What is next? Did digital transformation just become even faster?: Internet usage vs. productivity

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Abstract

Modern businesses have been going through a strong organizational transformation, caused by technology, strongly accelerated by the new digital era. Some of the most provoking discussions revolve around the change in productivity. Nowadays in times of economic crisis, issues concerning the economic influence of ICT and the Internet are even stronger, which has been even more visible during times of covid. This academic article refers to relevant scientific work on various levels stressing and engaging the context of Macedonia. Hence efforts are made to synthesize aspects related to actual impact considering local enterprises in different industries. Additionally, organizational changes are also included being impacted by the tremendous internet usage. This paper aims to find a coherent approach to coping with the digitally challenged business world. Quantitative research performed has been engaging management representatives of various companies where conclusions are drawn, related to the influence of the Internet on productivity in an economic sense, as well as for the respective organizational changes and business models. Confirmation for the urgency to consider the importance of such a research effort is that at a large scale (over 90%) it is believed that the use of the Internet seriously changes the ways of working, increases the efficiency of operations, and seriously positively affecting potentially productivity. The Internet has been coping with certain effects on innovation, especially transforming communications with partners and end-users. Hence there are solid grounds to suggest that the Internet and ICT seriously affect digital transformation processes in Macedonian enterprises, which opens a wider discussion for a more extensive further research attempt.

Key Words: Internet, ICT, Productivity, Organisations, Management, Business Model, Digital transformation

1.Introduction

The new digital era often called the digital revolution has transformed the way we think, the way we work, the way we live, and of course the way we do business. Research often refers to digital transformation seen as "radical change of doing business, driven highly by today's necessity to change and adapt to the digital age" (Mićić, 2017). Change comes at a various pace, accelerated by recent covid implications, but still mostly implicates within business modeling. Digital transformation is a vessel enabling organizational innovation historically it has been widespread that the development of information technology in the '70s and 80s, as well as the rapid spread of the Internet in the 1990s and the most recent Internet developments in the 2000s, there has been a parallel initiation of interest in potential economic outputs. The processes stimulated by digital disruption are becoming more and more an issue struggling to become business issues. (Genzorova, et al., 2019). The development of digital technologies induces disruption of previously well-established systems in many sectors of society. In the current situation of economic crisis, the interests for the economic impact of ICT and the Internet is even stronger because the investments in broadband infrastructure can potentially improve the economic situation and help countries survive and heal from situations related to economic In response to these economic conditions, many countries are implementing fiscal stimulus plans to reduce the impact of the recession and initiate economic recovery. According to the Andes, Castro (2009), in the past, the typical government reaction should be to invest heavily in physical infrastructures, such as public roads or buildings. However, while many of the countries can still have benefited from this, investments in digital infrastructure can have a greater positive impact on job creation and economic growth. Many governments decided to focus their investments on high-speed internet and high-speed infrastructure in their stimulus incentive packages for the economy CESifo (2009) claims that economists are concerned that growth may remain permanently low with the level of investments, employment, and productivity lower than before (Economist, 2009). To deal with the bottom line of the debt crisis, generating growth is a top priority (Economist, 2010). Likewise, unemployment remains a critical issue: in the OECD Employment Prospects Survey, the focus on OECD countries should be to create 17 million job vacancies to gain the employment level before the crisis (OECD, 2010). At the same time, the focus towards broadband infrastructure investments as the long-term growth driver for growth and employment needs to remain a priority in economic policies. After a long period in which Europe followed the US in terms of productivity, Europe has been lagging since 1995 (Atkinson, 2007). It has been suggested that for Europe to grow and prosper in the future, it is crucial that the level of productivity increases as it did before 1994. Evidence suggests that a key factor in increasing productivity is the significant use of information and communication technology (ICT) everywhere in European societies and economies.

This general context sets the scene for businesses to consider setting their priorities. Certain studies suggest (HBR Analytics Services,2014) that 50% of business and technology leaders claim that their organizations were already missing out on new technology-enabled business opportunities. Digital transformation has various impacts on organizations, however, we believe the ultimate impact that organizations want to leverage on digital transformation is value creation which is centered not only around the organization, but also around customers. (Morakanyane, et al., 2017)

The paper aims at discussing the literature from multiple fields to increase the understanding of digital transformation and to stimulate future research by providing valuable insights and fulfilling our research agenda. Within our research, in the first line, we try to identify the external factors that have stipulated and extended dramatically the need for digital transformation. Namely the progress of technology and the rise of the internet if and how it has impacted companies. The internal perspective is aiming an analysis related to the strategic imperatives that result from digital transformation regarding communication, productivity, internal process of transformation. Hence the aim is to find answers on how productivity is impacted by digital transformation considering individual as well as the organizational perspective. So the main research question is evolving around *How digital transformation impacts productivity?*

Consequently we are aiming at adding value to a research agenda providing a base for future research topics on digital transformation. We shall begin our discussions on external drivers of digital transformation, which presents the background of our discussion such as Internet usage. Based on the outputs related to the background research, we discuss the imperatives that result from digital transformation, including organizational innovation, productivity as well organizational architecture. To sum up our discussion, we propose a research agenda for future research on digital transformation.

2.Literature Review

2.1 Digital transformation creating a context

The new era has created a g lot of buzz around digital transformation, which has been greatly used both in business and as well as in technological discussions. The meaning and definition of digital transformation have been evolving around the potential correlation of digital technology and business which potentially transforms business operation and delivery of value to customers" (Mićić, 2017). Then also digital transformation has been reffed to as a process that is used to modernize the society from a systematic perspective (Brennen, Kreiss, 2016). More so digital transformation has been considered to be one of the main motors inducing transformation in the corporate world, through establishing different technologies, based on the internet affecting the society as a whole (Unruh and Kiron, 2017).

There is almost no dilemma that the Internet, broadband access, and ICT help to develop the business. Measuring effects are usually quite complex: more developed countries have a larger scale broadband internet, which is also spread faster. However, more developed countries don't always succeed in having higher economic growth rates than the less developed ones.

Certain authors are claiming that digital transformation is referred to as a radical change more than as an generative development (Morakanyane, et al., 2017), which opens new perspectives in comping to this topic, making it more vivid in sense of research perspectives. Additionally, it can be argued that earlier forms of digital transformation were revolving around the introduction of computer-based systems and automation of processes, nowadays digital transformation is more concerned with the adoption and use of emerging technologies. This also raises complexity but still evokes discussion and research with more visible elements.

2.2 Productivity

The influence of the Internet on economic trends and economic development in terms of productivity is becoming increasingly important in modern literature. According to research related to the influence of the Internet on economic development, employment, and prosperity, increasing productivity by 10% at 4,800 small and medium-sized companies as a result of using the Internet is identified. (McKinsey & Company, 2011). Similar, this article argues that the internet is already contributing with 3.4% of the GDP in 13 countries included in the analysis (8 from the G8 group and 5 countries at different levels of development: Brazil, China India, South Korea, and Sweden), and with a 21% share of the BDP in the last 5 years in developed countries (McKinsey & Company, 2011). On the other hand, for every job lost as a result of the introduction of internet technologies, 2.6 new jobs are created somewhere in other places, and low and medium-sized companies that intensively use WEB technologies are the ones that grow and export twice more from other companies using WEB technology.

Broadband internet helps developing innovation and to develop the segment of services, creating new fields for European educated workers. The development of these new services takes place through the transfer of employment and competencies from the traditional sectors of the economy to the most dynamic and new sectors. Broadband internet has a positive impact on productivity, economic growth, and the level of employment (Fornefeld et al, 2008). Furthermore, Fornefeld claimed that the development of new markets created more than 100,000 new jobs each year and increased the European GDP by 8.2 billion euros per year (0.71%). These only confirm the initial discussions that in Europe there are continuous changes in organizations, related to the development of the Internet, which is important for our analysis. Countries with rudiment telecommunications systems generally have lower levels of economic development. Current research pushes us towards the conclusion that economic impact on growing and expanding telecommunications infrastructures in various regions which are less developed is very important, in addition to the positive implication on political stability and simultaneously to institutional reforms concerning the economy. (Waverman et al., 2005). Researching the different influences of fixed and mobile internet on the aggregated economy, showed that the effects are not being equal (Thompson, Garbacz, 2007).

Mobile internet development is evolving and developing rapidly in the developing world and undoubtedly can provide valuable information services in undeveloped and developing countries. Still, in the developed world this is not the case, at least not until recently. Interestingly results suggest that mobile broadband internet access has a reverse-proportionate effect on the GDP of the country per family and the effect on increasing inefficiency.

In literature, we can find very similar implications, which are drawn from other authors, according to which investments in mobile telephony only briefly and for a short time increase productivity, while the long-term benefits are different for developed and developing countries (De Maagd, 2008). Hence research results addressing the influence of the Internet on productivity are usually conflicting and provide a mixed perspective (Hannula, Lönnqvist, 2005). However, there are several interesting outputs, which conclude that the Internet can provide a useful tool for improving productivity or overall performance. Additionally, it seems that in some cases

the paradox of productivity arises because of wrong or inadequate productivity measures or because of conceptual confusion. The bottom line is that the internet can, but also in some cases can not increase productivity depending on the way it is used. From a managerial perspective, there are many reasons for using the Internet, such as improving customer relationships or due to competitive pressure. However, improving customer relations at the end of the day and getting better value for the customer, which at the end means better productivity for the enterprise.

2.3. Internet usage

Connecting billions of people worldwide, the internet is a core pillar of the modern information society. The world has been growing internet usage, hence starting from the beginning of 2021 there were 4.66 billion active internet users worldwide which are considered to be more than half of the global population or 59.5%. Where the majority or 92.6 percent (4.32 billion) penetrated the internet via mobile devices. (Statista , accessed 12 May 2021). Due to the Internet, the world has become smaller in this perspective Northern Europe is ranking first with a 96 percent internet penetration rate among the population. Following a high rate of penetration are the UAE, Denmark, and Sweden. However at the opposite end is North Korea with virtually no online usage penetration among the general population, ranking last worldwide According to data provided by the world bank North Macedonia 79% of Individuals are using the Internet (% of the population) – (Worldbank, accessed 09.03.2021)

2.4. Organizational innovation

Organizations have been going through various processes aligned with the agenda of digital transformations. Novelties have been introduced constantly. Hence despite the digital resources needed to achieve digital transformation, a key issue to consider is the organizational changes needed to adapt to digital change (Eggers & Park, 2018). In a wider context the term 'organizational innovation' refers to the creation or adoption of an idea or behavior new to the organization (Damanpour 1996). Internet and the new era of digitalization have been implicating changes in particular regarding the organizational structure that should be flexible for digital change. In this sense research agendas strongly argue that digital transformation has implications on the organizational structure (Sklyar, et al., 2019)), favoring a flexible structure composed of separate business units, agile organizational forms, and digital functional areas. The new experiences during the current crisis will greatly trigger new academic research, transforming current discussion and knowledge in this field. It has been already witnessed that organizations have been going through an accelerated path of progress due to the pandemic setting new rules and new ways of doing things. Organizations have been evolving very quickly towards a very digitalized online format not known before, still opening a pathway for new practices which are becoming more than a standardized approach but a so-called new mainstream setting

3. Methodology and research design

There is no major research or any scientific studies that address the issue of the impact of the Internet on the productivity of companies in the Republic of Macedonia, nor are there any studies that address the impact of Internet use on organizational change, impact on digitalization process or similar. Preparing the foundation for this research all available resources have been considered: websites of relevant institutions, websites of research institutes, relevant internet resources, various journals, and academic publications as well as websites of international organizations implicating a gap related to the business implications of digital transformation. Included are public internet resources and search engines that address keyword articles for a longer time frame targeting the Republic of Macedonia. Besides several materials from the National Bank of the Republic of Macedonia and the Ministry of Information Society, where the topic of productivity and the Internet is mentioned, but not aligned indicating merely a point of contact with the topic. This has provided even stronger motivation to the authors, to study the field and conduct research related to the topic.

There were two phases in the process of conducting research. Hence there are two parts in the first part there is the quantitative and in the second a more qualitative approach. The main discussions are summarized within the qualitative discussions and are in this sense used as the focal point. As a crucial part from the initiation phase discussions in form of short interviews on these topics with several professionals from different industries,

managers from different companies of different sizes (from larger manufacturing companies, banks, insurance companies, car dealers, IT companies, wineries, wholesale and retail companies, small companies with different activities) were made. Secondly, discussions engaging academia with various backgrounds were conducted. Both of these parties have emphasized and stressed the importance of this topic and the necessity to proceed with our research. Some authors even presented results where it has been said that ”integrated into the operation of Macedonian companies and the level of its uptake is quite high compared to the region. (Morakanyane, et al.2017) Which also stipulated that there is s a strong base for performing such a research study.

In the preparation phase, it was planned to use quantitative research with access to 200 Macedonian companies, of different sizes and different industries. The sample was formed based on the available business directories of the chamber of commerce divided per industry, but also based on personal contacts and knowledge of company

management from the authors of the research. Consequently, the the bigger emphasis in the sample was given to more technology-oriented companies from the sectors of Information technology, banking, telecommunications, automotive but also quite significant participants samples were chosen from rather traditional industries like food, tourism, chemical, construction, etc. Due to time constraints and lower response interest than initially anticipated the survey was eventually conducted on close to a hundred different companies. Hence the questionnaires were sent out to 295 potential respondents - representatives of companies in the first round of questions, and the questionnaire was fully answered by representatives of 97 companies and institutions, or about 33.8%. In the second round of questions, the questionnaire was sent out to 267 potential respondents - representatives of enterprises in which most have already answered the first round of questions, and the second 78 respondents participated (76 in full, 2 partially), or about 28.4%.

The first questionnaire was a combined questionnaire with optional questions and open-ended answers/comments on some questions. It contained 23 questions. For 22 questions there were multiple-choice options, of which only one question had the opportunity for a complimentary answer (rounding off multiple options). Respondents had options for additional comments on 8 questions, and there was one fully descriptive question. The questionnaire was set up on Survey Monkey', with respondents' invitations coming through specially designed e-mails containing links to the questionnaires. The questionnaire included questions related to the time of using the Internet (number of years), the acceptance of internet technologies, the connection of investments made by organizations in ICT and internet/intranet technologies used, the timing of the investment cycle, and the level of investments in internet technologies compared to income.

The second questionnaire was a classic questionnaire with choice questions, which contained 9 questions. There were multiple-choice options for all questions. In 3 questions the options were excluded from each other, in 5 questions the options were complementary (ie they could be selected in parallel), and one question was of two-dimensional matrix type (selection of one option from more than one row of the matrix). Respondents did not have the option of additional qualitative comments in the second questionnaire. The second part of gathering data containing the interview section was more biased gathering the perspectives,i.e. the opinion on the impact of the Internet on productivity and the eventual change in productivity due to the use of the Internet and Internet technologies. There were included questions related to the application of technologies and the time gap between the impact perceived in companies. The Impact on organizational innovation and potential change in organizations due to the use of the Internet and ICT were part of the questionnaire, as well as the potential impact on employees and the changing the needs of companies for different types of employees due to the use of Internet and Internet/intranet applications. During the interviews with the managers, several topics were discussed, including how many years the company uses the Internet, what the company uses the Internet for, opinion whether the Internet is an integral part of the company, as well as ways of communicating with customers and partners. In this line, some of the focus was oriented towards the business model of organizations, as well as their eventual change resulting from the acceptance of the Internet and ICT. Round two entailed further details, for instance: the reasons why communication methods of companies with partners and clients have changed, the reasons that positively affect companies, the reasons for the processes of transformation and/or change in the structure of employees, as well as the impact on the change of organizations in terms of using Internet and intranet applications. This qualitative part is being summarized in a table to confront various outputs and to create valuable discussions, which entailed in the result and conclusion section.

It should be noted that withi the production process we could use Multifactor productivity and Labor productivity measures as a some of the standard outlay for measuring produvtivity , still at this stage we aim at generating a overview of the perspectives offered by employees and how they perceive the digital transformation process.

4.Results

From the output of the two questionnaires, it can be noticed that the answers from the following industry sectors had the greatest contribution: 1. Information technology (14.43% with 14 answers in the first questionnaire and 15.79% with 12 answers in the second questionnaire); 2. Banking (11.34% with 11 answers in the first questionnaire and 11.64% with 9 answers in the second questionnaire); 3. Telecommunications (6.19% with 6 answers in the first questionnaire and 7.59% with 6 answers in the second questionnaire); 4. Automotive industry/car trade (8.25% with 8 answers in the first questionnaire and 7.89% with 6 answers in the second questionnaire); 5. Food industry (7.22% with 7 answers in the first questionnaire and 5.26% with 4 answers in the second questionnaire); 6. Insurance (4.12% with 4 answers in the first questionnaire and 6.56% with 5 answers in the second questionnaire); 7. Energy (3.09% with 3 answers in the first questionnaire and 3.95% with 3 answers in the second questionnaire).

Other sectors and industries (tourism, construction, leather, metal, wood, and chemical industry, then education, environmental services, etc.) were represented by 1 or 2 answers, which we consider irrelevant for industry analysis, but of course, these answers are very useful in building the full picture and the analysis carried out. It should be additionally emphasized that during the research a large number of answers appeared from other types of industries/sectors that were not in the predefined options (27.84% - 27 answers and 27.63% - 21 answers), which shows that the structure of industries and sectors and the granularity of opportunities probably needed to be further expanded and detailed. However, these answers also make a serious contribution to the overall analysis, especially from the first survey where there were qualitative inputs, so additional analyzes can be made for some other types of sectors and industries.

The results of both rounds of questionnaires provide very interesting insights, some of them were expected, but some were rather unexpected. But, also, which is especially important, with the second questionnaire, several claims were tested related to the opinion of the respondents about the level of internet influence on the economy and productivity and the level of internet influence on certain industrial branches. More details on both questionnaires are provided and the results of the first quantitative questionnaire are summarized below. It was completely expected that 98.96% of the respondents use broadband internet. Also, more than 92% of the respondents use broadband internet for more than 5 years, 19.59% use the internet for 20 years, 27.84% use the internet for 15 years, even 30.93% use the internet for 10 years. This result was generally expected, but still not as intense and with such high percentages as shown in graph 1 and table 1.

Graph 1. Graphical presentation of the distribution of time of usage (in years) of broadband Internet at Macedonian enterprises (presented in percent of answers per year category)

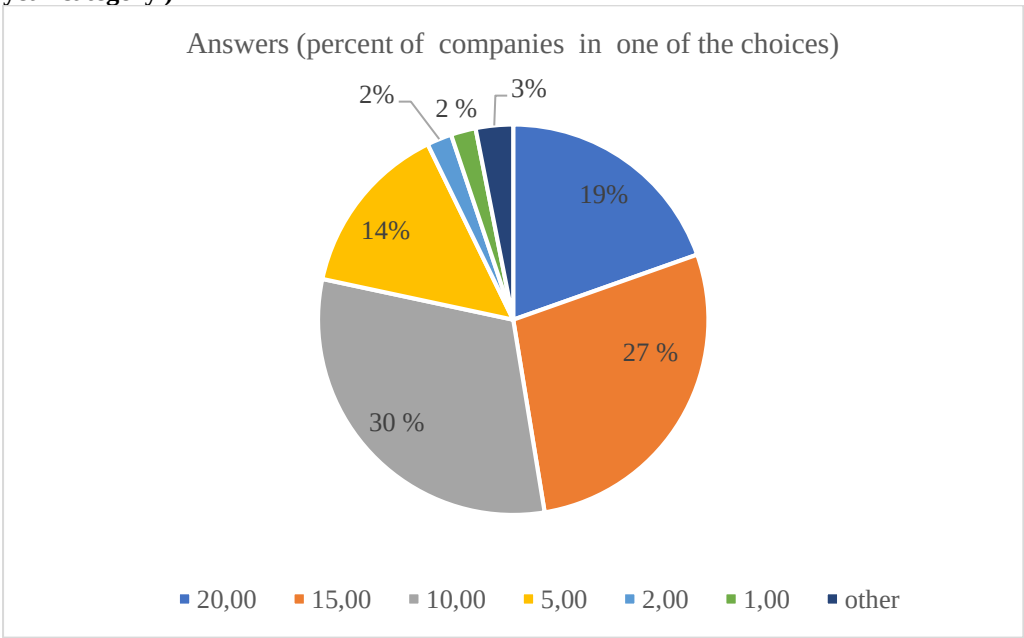

Table 1. Number of years of usage of broadband Internet at Macedonian enterprises - distribution of answers in percent and absolute number of answers per category of years

Choice (Years)	Percent (Distribution)	Answers (number of companies in one of the choices)
20,00	19.59%	19
15,00	27.64%	27
10,00	30.93%	30
5,00	14.34%	14
2,00	2.06%	2
1,00	2.06%	2
other	3.09%	3
Total number		97

This outcome leads us to the conclusion that the Internet in the Republic of Macedonia in more than 78.26% of companies is used for 10 years and more, which is a long time frame to opening considerations for various impacts on company productivity, transformation, multiple changes of organizations and changing the structure of employees. Initially, with this, we want to set the context for achieving some expected impact of the Internet on Macedonian companies, influenced primarily due to the long period of use of the Internet and sufficient periods to consider and analyze impact as well as investment cycles that include internet technologies and digital transformation.

The results that follow the question "What do you use broadband for in your company?" are interesting. (where more options can be marked.) "As expected, more than 97% of respondents say they use it to receive and send e-mail, and 82.47% use it to find information and find new partners. But quite unexpectedly, serious 52.58% use the Internet to integrate work with partners (order new products and make new orders via Internet/intranet applications) and 48.45% use and influence internal reorganization due to the application of Internet technologies, as shown in table 2.

Table 2. Internet in Macedonian enterprises is used for what?

Choice (of companies)	Percent	Answers (of companies)
Sending and receiving e-mails	97,94%	95
Finding information on the Internet and finding new partners	82,47%	80
Selling services and products over the Internet	38,14%	37
Integration of the work with partners (Orders of new products and quantities of products through Internet/company Intranet) - first elements of Digital transformation	52,58%	51
Internal reorganisation due to of way of working due to use of Internet technologies	48,45%	47
Other	37,11%	36
Total		97

Marking the top choices from our list is sending and receiving emails, which is rather basic but expected, so is also finding information. These two outcomes lead us to the assumptions that a significant part of Macedonian companies are experiencing serious structural changes related to the use of the Internet, and the operations are

increasingly adapting to new trends and technologies (new processes adapted to digital Internet models, connecting suppliers and partners through the internet, change of the supply chain, change of the internal structure, etc.). Especially since the research has been made before covid it would be very interesting to compare current responses, which would potentially implicate dramatic changes. This leads to a conclusion that digital transformation is underway as a considerable part of Macedonian companies, even though in some cases they are formally not aware of this, this may be additionally and very probably accelerated due to the pandemic. On top of that, if we add that a serious percentage of 38.14% of the companies are oriented towards selling their services online, we get a pretty wide picture related to the adaptation to the new internet trends. This was not something that was expected despite the long-term use of the Internet in the Republic of Macedonia. The responses implicated that especially traditional sectors are very resistant towards more brave steps of digital transformation.

Moreover in the context of the previous question “Do you consider the Internet to be an integral part of your company's operations? (Could you work in the company today without using the Internet?) "A huge part, ie 95.88% answered positively. This means that almost all representatives of Macedonian companies do not even think of working and organizing their companies without the internet nowadays, i.e. that the internet is necessary for daily operation and standard routine, similar to electricity or water. In addition, it is even more interesting than the question: "How and in what way does your company communicate with its customers?", As many as 42.27% answered that they do it online, compared to 15.46% who do it through standard media advertising campaigns (TV, print media, radio) or 11.34% who communicate through their sales networks (their stores) as shown in graph 2 and table 3.

Graph 2 In which way Macedonian companies are communicating with the clients?

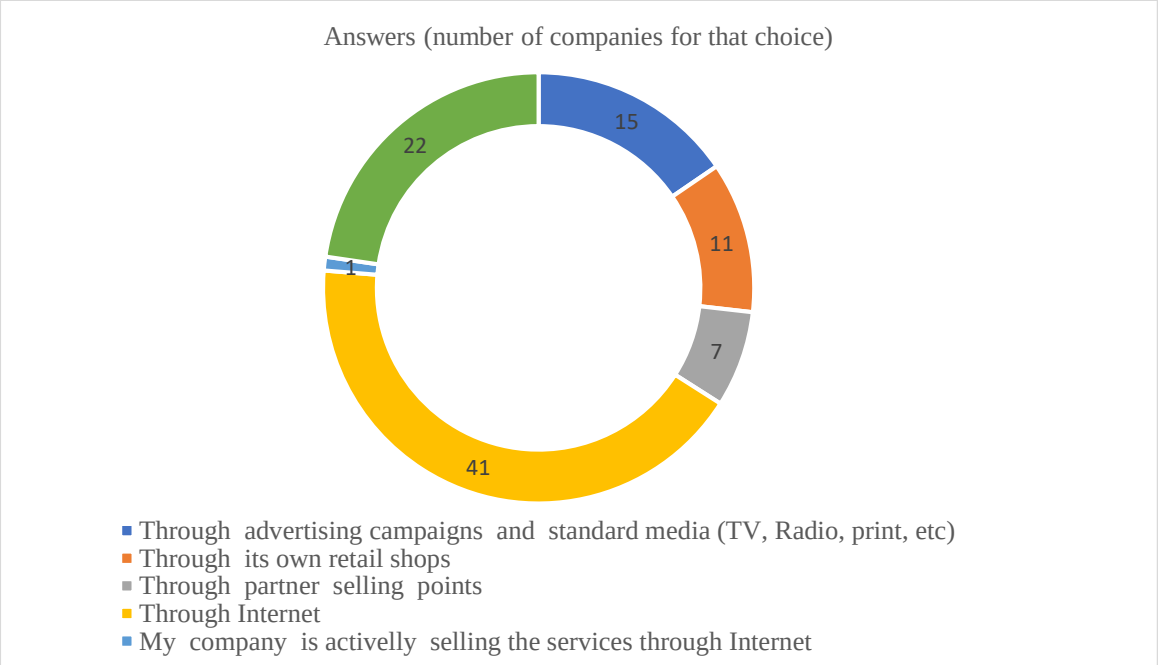

Table 3 In which way Macedonian companies are communicating with the clients? (Distribution of answers and contribution of answers in percent)

Preferred choice of communication with clients (of companies)	Percent (from the chosen options)	Answers (number of companies for that choice)
Through advertising campaigns and standard media (TV, Radio, print, etc)	15,46	15
Through its own retail shops	11,34%	11
Through partner selling points	7,22%	7
Through Internet	42,27%	41
My company is activelly selling the services through Internet	1,03%	1
Other	22,68	22
Total		97

This shows that Macedonian companies are increasingly oriented towards advertising in digital media (their advertising budget structures are adjusted accordingly), but at the same time, it implicates that their models of work and communication are changing, another early sign of digital transformation. This is since different processes, expertise, knowledge is needed to communicate with a customer through their sales network or dealer network, as opposed to presenting their services online. Moreover, the same conclusion applies to the processes and organization of orders and services from customers when they need to be done online, which is often very different from the standard way - through standard sales or communication channels. Responses in this sense indicate that Macedonian companies are seriously following internet trends and adjusting operationalization on those trends. Despite that only, 1% of these companies are actively selling their services online it is interesting to mark and consider dramatic changes in the upcoming future. Please note that this information implicates the pre-Covid 19 periods, thus most probably the share of companies that are actively selling services and products through the Internet has increased in the meantime.

Furthermore, on the question: "What is your investment in information and communication technologies / Internet technologies in the last 5 years?", the majority of respondents (48.42%) answered that they are below 5% of the company's revenue, and 33.68% answered that they are between 5 and 10% of the companies' revenues, which is within some expected range. But what is surprising and rising a red flag in some way is that 9.47% of them said that they do not have such internet/intranet-related investments, etc. The next question: "In your opinion, how long does it take from the moment of investing in information and communication technologies/internet to the moment when the impact of the Internet and ICT on the productivity in your company was actually felt?", as many as 64.1% answered that this period is 1 year and another 13.68% think that this period is 2 years, as presented in Table 4 below. This means that a very serious 77.78% believe that the period of influence and spillover of Internet technologies on productivity in companies is between one or two years. This is on one hand very logical at first sight, but considering various impactful research efforts we know that these periods can be much longer. Hence there is still a lack of understanding and experience related to the processes, so these are very biased responses. Additionally, it is important to emphasize that as much as 13.68% say that such a period does not exist because no impact of the Internet and ICT on the productivity of the company has been observed. This is undoubtedly an important element that implicates that a serious percentage of companies do not feel at all, or at least have the perception that the use of the Internet and ICT has no impact on productivity.

Table 4 Period needed for spill-over of the ICT/Internet investments in the companies to influence the productivity in the companies

Choice of the spill-over effect period (from companies)	Percent	Answers(from companies)
There is not such a period, I have not recognized any influences from Internet and ICT on the productivity	13,65%	13
This period is around 1 year	64,21%	61
This period is around 2 years	13,68%	13
This period is around 3 years	6,32%	6
This period is around 5 years	2,11%	2
This period is around 7 years	0%	0
This period is around 10 years	0%	0
This period is around 10 years	0%	0
Total		95

In the next question: "How and in what way does your company communicate with its partners?", A large part (78.35%) answered that they use e-mail for that, and a relatively small part (11.34%) responded that they use telephone communication, which reaffirms the establishment of the internet as a standard tool and standard resource as well as electricity or telephony, as emphasized earlier. But only a small part (5.15% or 5 respondents) answered that they do it by issuing orders/feedback through intranet applications.
This provides some confusion and contradiction to the responses answers to previous questions, but especially with the answers to the question whether most (52.58%), respondents in the companies said that they use the Internet to integrate work with partners (orders for new products and new quantities through Internet/intranet applications).

This in many ways presents and emphasizes that there is some understanding and certainly perception within Macedonian companies in terms of use and influence of the Internet, especially concerning advanced concepts of integrated Internet/intranet work and cooperation with partners, new business models, and ways of organizing, which more or less is still evolving.

The next section covered is extremely positive and affirmative, in the range of 89-97%, but these few questions provided an opportunity for qualitative answers and comments. For example, 91.75% of the respondents in the last 5 years notice a change in the ways of communication with users and partners due to using the Internet, Internet applications, Internet portals, intranet applications, social networks, and also 96.91% believe that using the Internet in their company positively affects the productivity of operations. Additionally, 95.83% believe that the Internet increases the efficiency of processes and the efficiency of employees, i.e. that it is not true that the employees only uselessly "surf" the Internet or play online games. In a very similar manner 91.75%, believe that the Internet has a positive effect on increasing innovation in their organization, such as the introduction of new and creative services and products, new and efficient ways of customer service.

Similarly, although not as convincingly as before, 71.58% of the respondents in the companies believe that the use of the Internet and appropriate Internet and intranet applications influence the change of the business model of their companies, and 79.38% believe that the Internet affects the process of transformation (change of processes, abolition of certain processes, introduction of new ones) of their company. All these statements from above, bring us to a potential conclusive output that the Internet and ICT seriously influence the digital transformation in Macedonian enterprises and even more implications are expected in the very present moment in time.

The overall outlay of the results entails a few sections referring to internet usage, productivity, and organizational innovation, each of them being covered by few different questions. These provide a qualitative indication of where companies stand at, still a more longitudinal perspective should be considered in further research and connecting the digitalization process with the process od strategy development should be provided. The informatuing gatehered implicates certain biases related the responses , i.e meeting expectations more than to providing information about the actuall situation .

5. Future research

This research effort aims to reflect on the phenomenon and the literature from diverse fields to help understand digital transformation and to stimulate future research by providing insight and discussions related to future possible research agendas. It has been discussed that there is a quite limited understanding of what companies go through, hence research should engage in understanding all the stages of digital transformation. Prior literature suggests that companies experience the same or at least similar sequence of digitization, which eventually results in digital transformation. Also considered for future research should be the resilience of firms and also pretty unclear the degree to which firms should transform digitally. There is a very wide field to consider related to strategic aspects of digitalization and the relationship of digitalization and growth strategies. Another important research issue is related to digital resources, in this sense a lot of questions could be potentially raised. identifying the optimal forms of organizational structures that allow firms to succeed in excuting their digital transformation strategies.

5. Conclusions

The relationship between productivity and digital transformation is pretty, dynamic, and multilevel. This has been greatly proven by literature which is voluminous and diverse. However, this paper has sought to understand the nature of these relationships from different but interdependent perspectives. Although there are potentially important overlaps and interconnections between these different aspects of the relationships, the different strands of research have remained separate and there is no single coherent conceptual framework for understanding that can be proposed This is partly due to the great conceptual ambiguity and confusion surrounding these discussions.

An overall pool of conclusions and interpretations are reached related to the main issue. Whereby the level of awareness about the use and need for internet in Macedonian companies is at a very high level; Still intuitively, Macedonian companies at a large scale believe that the use of Internet seriously changes the ways of working in Macedonian companies, increases the efficiency of operations and seriously positively affects productivity. Response from research performed indicated additionally, that the Internet has a very positive effect on innovation and seriously changes the way of communication with partners and users.

Research also claimed at a large scale that the use of the Internet and the corresponding Internet and intranet applications, affect the change of business models of their companies and affect the way their company is organized. This leads to a potential conclusion that the Internet and ICT seriously affects the digital transformation in Macedonian enterprises

In summary, most companies believe that the changes related to the use of the Internet occur because of the internally perceived benefits of the change in communication with customers and partners and because of the opportunities with this change to reorganize processes and be more efficient and productive in the medium term of several years.

Additionally, a smaller but serious part of companies believes that these changes occur due to the strategically perceived advantages of the change in communication with customers and partners in the long run and the need to change the business model in companies.

Companies in the Republic of Macedonia are seriously tactical (for a period of several years) and strategic (5-10 years) focused on these changes brought by the use of the Internet, and are seriously working to increase efficiency and productivity, as well as changing business models. Within our research it is mostly considered that digital transformation has a positive relationship with productivity, organizational innovation. Where as there are some outlayer whether at some leve internet usage influence productivity in negative individual productivity and eventually overall organizational productivity,

The perception within Macedonian companies is that fast access and the scope for access to information, as well as the significantly facilitated cooperation with the partners and the clients, are the main factors (drivers) of increasing productivity when using the Internet. Elements such as improving employee motivation and morale, employee access to top management, reduced or improved administration, shortening of internal procedures and procedures for using the Internet are seriously less important.

Initially many of these conclusions are unexpected, especially for the less important elements. But it is probably logical that the first few elements related to the speed and breadth of access to information could be considered as more serious factors in increasing productivity in Macedonian companies.

When using the Internet and the relevant Internet and intranet applications considering the change of the business models the most relevant is the change of the way of promotion and advertising, improvement of the working and business processes, change of sales channels. The most viable part of the research has been indicating that influencing the transformation process in electronic communication which reduces the use of paper communication, thus the processes are faster and more productive (for example, there is no need for couriers to deliver mail through the company, everything is immediately available). In addition, many believe that communication at remote locations is facilitated, and this helps to eliminate the same processes that would be repeated in different locations. Similarly, many believe that it is related to the automation and digitalization of processes, and includes the eco-system of partners as authorized service vendors. Also, a significant option or factor for this transformation effect is the far greater automation of routine processes

This large literature has advanced our understanding of the effects of digital transformation on productivity, create knowledge and generate technological innovation remains unclear how and under what conditions organizations are impacted in the sense of productivity and the role in driving the processes of digital transformation. Progress in these areas will require greater efforts to bridge the different levels of analysis and multidisciplinary research to add insight and depth beyond one narrow perspective

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