

# Digitalization and Automation of Accounting: Accountants' Perceptions on Advances in Technology

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Undergraduate thesis / Završni rad

2022

Degree Grantor / Ustanova koja je dodijelila akademski / stručni stupanj: **RIT Croatia / RIT Croatia**

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**RIT Croatia**

Dubrovnik 2022

Digitalization and Automation of Accounting: Accountants' Perceptions on  
Advances in Technology

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May 6, 2022

## **Abstract**

Technology is evolving very fast and it is making great changes in all aspects of every business, with no exception for accounting. The aim of new trends in technology is to help businesses but also the workers to work simultaneously side by side with technology and make their job more effective. This study uses descriptive data analysis and quantitative analysis to interpret accountants' perceptions on advances in technology and its impact on their business. The aim of this research was to find out what are perceptions of accountants on new trends emerging in technology that have a direct impact on their business. The research was conducted online created with Google forms and it was distributed to 30 accountants around Croatia, Serbia and Montenegro. The study results show that there is a big area from improvement. They also show that accountants are not enough familiar with all trends in technology and how it can help them in their business, one example is the Big Data trend.

*Keywords:* accounting, finance, technology trends, big data, cloud accounting, accountants' perceptions, automation, digitalization, information technology, accountants

## **Purpose and Relevance**

Nowadays in the world, a lot of companies are opening every day and there is a growing need for accounting as a profession and accountants who do their job properly and credibly. Precisely because of the high demand in the market, there has been oversaturation and people who are not sufficiently educated in this field are trying to push themselves into the market. Specifically, because of this reason and also with the advancement of technology, accounting is becoming more and more automated. Technology is a huge helper in the business world, it enables people to work on more demanding jobs and easy tasks are left for the technology. The purpose of this project is to get an insight on what are the trends and changes in technology that have influence on accountants and accounting as a business; how those changes are actually changing this profession and what are the perceptions of accountants on these changes.

## **Accountants' Perceptions on Advances in Technology**

“As companies move towards digital business models, more and more data are being exchanged between organizations, partners and customers. Digital information, the source of life for today's interconnected ecosystems, is becoming increasingly valuable for companies. In today's golden age of digitalization; data, data review and data audit are important challenges to accounting.” (Adiloglu, B. and Gungor, N., 2019).

The assessment of the economic position of the business system cannot be imagined without the use of accounting data and informatization, as the value of the expression of all business changes in the business system. “Accounting is the part of the information function and extends from the level of the national economy to the lowest level of economic and non-economic activities at all hierarchical levels of organizational structure (Peršić M., 2006). Accounting is incorporated in every business and there is no business that is able to function or to be viable without a proper accountant. The accounting profession has changed from a bookkeeping and payroll to a much more complex work and decision-making type of a business. Nowadays accounting has a strategic role and is based on a forward- thinking (Higgins M., 2021).

## **Importance of accounting in today's world**

Accounting is essential to operating a company because it allows you to track income and expenses, maintain statutory compliance, and offer quantifiable financial information to investors, management, and the government that can be used to make business choices (Woods D., 2019). “Accounting is one of the most essential disciplines for daily life.” Even if we are not aware of it, some kind of accounting is present in our daily routines (DeVry University, 2021). Accounting in itself is very important. From history to the present day, a lot has changed in this type of business, but the foundation or the core of this business and the need for an accountant has remained identical (Peruško P., 2019).

## **The history of accounting**

According to Bellis M. (2019a) archeologists found some records that look similar as accounting records that date back from 3300- 2000 years B.C. They were found in ancient Egypt and Mesopotamia. The primary reason why they developed this system is to record a business transaction and a trade between people. People back in Mesopotamia traded some simple goods such as animals, seeds, vegetables, and fruits and exchanged those goods for some others that they needed. In that way, they were keeping track of what they were “selling” and what they were “buying” (Investopedia, 2021a).

Investopedia (2021b) claims that as the world was evolving, new and more goods were available and people were trading those goods in the markets. Back then, people would make a transaction with all information needed; who is buying what, how much of it, and at which cost. All the information was kept in a single/ individual ledger, so in case some problem or a dispute occurs, they have everything recorded. With the growing economy, accounting and bookkeeping became more specific.

Bellis M. (2019b) states that “the first professional organizations for accountants were established in Scotland in 1854, starting with the Edinburgh Society of Accountants and the Glasgow Institute of Accountants and Actuaries.”

## **Accounting and Technology- New Trends Emerging**

Technology is changing the world of business. It plays an enormous role in the efficiency and growth of every business, so does it is playing an important role and is changing the accounting as profession. “The developments in accounting technology are rapidly changing the way we process and present financial data. Efficient data management is essential for managing the finance function within the hospitality industry, especially for hotels.” (Bremner I., 2018) The days of reporting financials backwards are long gone. Accounting technology advancements are boosting the real-time availability of information, allowing for faster and wiser decision-making (Bane C., 2022). New technologies that are being used in accounting should be used strategically to develop an accountant’s business even further.

According to Scott A., (2021) finance experts will benefit from being aware of the newest technological advancements while developing corporate plans.

## **Information Technology**

According to Sam, A. (2021a), “the information and communications technology is a set of services, networks, software and devices that are designed to improve the quality of life of people within an environment, and integrate an information system interconnected and complementary.” This is a generally accepted definition of ICT, but in what we are interested is ICT in the terms of accounting as profession.

Information technology can be seen as a technology that enables people to handle all important information. Adenle O.E. et al. (2020) argue that information technology can be described as tool or a mean through which information is stored, recorded, edited or scattered. They also emphasize on the importance of information and communication technology. They said that ICT is growing enormously fast and that it is affecting all businesses, no except for accounting.

There are many benefits associated with the information and communication technology that enables accountants to more accurately do their job. Efficiency, time saving is just some of them. Sam., A. claims in (2021b) that there is no more repetitiveness and routine tasks associated with the accounting, all of that is already integrated in the technology and processes. There is no longer a need for classifying or recording of the data since it is done automatically throughout the accounting software and other programs.

We have seen a tremendous changes in the ICT that are reshaping businesses, so we can divide them into few trends:

### ***Cloud computing***

Judson, B. (2020a) states that cloud computing as a way of doing business in accounting is growing because of its flexibility that it provides to the businesses. She also said that cloud accounting is giving access to business manager as well as to accountants to keep track of the business. This cloud computing is giving a freedom for accountants; they are able to access the data at anytime and anywhere, which was not the case before. According to Silvani, V. (2021), cloud accounting is helping teams of accountants in a way that they are able to work simultaneously by all of them accessing anywhere they are. This cloud-based computing enables data to be in real- time updated. This all contributes to the credibility for accountants; clients feel more comfortable if they can get the information right away when they need it. Research done by Adenle O.E. et al. (2020) stated many benefits of cloud accounting. Some of them include financial position in real time, there are no server mistakes- they are solved by software producer, accountants are able to track all relevant information they needed such as sales, inventory, bank accounts and other.

### ***Big Data***

The whole financial sector is being changed because of the impact of Big Data. Accounting is also one portion of finance world that is being transformed because of the Big Data. The main advantage of big data is that it simplifies accounting processes, it helps accountants to make data-based decision in their business, (Joshi N., 2020). The Big Data is a trend that helps businesses to evaluate huge sets of information and has an extremely well return on investment. According to Adenle O.E. et al. (2020), Big data analytics help business to level up their customer service, it gives them more revenue possibilities and helps companies to stand out among their competition. Finance experts may use big data to figure out which collected data is the most useful for them and then turn that information into something valuable for them, using that information for improving their future actions (Rahul J., 2021a).

### ***Artificial Intelligence and Automated accounting system***

Many people perceive artificial intelligence the same thing as automation process, but they are two different things.

Dr. Nasila M. (2019), in his article explained that “artificial intelligence deals with technologies, systems or even processes that competently mimic how human being make decisions, react to new information, speak, hear, as well as understand language.” Whereas automation in accounting is a process that makes more simple complicated ledgers and spreadsheets, it helps users of automated software to faster get an information, Judson, B., (2020b).

Plenty of monotonous tasks that were before done by the accountant are now done by artificial intelligence which allows accountants to focus on more demanding and more complex tasks (Gass J., 2018a). Based on the survey that was done on 3,000 business executives done by MIT- Boston Consulting Group, shows that more than 80% of them sees an artificial intelligence as an advantage that can make them more competitive in the market (Ovaska-Few S., 2017).

“Artificial intelligence extends a computer’s normal input and output programming. It allows computers to make predictions and adapt how they respond in certain situations.” (Gass J., 2018b). Artificial intelligence and robotic process automation (RPA) have the ability to evaluate vast amounts of data quickly and accurately. AI can also help businesses improve administrative part of the accounting job, workflows, and some other accounting processes, resulting in a variety of structural improvements (Rahul J., 2021b).

According to Dokka (2019), an automated accounting system helps business to speed up processes that are time consuming and tedious. Also, how connected automation and AI are is that automated accounting is driven by AI and it helps to process documents such as bank statements, source documentation and pay slips.

“Automation cannot replace humans entirely, especially in accounting. However, using advanced technologies in the accounting industry can enhance the service quality of accounting firms. For example, accountants will not have to perform manual and repetitive tasks anymore, (Rahul J., 2021c). Just like automation can’t replace humans, nor does any other type of a trend in technology that is related to accounting. It will still need a human touch to some extent.



## **Changing the skills needed**

Advances in technology are reshaping skills that are needed for almost every business. Accounting is one of them. Moyer S., (2020) states that as automation is becoming more and more advanced and popular, employers are no longer looking for basic skills in their employees, rather those skills that are needed for simultaneous work between robots and people.

Many basic level tasks that accountants were assigned for are now erased in a way because automation took that role (CPA Australia, 2019). The focus is shifted from transactions to obtaining data, how to interpret the data and how to be more effective in communication with clients to boost their businesses. The shift has happened to more data analysis, problem-solving and decision-making skills (Jackson, D. et al. 2020).

According to Kaplan (2020), there are numerous skills that a person should possess in order to be a successful accountant. Even though technical and computer skills are extremely important in accounting, Faragher J (2015a) claims that soft skills are becoming more and more important. She states that employees who display greater cooperation and time management abilities might see a 15% increase in their lifetime wages. This indicates how soft skills in accounting world are extremely important.

As new trends in technology are emerging, there is a prediction that it will result in a 40% net reduction in staff in the finance sector by 2025 (Accenture, 2019).

## Method

The aim of this quantitative research was to find out what are perceptions of accountants on new trends emerging in technology. I focused mostly on trends that have a direct impact on their job. I wanted to find out are those trends helping accountants or they think that it is something that is totally unnecessary and cannot help them. I decided to use an online survey created with Google forms. The instrument that I used in this survey was originally written in English language, but for the needs of my participants and possible language barrier, I translated the survey into Croatian language and it was checked by my mentor. I also pilot-tested survey on two accountants that I know and, on my friends, just to get an insight if everything is easily understood and logically written. The survey was opened from March 28, 2022 until April 22, 2022. I decided to publish link for my survey in one Facebook group where accountants are exchanging questions, ideas, etc. but I also used a snowball effect, whereas I sent a link of a questionnaire and people who I know forwarded the link to other accountants.

The whole survey was divided into 3 sections; the first section were 20 statements based on the 5 - point Likert scale questionnaire that were derived from two already published researches; (Pasig Catholic College, 2019/2020) and (Suleman, Omoalu Simon, 2019), where respondents were able to rate the statements from strongly disagree to strongly agree. The second section were 4 multiple choice questions related to what kind of software do they use, how they enter bank statements, what they prefer, etc. The third section was dedicated to demographics of participants where I wanted to get insight in their gender, their age, where are they from, how many years of experience in accounting do they have but also how many employees work in the company in which they work. And at the end I also included one open ended question, where participants were able to state their opinion on this topic, or to comment something that wasn't written in the survey.

All of the participants were people who are working in accounting/ finance sector and understand that job. I got 30 responses in total on my online survey. Out of all participants I got 80% of responses from female population, which is 24 responses and remaining 20% were male population which is 6 male participants.

I divided age question into 5 age groups; 20-29 years, 30-39 years, 40-49 years, 50-59 years, and 60 or 60+ years old. ( $M=2.5$ ), ( $SD=1.14$ )

AGE	# OF RESPONSES
(1) 20-29 years	5
(2) 30-39 years	13
(3) 40-49 years	6
(4) 50-59 years	4
(5) 60 or 60+	2

I also wanted to find out where are from my participants. I left a fill in the blank, so they could write the name of the city where are they from, but I got 29 responses with the name of the city, and 1 answer that was not valid. So, I decided to cluster them into 3 categories; Croatia, Montenegro and Serbia. I got majority of responses from Croatia (70%), following by Serbia with 23,3% and Montenegro 6,7%.

When it comes to the question of how many years of experience do they have in accounting, I also made 4 different categories. (M=1.73), (SD= 1.01)

# OF YEARS	PARTICIPANTS
(1) < 10 years	17
(2) 10-20 years	7
(3) 21-30 years	3
(4) > 30 years	3

And the last thing about demographics I wanted to find out was the size of the companies where participants work, how many employees do those companies have. (M=2.17), (SD=1.21)

# OF EMPLOYEES	PARTICIPANTS
(1) 1-9	12
(2) 10-29	8
(3) 30-50	3
(4) 51+	7

## Results

This research was based on descriptive data analysis and a quantitative analysis because of the small sample size. The correlation method was not used because it wouldn't be credible for a pool of 30 participants.

The beginning of the survey was aiming to investigate do participants agree that advancements in technology changed accounting and that it shifted focus on the more complex part of the job. Out of all responses, most of the participants agreed with this statement. ( $M=4.1$ ), ( $SD=0.76$ )

On the statement that says how a computerized accounting system is making everything much easier and much faster to enter data, most of the participants agreed. ( $M=4.3$ ), ( $SD=0.71$ )

Figure 1 shows how many participants think that they will need to acquire more skills because of the advancement in technology. The big majority (97%), agreed and strongly agreed with this statement. ( $M=4.13$ ), ( $SD=0.43$ )

Figure 2 shows what are the opinions of accountants on the future of accounting as a profession in the next 15-20 years, and do they think that there won't be a need for accountants, 67% of participants strongly disagreed and disagreed with this statement. ( $M=2.23$ ), ( $SD=0.90$ )

Figure 3 shows how many participants actually use the import option as a way to import bank statements in their accounting software and how many of them enter the bank statements manually with the journal entry. Out of all 30 participants, 18 of them use manual data entry, 9 of them use the import option from the bank, and 3 of them use both systems.

When it comes to artificial intelligence and robots, participants said that they are neutral and they don't agree with the statement that they would implement artificial intelligence and robots in their company. ( $M=2.97$ ), ( $SD=1.13$ )

When it comes to what type of a system they use in their regular everyday work, 9 participants use only custom accounting software, 8 participants use accounting software package, 3 of them use cloud accounting system, and only one participant use spreadsheets as its only accounting system.

The remaining 9 participants use multiple types of accounting systems.

On the question what they prefer, manual entry or using automatization as a way to enter data, most of the participants said that they prefer automatization as an option (87%), and the remaining said that they rather use a manual way to enter data. ( $M=1.87$ ), ( $SD=0.35$ )

Regarding questions about Big Data, how it can help accountants, and how much big data costs, is it worth money, on these two questions that I implemented in the survey, participants answered that are around the neutral answer. ( $M=3.83$ ), ( $SD=0.95$ ) and ( $M=3.23$ ), ( $SD=0.86$ )

The results of this survey are leading this research to a discussion, where we are going more in detail explain what is happening in the world of accounting and what can be done in the future.

## **Discussion**

On the question “Do you use importing bank statements through the bank into your software or do you enter them manually with the journal entry?”, I got some unexpected responses. Importing bank statements is considered the easiest and the most basic type of automation system that can help accountants in their business. It is much more convenient, there is no need for entering manually bank statements with a journal entry, rather in a few clicks, the job is finished. The answers from participants differ. Out of 30 responses, 18 participants use manual data entry with a journal entry, and only 9 participants actually use the import option from the bank. And the rest, which is 3 participants, use both methods in their work. These results may indicate three different things. The first approach to these results is that accountants are not aware of this option, that import exists at all, or maybe they know it exists but they are not comfortable with using it. The second approach to these results is that banks are not providing their customers with this option. If the second approach is correct, then there is an opportunity for banks to improve their services and the third option can be that accounting systems do not have an option for import. (Figure 1)

The second trend that I have found from the results is based on the question “Artificial Intelligence will advance to the point that within the next 15-20 years accountants will not be needed: the job will be automated”. According to the answers of participants, 67% out of all answers strongly disagree and disagree with this statement. These answers are indicating that participants are aware that Artificial Intelligence will not be able to totally take over their jobs, which means a bright future and an existing future for them. (Figure 2)

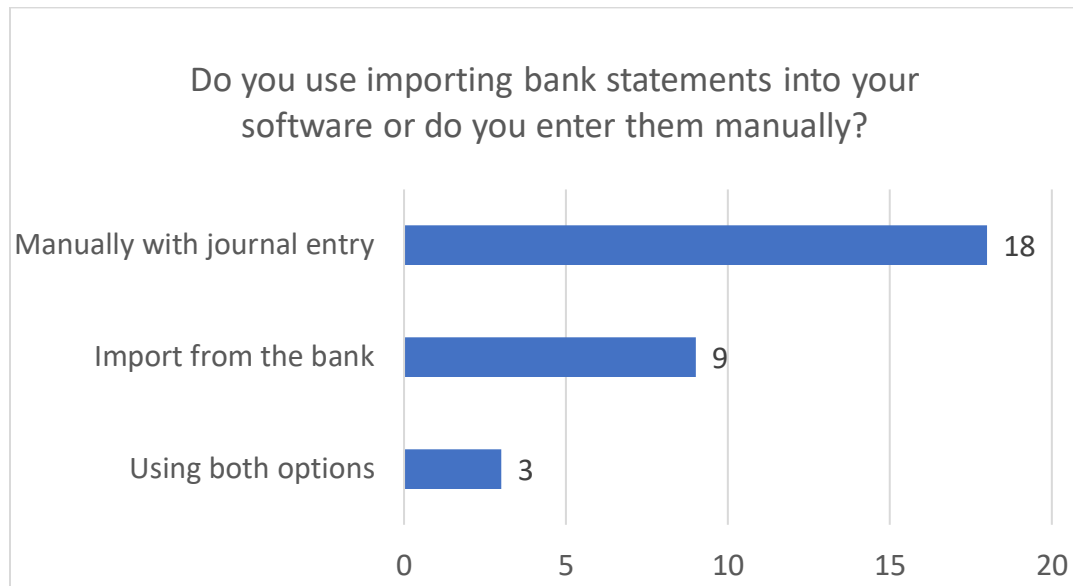
The third trend that I have found from the results of my survey is based on the question “Due to the improvements in technology, I will be forced to gain new skills for the needs of technology.”

Out of all participants, 97% of them agree and strongly agree with this statement, that they will need to gain some new skills because of the advances in technology. This result is showing how much accountants are aware that there is a gap between skills that they possess and skills that they need to acquire in order to become more efficient in working side by side with technology. This result is consistent with the claim from my literature review where Faragher J (2015) claims that acquiring new skills is becoming more and more important for accountants due to the advancement in technology. (Figure 3)

Based on the open-ended question at the end of the survey, these are some of the outcomes and how can this research be applicable in real life and future business. There is still a major area for improvement in accounting and technology in order for them to work together simultaneously, while technology gives accountants room for more demanding and complex tasks to manage. Since this research was based in Balkan countries (Croatia, Serbia, and Montenegro), this indicates that people from this area are not enough familiar with some trends in technology that are used in accounting, such as a Big Data and Artificial Intelligence. The use of Big Data in larger companies can be helpful but in the same way, can be profit-boosting for a company. Also, few participants said that accounting as profession is becoming more and more complex because they need to be informed all the time about changes in law, new trends in technology while doing their regular work.

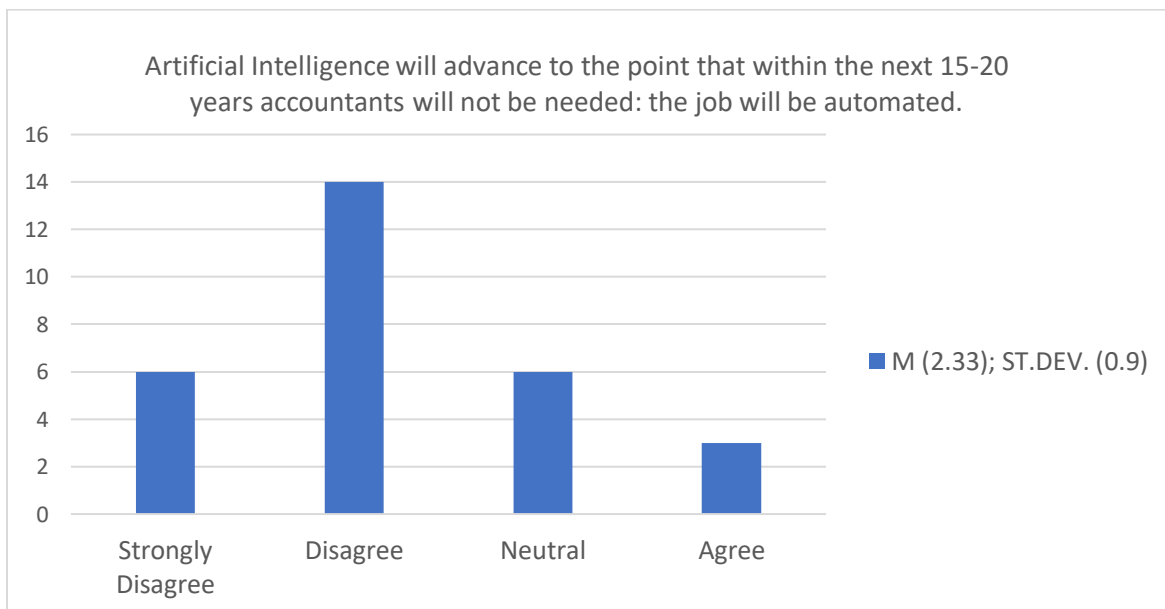
Certain limitations could be addressed for future research. In this research, there are few of them. Generally speaking, in Croatia, April is the most stressful period for all accountants because they have to send at the end of April the annual report for the previous year, in this case for the year 2021. This is something that takes a lot of time for accountants since they have to take care of a current business as well. This is something that requires a lot of time and energy. The bigger the company, the greater the amount of time that accountants need to take for an annual statement. That is why I believe that they were too busy doing their work to even respond to the survey. The second limitation of this research is that one Facebook group didn't accept my post, where I put a link for my survey. The response rate would be much higher if I had the chance to post a link in that group. This ties well with the small sample size; the interpretation of the results would be better and I would get more insight into accountants' perceptions if I got more responses.

## Appendix



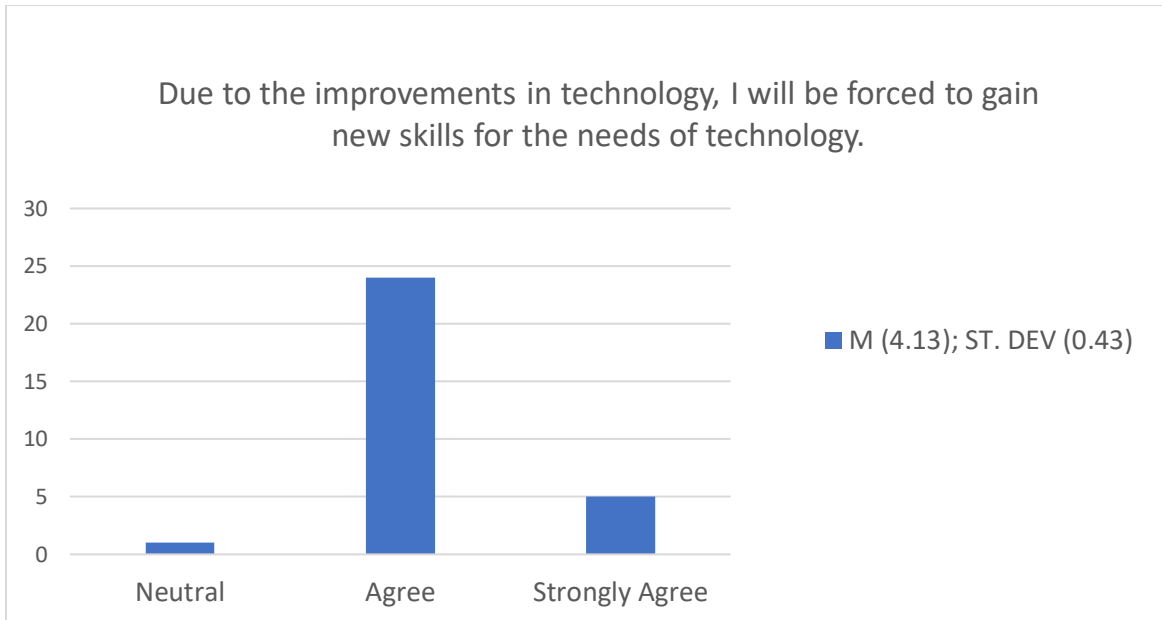
Source: Author

Figure 1



Source: Author

Figure 2



Source: Author

Figure 3



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