Perception and attitudes on the effects of digital technologies application: a survey

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Abstract. *Advancement in technology development in the last years brought many changes in everyday life. We are witnessing rapid and comprehensive innovations and changes in information and communication technology which influence economy, society, education, medicine, etc. This is called the digital revolution.*
This paper describes the results of the analysis of impacts that digital revolution has on society and individuals. The analysis included a survey on examinees' opinion and their experience with digital revolution, what their expectations are, what their habits are while using smartphones and computers and whether they are familiar with GDPR. 224 examinees filled in the survey. Survey results were analysed according to the age of examinees.

Keywords. digital revolution, information and communication technology, innovations

1 Introduction

The Digital revolution, also known as the Third industrial revolution, started sometime between late 1950s and late 1970s when digital computers and digital records were adopted. The trend continues even today (Schoenherr, 2004) and it is based on the digitalization of social systems (Freeman & Louçã, 2002). In addition, technological change in general is boosting this revolution as well (Perez, 2004). Shifting from mechanical and analogue electronic technology to digital electronic enabled faster and more efficient information exchange and the new information age has started. Digital revolution also covers mass production and digital innovations such as the computer, digital mobile phone and the Internet, which have transformed traditional business and production methods (Debjani, 2014), (Bojanova, 2014).

Digital information and communication technology (ICT) can transform the entire economy to a more developed social and economic form related often to the terms: post-industrial society, information society, digital age, etc. (Hilbert, 2015).

Digital computers are an essential part of the great change in communication, media and devices, which leads to faster globalization and digital revolution.

The number of Internet users, according to (Internet World Stats, 2019) in March 2019, reached 56,8% of world population. The number of mobile phone users in the world in 2019 is expected to be 67% of world population (The Statistics Portal, 2019).

According to (Visual Capitalist, 2018), 862.823 US dollars were spent online each minute in 2018. Each minute of 2018 included 187 million e-mails sent, 18 million text messages, 38 million WhatsApp messages, 4.3 million videos viewed on YouTube and many other Internet activities. It is obvious that the world is changing.

Information flow is becoming more and more intense. Trends, innovations, new products and markets are pushing the world to become more complex. Markets and the world are now complex adaptive systems processed on the Internet. Companies aim to improve their business models to keep their position and be more competitive in the future. It can all lead to radical changes in managing users, building brands, managing and analyzing information etc. (CIO Whitepapers Review, 2018). Using technology across digital platforms increases productivity of social organizations and companies, builds a more competitive world leading towards the desired future.

Digitalization of the society initiated digital transformation in many organizations. Digital transformation presents integration of digital technology in all business domains (Matt, Hess, & Benlian, 2015). Cloud computing, Mobile, Big Data, Social Networks and Internet of Things enabled the first wave of digital transformation. The next wave is influenced by the technology belonging to the "Industry 4.0.": robots, drones, artificial intelligence, 3D printers etc. (Domitrović, 2016).

The digital revolution completely transformed the way information is transferred across the world, enabling companies to enter international markets and increasing global connections in the world.

In this paper we analyse the impacts digital revolution has on the society and individuals. Our

analysis includes an online survey on examinees' opinion and their experience with digital revolution. We tested examinees' habits about using smartphones and computers in daily life and their perspective on the time spent using these devices. The survey results are based on answers received from Croatian citizens.

2 Background

The digital revolution enables building and creating different products and services in digital technology. It aims to transform people who are the key factor to increase the value of these transformations. Organizations should be more informed and ready to develop. They should also make sure that every employee participates in the goal achievement. Digital revolution encouraged new ways of communication which strengthen economy and offer consumers access to information at any time using different platforms such as mobile internet, cloud technologies, nanotechnologies, robots and other digital technologies (CIO Whitepapers Review, 2018).

2.1 Impact of digital revolution

The digital revolution was significantly influenced by the development of the microprocessor, digital electronic computer, personal computer, networks, Internet and digital broadcasting.

Positive socio-economic aspects include better international connections, simplified communication and exposure to information. Digital revolution enabled smaller firms to access a broader market. Production and services on demand and lower technology cost enabled innovation in all aspects of industry and daily life, which implies that digital technologies significantly increase productivity and business success. It is easier to monitor the entire manufacturing system.

Negative impacts include information overload, accuracy problems, internet predators, social isolation in some forms, etc. In modern age, workers are replaced with computers which perform jobs faster and more efficiently. Jobs traditionally related to the middle class disappear, whether through outsourcing or automatization.

Cryptocurrencies, such as Bitcoin, present a challenge in fighting against money laundry and other illegal activities. Technology behind them will most likely revolutionize finances: assure faster and more secure transactions and assure relevant data on potential clients applying for loans (Mühleisen, 2018).

Considering digitalization, there are three types of companies (Saga RS, 2018):
1. New companies completely digitalized from the start: for example, Google, Apple, WhatsApp digital banks, virtual organizations without offices.
2. Old companies from industrial age which must change their business model and go through the process of digital transformation.
3. Hybrid companies which combine physical and digital elements. They use a type of connecting point with the users, such as bureau, business office or sales point with a combination of digital elements.

According to Pascal Brier, there are four major impacts digital revolution has on the industrial world (Altran, 2018): improved performance and flexibility, increased productivity, a massive reorganization of the supply chain and mass customization. Sensors implemented in the production process will enable elements of production to react on any sign of a problem, to self-regulate and to introduce preventive maintenance activities during self-monitoring. Many delays will be avoided. Having full control over the production system, producers will produce based on demand. This way they will reduce stocks and reduce costs caused by unsold products. Productivity will increase with the use of collaborative robots. Instead of moving factories to make them more profitable with less production costs, with 3D prints industry can adjust and maintain locally. Production will be based on demands, and with the help of virtual reality, companies will be able to use imagination, identify requests and adequate technologies and ensure expert support.

In the future, educational policy and market competition policy will have to adapt. Schools and universities should ensure skills for future generations, needed to successfully work in the future economy. Considering the global impact that digital technology has, it is necessary to cooperate in global financial markets and in traffic. This cooperation should include global personal data regulation, since Internet is global and international and individual state regulation is hard to monitor, especially with different taxes for digital companies (Mühleisen, 2018).

2.2 Digitalization in Croatia

According to The Institute of Economic, Zagreb, 17% of Croatian companies are intensively digitalized, only 8% of them use Big Data technology, 16% social networks and 26% use ERP (Vranković, 2018).

Reports from the Croatian Bureau of Statistics point out that 33% of examinees in Croatia shopped online in 2016. Despite of the growth and rather significant number of companies which sell their products or services on-line, the overall share of online sales in Croatia is estimated to only 1-3%, depending on the industry type.

According to the Digital Economy and Society Index Report for 2018 (European Commision, 2018) Croatia has reached 22nd place (DESI=46,7), while in 2017 Croatia was 23rd (DESI = 43,2) within the European union. More specific, in the category

"Digital Public Services" which is related to electronic public services, Croatia was 25th in both 2017 and 2018. Subcategory related to e-services in public health services put Croatia in 10th place. In the category „Connectivity" (for both fixed and mobile broadband coverage) Croatia is only 27th, the same as in the previous year, although national investment increased, and the service is available in 99% of Croatian land (the average in the European Union is 97%).

The biggest progress is achieved in the category "Use of Internet Services by Citizens", which included communication and internet transactions: in 2017, Croatia was 14th and in 2018 11th. For the category "Integration of Digital Technology", which includes company digitalization and e-markets, Croatia was 17th in 2017 and 21st in 2018.

These results show that Croatia should continue with the improvement and development of digital society, starting from digital services, strategic polices on different interconnected sectors, investments in better internet infrastructure and a lower price for internet end-users, to a better use of open data which has a great potential for economical and non-economical (scientific) way (Povjerenik za informiranje, 2018).

In Croatia there are some examples of good practices in e-commerce solutions, even for the more complex products and services. Industries related to digital transformation in Croatia are banks and finance industry, telecommunications, media, retail and tourism.

Examples of good practices in digitalization in Croatia:

- e-Citizen (e-Građani) system is established with the goal to simplify and increase communication of citizens and public service and make it more transparent. (Središnji državni portal, 2018).

- e-Class Register is a web application for managing classroom data in the electronic form. It was developed by CARNET and it is in use since 2011. Currently, it is used by more than 1160 schools in Croatia (Carnet, 2018).

- The city of Pula implemented a digital process called e-Business to its daily activities in public services in 2007. Benefits include: less paper documents, less time to finish processes and time and money savings for citizens. Afterwards, they implemented e-Kindergarten, e-Invoice, e-Case and e-Consultations (TV Istra, 2018).

2.3 Sharing information and privacy concerns

The development of the Internet and WWW offered new possibilities of communication and information exchange. Global information exchange brought a new level of freedom of expression. Individuals and organizations can publish content available to the entire world at a very low cost compared to any other communication technology.

In general, privacy became a concerning issue. The ability to store and use big amounts of data created the possibility to monitor activities and interests, which raised some concerns regarding privacy rights and opportunities to take advantage of the situation.

In addition to human and civil rights, reliability of data is another problem. It is easy to store and copy facts, articles, statistic data, etc., but hard to confirm its authenticity. In music, film and television industry, there are new issues regarding author rights and copy rights. It is easier for minors to access pornographic content which leads to additional censure and information regulation in WWW. Unfortunately, laws and regulations cannot follow the pace of digital revolution and its impacts.

Therefore, new areas of regulation have appeared, such as environmental law, bioethics, ICT and Internet related regulations. Many domestic laws have an international component (Germain, 2007).

2.4 General Data Protection Regulation - GDPR

Data processing, especially personal data processing, new ICT and digital market, created the need for data and privacy protection of new digital products and services (Čizmić & Boban, 2018). Personal data are those data related to an individual sufficient to identify him or her, directly or indirectly. The solution to this problem is General Data Protection Regulation (GDPR) which is in use in the European union since May 25th 2018 (GDPR2018, 2018). It is applied to all organizations which store data about EU citizens.

GDPR brought significant changes in personal data management (Čizmić & Boban, 2018). Specific rules of GDPR require changes in technology and the ways organizations collect information about people (EU GDPR.org, 2018). New regulations helped to establish a new European framework for data protection and implemented a new definition of personal data which replaced current inconsistent regulations.

3 Research methodology

The goal of this research was to gather opinions and thoughts on the impact of digital revolution on society and individuals. The research tested awareness and people's expectations, their habits while using ICT such as smartphones and computers, and the level of their knowledge on some related facts regarding GDPR. Authors expected different answers depending on the examinees' age.

Research questions were set:

1. Are people aware of the (sometimes unnecessary) time they spend using devices such as smartphones and computers?

2. Are people informed about services which facilitate administrative procedures, such as Croatian service e-Citizens (e-Građani)?

3. Are examinees familiar with GDPR, which was implemented in May 2018?

With the goal to test research questions, authors created a questionnaire. This questionnaire was available online and examinees filled it in anonymously during October and November 2018. The questionnaire consisted of 24 questions divided in 3 parts. In the first part a set of basic demographic questions were set (age, sex, residence region, educational level, employment status). The second part was related to the use of smartphones, laptops and desktop computers. The third part covered questions related to the digital revolution and digitalization (Sinčić, 2018).

The questionnaire was filled in by 224 examinees and 79 % of them were women. Classified by their age, 20% of them are under 20 years old, 73% are between 21 and 35, 6% are between 36 and 50, while 1% is over 51. According to their regional affiliation, all counties of the Republic of Croatia were covered, except the Zadar county. Most examinees live in the Zagreb county and Istria county. Most examinees are high school graduates (49%) and faculty graduates (30%). Some have undergraduate or similar educational level (20%), while 1% of them finished only elementary school. More than half examinees attend school (2%) or faculty (51%), 39% work, 7% are unemployed and 1% is retired.

4 Research results

With the goal to test research questions, this research analysed examinees' answers. All examinees own at least one smartphone, while 2% own two or more. They use it mostly (more than 1 answer was possible) for chat applications such as Viber, Skype or WhatsApp (81%), social networks (80%), searching the web using Google or other search engines (50%), phone calls (49%), chats (22%). The entire set of answers is shown in Table 1.

Table 1. Answers to the question: "For which purpose do you mostly use smartphones?"

Category	Percentage
Viber, Skype or WhatsApp	81%
Facebook, Instagram and similar	80%
Searching internet (Google, etc.)	50%
Phone calls	49%
Chats	22%
E-mail	1%
Netflix, Add manager, Photoshop	1%
School/faculty	0%

TV shows	0%
Photographs	0%
Games	0%

Authors wanted to know about examinees' perception of the time spent on smartphones. The question was set: Do you think you unnecessarily spend too much time on smartphones? 73% of examinees answered this question affirmatively, while only 27% disagree. Table 2 shows categories of interests which examinees recognized as the most relevant unnecessary time-consumers. Categories were defined during questionnaire analysis of their open answers. Analysis of the answers covered four age groups: under 20, 21 to 35, 36 to 50 and above 51.

Table 2. Answers to the question: "If you think you spend too much time on smartphones, what are your biggest unnecessary time consumers?"

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
Social networks	69,7%	65,0%	40,0%	0,0%	64,5%
Chat	3,0%	11,4%	10,0%	0,0%	9,6%
Youtube	12,1%	7,3%	0,0%	0,0%	7,8%
Other	3,0%	5,7%	10,0%	0,0%	5,4%
Games	6,1%	4,1%	0,0%	0,0%	4,2%
News	3,0%	2,4%	20,0%	0,0%	3,6%
Google	0,0%	1,6%	0,0%	0,0%	1,2%
Shopping	0,0%	0,8%	10,0%	0,0%	1,2%
Business	0,0%	1,6%	0,0%	0,0%	1,2%
School / faculty	3,0%	0,0%	0,0%	0,0%	0,6%
TV shows	0,0%	0,0%	10,0%	0,0%	0,6%

Social networks are the biggest time-consuming category in general (with the average of 64,5%), especially with youngest two groups under the age of 35. The next category is Chat, which is relevant for two middle age groups 21-50. Other categories have in average less than 8% of answers.

It is interesting to notice the difference between answers offered by different age groups. For example, categories News and Shopping are relevant for the age group 36-50 only, 20% and 10% respectively. Games and YouTube are relevant only for the two youngest age groups. It is also interesting to notice that examinees do not perceive Google (or other search engines) as an important unnecessary time consumer. Based on the data in table 2 we can see that examinees older than 51 do not think that they squander time on smartphones.

To the next question: Do you use desktop or portable computers (and for which purpose)?, 95,5% examinees offered a positive answer. Some of them use it for business purposes only (13,8%), some for private purposes only (24,1%) and most of them for

both (57,6%). Detailed analysis of this question according to the age group is shown in Table 3. We can see that regardless of the age group (except for the oldest age group), relative relation of the computer purposes stays almost the same.

Table 3. Answers to the question: "Do you use desktop or portable computers (and for which purpose)?"

Category	Age group				
	<20	**21 - 35**	**36 - 50**	**>51**	**Total**
Yes, for both private and business purposes	61,4 %	56,4 %	66,7 %	0,0 %	57,6 %
Yes, for business purposes only	11,4 %	14,7 %	13,3 %	0,0 %	13,8 %
Yes, for private purposes only	25,0 %	24,5 %	13,3 %	50,0 %	24,1 %
No	2,3 %	4,3 %	6,7 %	50,0 %	4,5 %

In the next question, examinees chose one or more answers to the question about different uses of desktop or portable computers (Table 4): searching the Internet (67%), e-mail (54%), social networks (29%), news (17%), school/faculty (14%), work (13%). Less than 10% examinees chose TV (shows and movies), gaming, different applications, shopping and banking.

Table 4. Answers to the question: "For which purpose do you mostly use laptops and desktop computers?"

Category	Percentage
Searching the Internet	67%
E-mail	54%
Social networks	29%
News	17%
School/faculty	14%
Work	13%
TV (shows and movies)	8%
Gaming	4%
Word	3%
Youtube	2%
Music	2%
Banking	1%
Shopping	1%
Photoshop	1%

It is interesting to see the results of the question about time unnecessarily spent on desktop and portable computers. Only 15% examinees gave a positive response. When we compare these results to the results about time unnecessarily spent on smartphones (73% of positive answers) we can see a big difference. We can assume the reason behind this. Authors presume that the ease of smartphone use, regardless of the location and time, might be the reason for this difference.

Categories of time-consumers for desktop and portable computers and data for each age group are presented in Table 5. which shows that the biggest time-consumers for laptops and desktop computers are social networks, YouTube, TV shows and music. It is very important to notice a rather high percentage for age group under 20 and the category: Games. Although the general average is low, Games are important for the youngest age group (50%), while the second youngest age group spends too much time using social networks and watching YouTube and TV shows and movies.

Table 5. Answers to the question: "If you think you spend too much time using laptops or desktop computers, what are your biggest unnecessary time consumers?"

Category	Age group				
	<20	**21 - 35**	**36 - 50**	**>51**	**Total**
Social networks	16,7%	32,4%	0,0%	0,0%	30,0%
YouTube	0,0%	29,4%	0,0%	0,0%	25,0%
TV shows and movies	16,7%	20,6%	0,0%	0,0%	20,0%
Gaming	50,0%	5,9%	0,0%	0,0%	12,5%
News	0,0%	5,9%	0,0%	0,0%	5,0%
Business	0,0%	5,9%	0,0%	0,0%	5,0%
School/ faculty	16,7%	0,0%	0,0%	0,0%	2,5%

The next question was: Do you think that digital revolution had a more positive or negative impact? Answers grouped by age groups are shown in Table 6. We can see that their opinions are divided, but only 6,1% think its impact is strictly negative. 35% think its impact is strictly positive, while 59% recognize both positive and negative impacts equally.

Table 6. Answers to the question: "Do you think that digital revolution had a more positive or negative impact to the society?"

Category	Age group				
	<20	**21 - 35**	**36 - 50**	**>51**	**Total**
Equally positive and negative	63,6 %	56,4 %	73,3 %	50,0 %	58,9 %
Strictly positive	27,3 %	37,4 %	26,7 %	50,0 %	34,8 %
Strictly negative	9,1%	6,1%	0,0%	0,0%	6,3%

Based on the examinees' answers, they recognized the following positive impacts of digital revolution: faster access to information, easier communication, connectivity, free communication, availability of quality contents, availability of fun contents, easier job-finding and recruiting, Web shops, easier learning, time saving, media transparency, better

accessibility of information. As negative impacts of the digital revolution, the examinees identified: privacy violation, addiction to technology, loss of face-to-face communication, lower self-respect, health problems (such as eye damage, bad posture, and depression), inaccurate information, digital violence, etc.

Answers to the question "Do you think that the digital revolution will contribute to creating new jobs?" (Table 7) are more positive within two youngest age groups.

Table 7. Answers to the question: "Do you think that the digital revolution will contribute to creating new jobs?"

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
Yes	45,5 %	63,8 %	20,0 %	0,0%	56,7 %
I do not know	25,0 %	22,7 %	46,7 %	50,0 %	25,0 %
No	29,5 %	13,5 %	33,3 %	50,0 %	18,3 %

For the next question: Do you think that digital revolution will destroy certain jobs? (Table 8), results are quite the opposite: only 7,1% offered a negative response (younger age groups), while 67,9% of examinees think it will happen (similar percentage in all age groups).

Table 8. Answers to the question: "Do you think that digital revolution will destroy certain jobs?"

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
Yes	65,9 %	68,7 %	66,7 %	50,0 %	67,9 %
I do not know	27,3 %	23,3 %	33,3 %	50,0 %	25,0 %
No	6,8%	8,0%	0,0%	0,0%	7,1%

Examinees consider these jobs potentially at risk: journalist, primary jobs, craftsman, mailman, physical marketing, jobs with simple manual automatized activities, machine guidance, taxi drivers and drivers in general, front office jobs, administrative jobs, manufactory jobs, cashiers, etc.

Examinees agree that without digitalization, many firms will not survive (78,1%, equally represented in all age groups), while only 4% disagree.

Table 9. Answers to the question: "Do think that without digitalization, many firms will not survive?"

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
I agree	77,3 %	78,5 %	73,3 %	100,0%	78,1 %

Neither agree nor disagree	20,5 %	17,8 %	13,3 %	0,0%	17,9 %
I disagree	2,3%	3,7%	13,3 %	0,0%	4,0%

The next question was: Do you think that Croatia is in step with other European countries in terms of digitalization? Not one examinee thinks that Croatia is better than the other countries. In total, 20,5% of examinees think that Croatia is in step with other countries, while 79,5% think that Croatia is behind other countries regarding digitalization (Table 10.).

Table 10. Answers to the question: "Do you think that Croatia is in step with other European countries in terms of digitalization?

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
Worse than other countries	81,8 %	82,8 %	40,0 %	50,0 %	79,5 %
In step with other countries	18,2 %	17,2 %	60,0 %	50,0 %	20,5 %
Better than other countries	0,0%	0,0%	0,0%	0,0%	0,0%

The next set of questions (marked A, B, C in Table 11) tested examinees' awareness and familiarity with administrative services and regulations. Almost all examinees are familiar with the e-Citizens system (99,1%) and 43,3% even use it. The most represented answer in the youngest age group is: I've heard about it, but do not use it (72,7%), while in two middle age groups around half of examinees use it.

Table 11. Answers to three questions related to GDPR

Category	Age group				
	<20	21 - 35	36 - 50	>51	Total
A. Have you heard about the e-Citizens system?					
I've heard and I use it	27,3%	47,2%	53,3%	0,0%	43,3%
I've heard, but I do not use it	72,7%	51,5%	46,7%	100,0 %	55,8%
I have not heard	0,0%	1,2%	0,0%	0,0%	0,9%
B. Are you worried about your privacy on the Internet?					
I'm worried	47,7%	41,1%	26,7%	0,0%	41,1%
Neither worried, neither not worried	36,4%	42,3%	53,3%	50,0%	42,0%
I'm not worried	15,9%	16,6%	20,0%	50,0%	17,0%
C. Do you know what GDPR is?					
I know	27,3%	57,1%	40%	0%	49,6%
I've heard of it, but I do not	11,4%	15,3%	40%	50%	16,5%

know what it is					
Never heard of it	61,4%	27,6%	20%	50%	33,9%

41,1% of (mostly younger) examinees are worried about their privacy on the internet, 17% are not worried at all. Very large number of examinees cannot decide whether to worry about their privacy or not.

49,6% of examinees are familiar with GDPR, 16,5 % heard about it, but do not know what it is, and 33,9% claim they did not hear about it. The latter percentage is rather high, and it implies the need for additional education, especially for the youngest group: 61,4% of examinees have never heard about GDPR. The age group most informed about the GDPR is 21-35 (57,1%).

5 Discussion and research findings

The results have shown that younger groups use smartphones mostly for communication purposes, not for calling and texting, but for chat applications. Both younger groups use smartphones a lot, while older generations use them to support other daily activities: shopping, reading news, etc. The oldest age group is hard to comment on since there were only two examinees in this group. Since the call to fill in this survey was published on a social network, the low number off examinees is an additional indicator that older people do not spend too much time on social networks.

Many examinees believe that they spend too much time using smartphones unnecessarily, while for desktop computers and laptops this percentage is significantly lower. Authors presume that the ease of smartphone use, regardless of the location and time, in addition to their convenient size, might be the reason for this difference.

Examinees are aware of many positive, but also negative influences and they are aware of privacy issues. According to examinees' opinion, Croatia is late in the process of digitalization, compared to other European countries. Their opinion is completely aligned with the report DESI 2018 described in this paper.

Surprisingly, almost 34% of examinees do not know anything about GDPR, which means additional education and awareness is needed in this field.

Education is needed, not only on selected concepts which are currently less familiar, but to constantly raise awareness about innovations and incoming changes. It is especially important in schools, but also as a part of lifelong learning to bring the news to older citizens as well. More precisely, GDPR was the main topic in many programmes and articles, supported by the Croatian Personal data Protection Agency, but citizens still showed a rather low level of awareness of the subject. Government and Local government should consider additional education procedures regarding delicate and important topics.

One of the more important prerequisites for digital growth and innovation is digital knowledge gained through education and practice, more digital experts and improvement of digital literacy in general. Some experts believe that the world shifted from the digital revolution to the information age, while others assume digital revolution has only started. In any case, digital innovations change the world as we know it.

6 Conclusion and future work

In this paper we presented research results of the impacts of digital revolution on society and individuals. We described main problems, gave an overview of the digitalization process in Croatia and presented several successful digitalization examples (e-Citizen, e-Class Register, e-Business in Pula). Special attention was paid to information exchange, privacy problems and GDPR.

This research included an online survey filled in by 224 Croatian citizens. The survey was used to collect data about their opinion on the digital revolution, its impact, their habits regarding the use of smartphones and computers and their knowledge of novelties implemented during this digital time (such as GDPR). Survey results were analysed according to examinees' age and described in Section 4 in detail.

Motivated by research results, our future work will include further and broader research on digital revolution, especially related to its impact on individuals and their daily life. Research will further test employee's awareness of the changes they face in their working place. In our future research we will cover all age groups equally.

Advancements and changes are evident in almost every aspect of everyday life, but also industry, economy, education, medicine, etc. For example, 3D printing and computer design constantly contribute to science, especially in the field of robot design. Some types of robots can now work in cooperation with people, while some organizations use only robots. Although it might seem that robots could replace people in the near future, technological advancements have only increased production so far. Digital innovations made online retail very common and turnover is still increasing. The digital revolution made a recent impact on medicine, which is especially important for gene medicine and the use of genetic information for personalized treatments.

One thing is certain: digital revolution changed human lives through positive and negative aspects. These changes are to be even greater in the future.

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