

*Limes – 2019*

*A II. Rákóczi Ferenc Kárpátaljai Magyar Főiskola  
tudományos évkönyve*

*Науковий вісник  
Закарпатського угорського інституту ім. Ференца Ракоці II*

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Закарпатського угорського інституту ім. Ф. Ракоці ІІ

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# *LIMES*

A II. Rákóczi Ferenc Kárpátaljai Magyar Főiskola  
tudományos évkönyve

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# THE IMPACT OF DIGITALIZATION AND INDUSTRY 4.0 ON THE AUDIT

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*The phenomenon of globalization has a great impact on social and economic processes, and as its result, the world has accelerated, processes have been automatized, digitalization has become part of everyday life, and solutions using artificial intelligence are becoming more and more widespread nowadays. They help in continuous monitoring, assessment of risk and control, so the whole. audit activity. The generations react differently to the changes and opportunities offered by these changes. While the X generation has to learn the new technology, for Y generation it is just part of life from the birth and the Z generations simply cannot live without it. In our study, we have examined the impact of digitalization and digital processes on auditing, and attitudes related to them. We have compared generations' point of views on new technologies and techniques, as well as how intergenerational co-operation affects them, and what they find the largest problem in accounting areas. As a conclusion, we found that the main problem is professional training and then the digital world, while intergenerational conflicts have come to the last place.*

**Keywords:** auditing, simultaneity, digitization, control

## ABSTRACT

A globalizáció jelensége kihat a társadalmi és gazdasági folyamatokra egyaránt és ennek következtében a világ felgyorsult, a folyamatok automatizálódtak, a digitalizáció a mindennapi élet részévé vált, és a mesterséges intelligenciával működő megoldások alkalmazása egyre elterjedtebbé válnak. Ezek segítik a folyamatos ellenőrzést, a kockázat- és kontrollértékelést, tehát az audit tevékenységet. A változásokra és a változások nyújtotta lehetőségekre az egyes generációk másként reagálnak. Míg az X generációnak tanulnia kell, az Y generáció életének a kezdetektől fogva a része ez az új technológia, a Z generáció pedig már egyszerűen nem is tud élni nélküle. Tanulmányunkban a digitalizáció, a digitális folyamatok könyvvizsgálatra gyakorolt hatását vizsgáltuk, illetve az ezzel kapcsolatos attitűdöket. Összehasonlítottuk az egyes generációk véleményét az új technológiákkal, technikákkal kapcsolatban, illetve, hogy mennyire jelent számukra gondot a generációk közötti együttműködés, valamint mit találnak a legnagyobb problémának a számviteli területeken. Végül következtetésként megállapítottuk, hogy a legfőbb gondot a szakképzés jelenti, és ezt követően a digitális világ, míg a generációk közötti konfliktus az utolsó helyre került.

**Kulcsszavak:** könyvvizsgálat, egyidejűség, digitalizáció, ellenőrzés

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## INTRODUCTION

Digitalization changes the world around us, reshapes the methodology of those activities which are carried out by tax, accounting and auditing profession. As a result of the globalizing world, several solutions have emerged that rely on the use of digital technologies and artificial intelligence solutions. The significant headway of digitalization in our everyday lives generates many conflicts as well, because development is extremely fast and not everyone has the right level of knowledge to apply digital solutions at least on a basic level. The globalization of auditing, tax consultant's services and accounting facilitates the development of solution-centers and creative common thinking. The distorted structure of the countries' SME sectors still hinders the construction of unified system, but the near-term auditing of economic processes comes within sight. Because of the development of digitalization, the employment structure will be transformed, therefore millions of jobs may be terminated, and this will make it more difficult to manage the number of new jobs that can be filled by retired or unskilled workers (Hegedűs 2017a).

Development is unstoppable and extends to almost all segment of our everyday life, so developments, new digital technologies bring significant changes in accounting. As a result of the 4<sup>th</sup> Industrial Revolution, the services of accountants and auditors will be transformed within a few years, despite the fact that the benefits of digitalization in risk management are taking just small steps forward. If experts accept and successfully implement opportunities offered by digitalization, they can save time. The introduction of digital solutions is time-consuming and resource-intensive one, however it will pay off as a result of increased efficiency.

Continued audit gets into the focus of auditing activities, which is an automated method that allows us to perform it more frequently, like

risk and control assessments. Technological background is key-element in the continuous control activities, which can help to automate the recognition of exceptions and/or anomalies. The approach of continuous control allows internal auditors to fully recognize critical control points, rules and exceptions. Due to faster and more efficient processing of data, auditors can put more emphasis on identifying risks, get deeper insight into how the organization works. The insight, that we can gain, can help auditors focus on high-risk areas.

## TASKS AND OBJECTIVES OF RESEARCH

The first task of research is to examine the background, advantages, disadvantages of digitalization, focusing technologies used by auditors. The second task of the research is to analyze the digital solutions already used by auditors. In this publication we emphasize only partial data and segments of the research which can be interpreted independently as well. Certain relationships can also be examined for parts. The study is based on a research carried out by us. We conducted an online questionnaire among auditors working in Hungarian SME sector in company form between January 1, 2019 and March 31, 2019.

The basic data were provided by the evaluation of the data which are available for use in the chamber's reports. The sample was selected from those X, Y, Z generation auditors who are listed on the mkvk.hu as auditors of financial institutions, IFRS, investments and enterprises. Sampling of auditors of the X, Y and Z generations with special qualifications has been done because the financial sector is the most sensitive to the use of digital technologies. We sent out a total of 402 questionnaires for voluntary completion. The research ended on April 30, 2019, and there were 329 evaluable forms available. Analyzing the survey data, different conclusions were drawn on how the development of digitalization will

influence the organizing and implementation of audit work. However, the analysis does not affect the full analysis of the effects of digitalization, but the Summary chapter draws conclusions and suggestions for many areas due to the connections.

#### BRIEF OVERVIEW OF DIGITALIZATION

Digital solutions are becoming more widespread in the world and countries, societies must adapt to this. In a globalizing world, the use of new technologies is unavoidable, as it has become a crucial condition for remaining on the market. As the Hungarian saying goes „Anyone who misses out is left out”, utilization of the opportunities offered by digitalization is essential. Digitalization not only simplifies the working routine, but also makes communication and relationships easier and more time-saving. The Y generation is already born into this world, where IT knowledge is crucial, but it is also necessary for those of other age groups which want to go further and acquire this knowledge.

Digitalization has many advantages and of course disadvantages and the users have to consider and find opportunities and methods for optimal application by analyzing their own environment. Digital solutions can replace postal processes, and the many signatures on paper are no longer required because we do not have to print the contracts and forms anymore, we can also sign them electronically. In fact, software solutions are not only good for sending and receiving invoices, vouchers in electronic form but also for changing further management techniques: incoming invoices can even be uploaded by scanning, making it easy for accountants to access. The so-called OCR (optical character recognition) technology is capable of digitizing incoming paper invoices with the help of artificial intelligence without human intervention. With this OCR technology, the system can recognize the text in the invoice based on the photo or scanning,

so that these data no longer need to be manually recorded in the billing or accounting program.

As a result of digitalization, processes will be routinely paperless over time. Organizing work, reviewing processes and finding weak control points increases the company's responsiveness to changes in business life. The possibility of tracking digital processes can play an important role in the “bleaching” of the economy and increase of tax revenues. Digitalization can lead to cost reduction as well, resulting in more efficient and faster work. Some administrative processes can be made more paperless and many bureaucratic (or seemingly bureaucratic) tasks can be completely replaced by a digital solution (Tusnádi 2018). Globalization and social development involve the dynamic technical and technological development of health care, the need for the reform of health system, and reconsideration of financing and efficiency issues (Hegedűs 2017b).

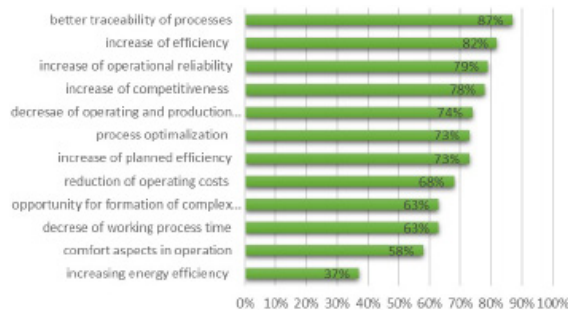
The development of digitalization carries several risks, so it is essential to develop data protection and IT security. The disadvantage of digitalization is that there will be fields of work that will disappear, and so millions of families can get into an unfavorable situation because they cannot handle, learn and adopt the technology. These disadvantages could be, however, reduced by retraining and newly appearing jobs, but it must be recognized that not everyone is receptive to the new knowledge. In the long run, the lack of IT-skilled workforce hinders the stable and well-functioning economy, therefore society has a major responsibility in determining trends and methods which are adopted.

In 2016 the Gkidigital conducted a research on the advantages of digitalization. Respondents had to mention factors which were thought of as the advantage of digitalization. Most of the respondents emphasized the better traceability of processes, which was followed by



increase of efficiency and operational reliability. These factors are also important ones for accounting professionals. The research results, which can be seen on Figure 1, point to the fact that the energy efficiency aspect is not the most important one, only 37% of the respondents considered it essential (GKI 2016).

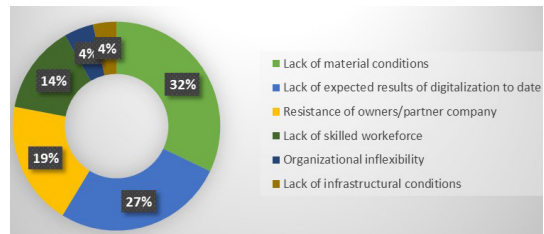
**Figure 1. Reasons for digitalization**



Source: GKI 2016

GKI's (2016) research outlines 6 arguments in Figure 2 for the reason for the lack of digital development. 35% of the respondents argue that the reason for not introducing digital solutions is the lack of material conditions because they require significant financial investment. 29% of them said that there were (they had) expectations for digitalization, but they were either not fulfilled or lagged. Some organizations do not introduce digital solutions because they are facing resistance by owners or parent company. Among the drawbacks, as mentioned above, we have already mentioned, that there are not enough workers with right qualifications. 9% of the respondents give reasons for the lack digitalization with inflexibility and absence of infrastructural conditions.

**Figure 2. Reasons for not implementing new digital technologies**



Source: GKI 2016

It is characteristic of the digital processes' development that many do not believe in them, they are in doubt because their spread is slow in the lower phase of growth. However, there is a point where the growth suddenly jumps up by leaps and bounds. Compared to linear growth it starts to grow at an unimaginably higher rate, than destroys or better said disrupts everything around it.

One of the most significant conflicts in the 21<sup>st</sup> century is that we need to talk about the absence of digital labor force because there is a significant demand for those professionals/experts who have digital knowledge and whose knowledge about digital devices is adequate (or at least not out-of-date) but the supply is lagging. Today's knowledge may not be worth it tomorrow, therefore professionals, experts in this segment need constant and continuous learning and development. However, not every user can make the change in this "comfortable world" at the right place (Halmosi 2018).

Our research shows that the main benefit according to the respondents is that the processes become visually more traceable and that the rational use of new technologies can lead to increasing efficiency and cost reduction as well. Of course, there will be jobs that will disappear in the coming decades which will always be painful for those who insist on doing well-trained working processes. It is natural that some job tasks will be now made by digital technologies which will require new employees in order to develop, discover and

apply these solutions. Constant changes also indicate that the digitalization of processes is not an overnight phenomenon and it happens rapidly which will require constant and continuous training and retraining in order to keep workers in the world of employees, even those who belong to previous generations and do not deal with digital solutions so frequently.

## X, Y AND Z GENERATIONS

### 1. Features of generations

The classification and grouping of each generation gave a major task to researchers. Strauss, Howe (1991) and Tari (2010) have different opinions on which generations were born in a given year and what is the last year which ends a generation, but they agree that those who were born in the same period belongs to a generation. In 2019 children are born into the alpha generation, which is the fourth generation whose common features, characteristics we can sort out. The exact zone of birth data will not be determined in this study, we rather emphasise and introduce the features. Since we are not able to provide information on the alpha generation from the aspect of the labor market yet, we will only characterize the X, Y and Z generations in our study.

The X generation is constantly active, loves the challenges and has a demand for higher wages. Because of their age, they are the leaders of management bodies, or they are the leaders of successful companies. It is important for them to create material and financial security as well by using their knowledges and learning, as they are aware of its important in promotion. Their work morale, work ethic has been influenced several times, as the branches of business began to specialize at that time and societies started to shift increasingly towards consumer society when they got to work. This generation was roughly in a teenage age when they got to know the Internet, so its discover-

ing was a learning process for them, they were not born with Internet being fundamental to them.

Regarding the life stages of the Y generation, their members got familiar with the Internet and the effects of digitalization in their early childhood. This age group is increasingly present in the labor market and so they are competitors for the X generation. In some cases, there are clear contradictions between these two generations, but the tension is not as intense as we can see sometimes between the X and Z generations. The members of the Y generation already place themselves at the center, it is important for them to develop. They are more flexible in their life than the previous age group, but it also means that they can change workplaces or jobs much easier and sooner. They also have an advantage, they can handle changes more easily due to their flexibility, for example. However, they have higher expectations for employers, employers are supposed to help and support their personal and professional development. They accumulate experience and if their expectations do not meet their wishes, they will easily change, but we can say that money is still a powerful, influential force for them (Mészáros et al. 2017).

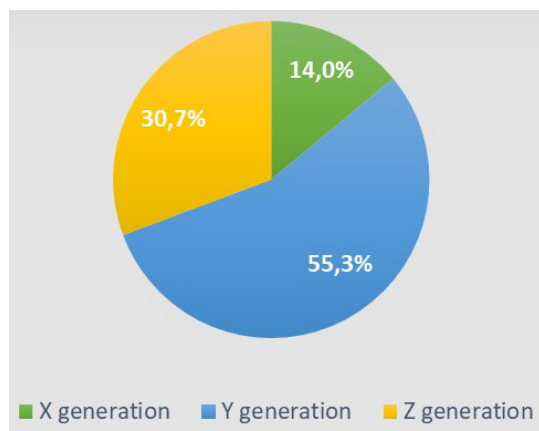
The Z generation's is demand for self-actualization overshadows their material and financial expectations, so it is more important to them than money. It is also more essential for them to have a job or field of work where they can fulfil their purposes and perfect themselves than get a higher salary. Compared to the Y generation Z generation is slightly different. They prefer oral information and feedbacks, and they can also understand them easier and faster, as if they would be informed in a different way. Their communication is open, and they expect it, too. Due to their age, only few of them are in the labor market yet, but later more and more of them will appear in the world of employees (Ament 2018).

## 2. Different age groups in the labor market

As we stated in the second chapter, we inquired the opinion of those accountant experts who are members of the X, Y and Z generations, therefore our research is limited on them. One of the main aims of the survey was to get an overall picture of their labor market situations, ideas and opinions about other generations.

As we have already mentioned, 329 questionnaires were sent back. The respondents' distribution based on generation is illustrated with Figure 3. Only 14% of them are members of the X generation, which means 46 people. 182 people are members of the Y generation which represent 55.3% of total respondents, and 30.7% of them, 101 people are part of the Z generation. The questionnaire was shared in main groups which are available on Facebook community website, and we gave it to certified accountants for voluntary filling in on compulsory further training, this can explain the age distributions.

Figure 3. Breakdown by generations

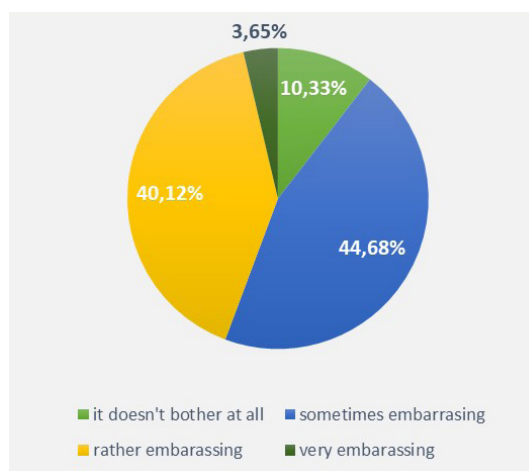


Source: own edition based on the questionnaire, 2019

In the questionnaire we touch upon a question whether the people working in accounting fields have positive or negative attitudes about the cooperation of different generations

at workplaces. Do they think that intergenerational cooperation and working together is an embarrassing factor or not? We gave four possible answers. Only 3.65% of the respondents said that the intergenerational working together is very embarrassing, while approximately 40% said that it is sometimes or rather embarrassing and only 10% answered with "it doesn't bother at all" as you can see in the 4<sup>th</sup> Figure. This refers to real problems among generations which can have hindering effect at workplaces. In the next step we analyzed whether generation gap is the main problem, or there are more serious ones.

Figure 4. Is intergenerational working together embarrassing at workplaces?



Source: own edition based on the questionnaire, 2019

During the surveying we were also interested in fields where there might be opportunities for improvement. Respondents had to rank different problems which appear while working in the accounting field. These problems were: higher education and vocational training which provide/give useless theoretical background/knowledge; salaries; intergenerational conflicts; inadequate atmosphere at workplaces; digitalization, accelerating world. Examining the question from this aspect the generation gap is not as serious as it seemed at first time. Looking at the 5<sup>th</sup> Figure we can see that the main problem is the theoretic-



cal knowledge offered by higher educational institutions (HEI) and vocational trainings which means that experts in the field of accounting do not feel the theoretical background offered by HEIs adequate. Theoretical education does not give students the knowledge that can help them to find workplaces. More practical and realistic materials would be essential. 35% of the respondents ranked this problem as the first one. On the second place we can see digitalization and accelerating world as a main problem. More than one fifth of respondents said that it's difficult to keep up with new technology and constantly changing world. Taking in consideration that only 14% of the respondents were members of the X generation, there were other answers from other age groups who said that digitalization is the largest problem. There are still many people who do not have enough knowledge about new technology and adequate skills to use it or even just refuse it. Only 10% of the respondents thought that intergenerational conflicts cause the largest problems at workplaces. Most of the answerers ranked it as the last one.

**Figure 5. Problems appearing in the field of accounting during work**



Source: own edition based on the questionnaire, 2019

## THE IMPACT OF DIGITALIZATION ON ACCOUNTING AND TAX SYSTEMS

The main topic of the conferences and further trainings in 2019 is the question: what does the digitalization bring to us in the field

of accounting and audit? How much can the scanned or photographed documents be handled in digital form and how is their accounting done by automatic transmission? Will accounting be the digital transfer among each program? How much can artificial intelligence programs take over the role of accountants? Will the keeping of analytical recording be easier with implementing of Receipt bank, 1 Tap receipts, SMACC, SDSYs or other systems? Is the intuitive work of bookkeeping completely replaced by process control based on mathematical formulas which requires no longer human work?

Answers can be approached from a wide range of perspectives, and there are many ideas depending on the accounting and tax system in each country, what the structure and operating environment of the SME sector that we audit or book is. Governments in each country are primarily interested in increasing or – at least – maintaining tax revenues, therefore there is already a simplified accounting system, which we can boldly call tax accounting (in Hungary these are EVA – simplified corporate tax, presumptive tax, KIVA – small business tax, KATA – listed/dedicated tax for small taxpayer corporations). They adjust tax revenues to some kind of index while pushing traditional financial accounting into the background. However, there are many disadvantages of simplification, many threatening factors: it is difficult to determine the property, income and efficiency of micro-enterprises from aggregated data without additional annexes, because of simplification many data that are important for the evaluation may be lost or not presented.

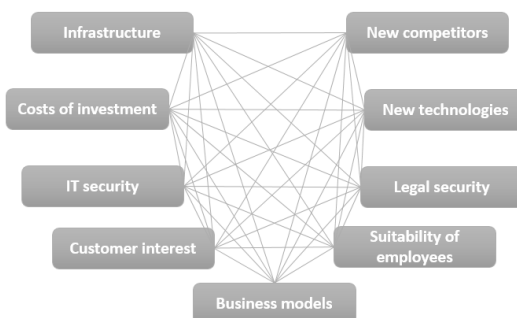
The structure of the SME sector in Hungary shows an extremely distorted picture due to their numerosity, capital strength, responsiveness, technical level and number of employees, we can speak about their efficiency only with due caution. In many countries, the development of the SME sector and the

improvement of the financial and accounting knowledge of the professional level of entrepreneurs would be necessary to develop. It could be accompanied by the development of the ethical behavior of entrepreneurs, for which any small shift could be measured in terms of tax revenue. Coercive tools are always bad tools, but recognition can be one of them which leads Eastern European countries in the right direction. Only the simplification of accounting and tax systems, increased control and restructuring of the sector go together with increasing tax revenues and predictability (Hegedűs 2019). Reshaping of current accounting and tax system serves the elimination of distorted phenomena and favoring many interest groups at the same time. Digitalization makes control and transparency more efficient by acting faster in order to filter out unrealistic/not real economic events. Digitalization can play an important role in the elimination of underground economy, following of cross-border services and transformation of accounting systems. Audit service and accounting work will also be transformed with the development of digitalization which will result in new methods, simplification and real-time measurement.

For digitalization to be effective, for the new technologies to work well we have to overcome the challenges of using digital solutions. The level of investment costs and their return potential should be considered from the very beginning. It is an inevitable factor to create IT security and clarify GDPR issues (Jósvai 2018).

The protection of digitally managed data is one of the primary aspects of accounting. Besides creating further conditions for digitalization, we also need to consider whether employees are able to use new technologies at all, if not, then we have to make decision about further trainings or looking for new staff. There are factors that require careful thought, but they are also essential to keep us competitive.

**Figure 6. Challenges of digitalization and Industry 4.0**



Source: <http://industry4.hu/>

Digitalization has different impact on all areas, so it also affects accounting and taxation systems. According to the Future of Jobs study published by the World Economic Forum in 2016, the probability of disappearance of accountants by 2025 is 98%. The study emphasizes that significant part of bookkeeping is routine and is mostly automated. Controlling represents higher added value which can be more difficult to replace by robotic solutions, but due to the development of artificial intelligence, these workflows are not protected from automatization (WEF 2016). In the future we will do the bookkeeping and audit service in a different way. Thanks to automatization and digitalization we will be able to save, probably, considerable time and human resources, the output of the work done will be visually more attractive and better, and we can increase the efficiency, too. We will save time on different testing tasks, make reports automatized and always available. With the help of automated software, the large and often non-similar data can be processed, and they can then be interpreted in a more digestible, visualizable form. A paperless office, electronic filing systems, digital signatures can reduce invested human work or make the knowledge of process faster. Reporting becomes simpler, authorities can get information about the financial-administrative activities of companies simultaneously with carrying out of processes as a result of automatization and this makes the interven-

tion more effective. Such accounting and taxation solutions gain ground and strive for unified ones without borders (IFRS).

#### SUMMARY

In the accounting and auditing profession we are also in the age of digitalization, which has a significant impact on our work. If we want to be successful in our job and we want to do it efficiently, then we have no choice but to keep up with the trends of artificial intelligence and automatization. The accountant-auditing profession is for highly educated and skilled professionals who are constantly adapting to the changing world. Accounting data is being digitized, more and more people are talking about their impact and skepticism or even fear is normal, acceptable. Automatization and artificial intelligence are surrounded by a constant paradox, digital technologies transform previously known frameworks. Digitalization will have a decisive impact, as the speed of information expansion and the speed of calculations will match the computing capacity of computers, which – according to Moore's law – will grow exponentially. However, exponential growth can be deceptive, estimating future effects can only be done with proper correction.

As a summary of our research, we claim that the effects of digitalization among other generations show up differently. The source of tension among X, Y and Z generations may be how well they are able to and willing to adopt new technologies, and who will be able to apply them in their work. Of course, someone who was born into this world as a member

of the Y generation will be easier to learn IT workflows than for the Y generation, but the struggle for the proper salary will force the previous generations to go ahead and keep pace with the new technologies, they should fall into step beside the changes. It is necessary to recognize and apply changes because this is basic requirement in the accelerating and ever-changing XXI century. Of course, we can reduce the pace of change or we can ignore them, but in turn it may result in a loss of market or job. Bookkeeping and auditing will not disappear in the coming decades. Without accounting there is no controlling and without knowledge about the past, the future can only be determined based on estimation or prediction.

Audit remained what is was. It is and will be about to increase confidence for financial statements and to improve the quality and reliability of information provided by annual reports. The accounting and taxational profession provide high quality added value, hereby supporting customers in order to achieve their goals.

Artificial intelligence can analyze risks, set up and apply mathematical models. People will have to compete with smart machines someday but behind the machines there will always be people who build and train them. Only human beings can coordinate human intuitions, intelligence, thinking, organizational skills and many other aspects, therefore human resources will always be needed.

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