

# Shifting Towards Digital Transformation in Bookkeeping Agency - Attitudes Pre- and Post-Implementation of New Technologies

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**Abstract** – The influence of digital technologies and various technological solutions on the usual organizational activities is unstoppable. Recent research shows that bookkeeping agencies have not remained immune to changes brought by technological progress through the phenomenon of digital transformation. Building on the aforementioned, this research seeks to investigate the impact of the introduction of new technologies on the business activities of bookkeeping agencies, with a special focus on the attitudes of agency employees and their clients. The research was conducted in 2015 and 2021, and it provides an overview of attitudes before and after the introduction of technological solutions in bookkeeping agencies' activities that allows e-business between clients and bookkeeping agency and bookkeeping agency and clients. This opens the possibility to change the way of doing business and digitally transform the bookkeeping business, but the sole availability of technology and solution does not imply wide usage. It can be concluded that it is necessary to work on strengthening the digital culture in bookkeeping agency-client relations, in order to change traditional ways of delivering value.

**Keywords** – Digital transformation, bookkeeping agencies, employees and clients attitudes, technology introduction.

## 1. Introduction

Advances in Information and Communication Technologies (ICT) affect society in general but also encourage innovation in the business world. ICT technologies have spurred a new business transformation popularly called digital transformation (DT). In DT governments and private companies try to digitally transform their operations, improve business processes, redefine business models and enhance products and services [1]. DT, as today's inevitable trend, affects business processes, business models, and business activities within different organizations.

DT disrupts business and professional life [2]. DT fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact across society in a strategic and prioritized way, with present and future shifts in mind [3]. Thus, digital transformation does not refer only to the use of technologies. Still, the emphasis is placed on achieving competitive advantage through implemented technological solutions in business processes, where technology facilitates and improves their development. At the same time, it is up to organizations to innovate quickly and to recognize the importance of digital technologies in a timely manner.

As more and more organizations invest in the implementation of digital technologies, such as Artificial Intelligence (AI), Internet of Things (IoT), Big Data, Robotics, Blockchain technology, etc. [4], the importance of their application is recognized in various industries. They are influenced by digital transformation, and managers of organizations are introducing it to promote improvements and changes in the way they do business.

Like the economy as a whole [2], industries cannot remain immune to the benefits of transformation.

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DOI: 10.18421/TEM124-63

<https://doi.org/10.18421/TEM124-63>


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Received: 07 June 2023.

Revised: 07 September 2023.

Accepted: 12 September 2023.

Published: 27 November 2023.

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Digital technologies accelerate business processes, reduce the processing time of individual process activities, improve communication, share and use relevant business data collected through various smart devices for data-driven decision-making, which together lead to greater business progress of organizations. Same is confirmed also in bookkeeping domain [5].

Industries have embraced transformation to varying implementation degrees [6], and the literature shows industrial inequality in progress while implementing digital technology in businesses. Some industries are in the initial phase of introducing technologies and accepting the concept of digital transformation, while some have started transformation earlier and become digital leaders, all with the desire to improve business.

Since the transformation is recognized as a process that adds value in various industries, it does not bypass the financial industry, i.e., accounting. There is more and more research that looks at the sustainability of current, traditional ways of doing business and the conduct of business processes within bookkeeping agencies (BA). Given the availability of technology and the creation of added value, bookkeeping agencies should think in the direction of creating new business models that will be supported by innovative technology and will enable secure and constantly available exchange of business data.

Such business models would enable the replacement of routine accounting activities and would contribute to increasing the efficiency of services in general [7].

Given the complexity of the transformation process, there is a certain aversion to changes in the service business - both by employees and by clients. This research examines the perception of employees and clients of a bookkeeping agency in terms of implementing new technologies and new ways of delivering services in two surveys conducted over a period of time ([8], [5]), using the analysis of variance (ANOVA) method for conducting data analysis. Accordingly, the aim of this paper is to determine whether the perception of BA employees and clients, regarding digital business transformation, has changed. In order to meet the research goal, the following research questions (RQ) were asked:

- RQ1 – Is there a statistically significant difference between two studies - one conducted before implementation of technology (2015) and another conducted after a few years of using technology (2021)?
- RQ2 – Is there a visible change in the attitudes of BA employees and BA clients in implementing new ways of working in the two studies conducted?

The paper follows this structure: It begins with a literature review to uncover trends in accounting services related to digital transformation. Next, the research methodology is presented, along with the findings. Finally, the paper concludes with a comprehensive discussion, concluding remarks, and recommendations for future research.

## 2. Literature Review

Changes in accounting processes are inevitable, and the authors [9] predict that 94% of accounting occupations in the next ten years could be replaced by the application of digital technologies based on artificial intelligence.

The question is when and how the mentioned processes will really change as a result of the influence of ICT technologies [10], [11] which in recent years has facilitated accounting processes and led to the creation of new business models in the financial sector [12], [13]. ICT technologies reduce the processing time of certain operations, reduce the cost of production of accounting information [14], enable their constant availability, improve the analysis and processing of huge amounts of data, [11], [15], [16] and influence optimized decision making.

In the future, digital transformation could enable flexibility of bookkeeping agencies while eliminating errors and facilitating the decision-making process [15], [17], [18], as well as the processing and display of accounting information in real time.

Research [14], [16] suggests that DT could further improve the reporting of bookkeeping agencies and communication between stakeholders of that system, but also achieve sustainable competitive advantage and excellent performance of bookkeeping agencies. For authors of the study [14] this means: (a) convenience and improved, pace of productivity, (b) security and agility, (c) easy invoicing and payment tracking, (d) better integration, and syncing, (e) facilitation of tax preparation, (f) making, bank reconciliation easily, (g) specialized functions, and (h) allowing to obtain real-time advice.

Accounting systems adapted to Industry 4.0, based on artificial intelligence, and supported by accounting algorithms, will enable the automated execution of accounting activities and solving tasks based on human intelligence [19], [10], [7]. In addition to all the above, the contribution of the use of ICT technologies in accounting processes will be also considered in the prevention of detection of accounting fraud [10], [11].

Regardless of the number of advantages that technologies brings to bookkeeping agencies, the key to their “survival” depends on adapting to digital development [12], and not only on accepting technologies that will not in itself have a long-term purpose if their application is not strategically defined. The authors [12] state the use of “traditional” technologies, inadequate selection of new technologies [16], security risks [20], lack of digital awareness, inadequate knowledge and skills of employees [16], and personality of stakeholders of the accounting system [2], as the main challenges of digitization in the mentioned industry.

In line with new market requirements, the authors [10] mention the need to revise the curriculum in accounting education (adapting the same to the digital age and industry 4.0), so that employees in accounting are ready to work with technology and integrate it into accounting processes. Automation will lead to the need for workforce that will need to be familiar with the use of advanced information systems [21], [22] and artificial intelligence, while human resources will need to possess technical and social skills [23]. Technical skills relate to understanding software and basic programming, data analysis, data visualization, data security, data warehouse management, and knowledge related to the application of ERP systems. On the other hand, social skills relate to leadership and management skills, good communication skills, conflict resolution, risk management, strategic decision making, customer centricity, innovation, emotional intelligence [23], and openness to accept and promote changes. These skills have been recognized in the creation of knowledge for Industry 4.0, and consequently, the education system (especially higher education) seeks to adapt its curricula to current market needs and direct them toward a digital future [4], [23].

The importance of changing accounting knowledge and skills is emphasized in the paper [11]. It describes several different roles that will emerge as inevitable by 2030 in performing accounting activities based on artificial intelligence – i) bookkeeper (responsible for ensuring the correctness of business transactions; training of AI software for the proper execution of transactions), ii) accountant (identifying the optimal solution for the organization proposed by the "AI virtual collaborator"), iii) controller (precise forecasting and visualization of data, support to management in strategic decision-making based on business data), iv) business data analyst (responsibility for big data and accounting analytics with knowledge of coding languages such as R, SAS, etc.), v) treasurer and risk manager (liquidity forecasts based on AI, support for fraud detection systems), vi) financial systems and process

manager (management of digitization and automation initiatives, assessment of improvements based on AI technology, management of employee skills related to artificial intelligence).

Factors identified as key in the successful implementation of DT in bookkeeping agencies are leadership (the leader must be innovative, have transformational characteristics, be focused on digital innovation, have an adequate vision of progress), availability of resources (human capital, financial and material resources) appropriate business model and organizational structure (advocacy of innovative approach and culture, adoption of technological solutions, employment of innovation-oriented workforce) and relevant external support (receiving knowledge from third parties in the form of innovation and business progress, available technological solutions, and business platforms) [24].

If the service industry is inspected in general, two trends emerge. The first refers to cloud computing that affects the change of communication and constant availability of data (e.g. between accounting system stakeholders), while the second refers to data-based methods (e.g. Artificial Intelligence) that allow automation of certain business operations (e.g. posting, document recognition) [2]. Such use of technologies to advance accounting processes has not previously been recognized in the market [16] in terms that added value to the services of bookkeeping agencies. Non-acceptance of technologies, among other things, is caused by employee attitudes. This topic is addressed by research [17] which states that the model of technology acceptance is a key factor in accepting and changing attitudes about DT among employees, and the research emphasizes how the usefulness and ease of use of technology affect employees attitudes about it. In research [8] and [5], authors emphasizes the same thing - attitudes of employees towards usefulness and ease of use is more important than availability of new digital technology and real workload reduction which results from it.

Research [15], [25] mentions a new, unexplored concept in development called continuous accounting (CA) as one of the ways of continuous accounting reporting at the end of the accounting period (monthly, quarterly, annually) thus achieving optimization of accounting activities and prevention of accounting errors. CA enables automation, reconciliation of completed transactions at the end of the period and control for the purpose of daily review of business activities. By applying CA, employees of bookkeeping agencies reduce the time spent in solving data collection, updating and verification activities, and focus on analysis, performance monitoring, but also on other strategic decisions in their work domain [15].

Digital accounting is a term mentioned by the authors [14], and refers to the presentation of accounting information in digital format and the processing of financial transactions in an electronic environment. Such processing of financial data enables the storage of all relevant information in one place with their constant availability in real time.

Furthermore, the authors recognized technological solutions [2], [17] such as Mobile and Cloud Computing (constant availability [24], convenience, security, flexibility, synchronization), Blockchain (security, fast transaction [26], availability, time and cost savings [17]), Internet of Things (asset analysis, employee performance, transaction and data processing [17]), Big Data analytics, Artificial Intelligence [11] (automatic recording of transactions, analysis of unstructured data, identification of accounting fraud [17]), as solutions that contribute to the creation of innovative and more efficient business models of bookkeeping agencies. For example, there are software robots [11] that take on routine accounting tasks, while non-routine tasks help to make decisions in new situations and allow the adaptation of business processes and affect their flexibility. One of the digital transformation models of bookkeeping agencies is mentioned in [7], as cloud accounting service where data is processed through online accounting software that facilitates communication between service and client, while the other model refers to complete accounting service transformation where the client, with the help of automation and AI, processes data via online accounting software, and the bookkeeping agencies has the role of advisor. Authors of research [23] additionally add the role of the entered/rekeyed (financial) data controller, eliminating human errors.

Since the results of research [14] prove that digital accounting affects the increase in the quality of financial reporting and the usefulness of accounting information, and additionally contributes to better efficiency in defining strategic decisions, the digital transformation of bookkeeping agencies is certainly a topic that will be recognized as an emerging trend. Given the current novelty of the topic, the number of studies on the effects of DT on accounting processes is quite narrow.

After a detailed literature review, it can be concluded that there are gaps and questions to which future research and practices should certainly provide answers [27]. Since the success of the digital transformation of bookkeeping agencies depends on the development of digital culture within them [24], encouraging the digital thinking of employees, promoting digital knowledge and skills, and creating digital processes are the topics on which pillars of digital transformation can be built.

### 3. Research Methodology

The relevant methodology for this research was determined based on the defined research goal and previously set research questions. In the first step, a longitudinal study was conducted in 2015, while the same study was repeated in 2021 with the purpose of comparing results and reviewing changes within a few years. To determine the difference between the two observed data sets (studies conducted in [8], and [5]), an analysis of variance or ANOVA (Single factor) was performed.

In both cases, the data collection was performed using an online questionnaire forwarded to the reference bookkeeping agency. The target research group were employees of the bookkeeping agency with more than 10 employees and with more than 100 clients. The bookkeeping agency in this study has 20 employees and serves approximately 240 companies of various profiles and legal entities (limited liability companies (Llc), public limited companies (Plc), public institutions, schools, associations, and other types of (non)profit entities).

The online questionnaires were the basis for conducting quantitative and qualitative data analysis with the aim of identifying digital transformation initiatives in bookkeeping agency and attitudes regarding possible changes in the traditional service business models. The perception was explored on the side of bookkeeping agency employees, but also on the side of clients, given their interrelated relationship. This paper investigates whether there is a difference between attitudes related to the application of web services (as one of the ICT options) for access to business data by clients in the bookkeeping agency database between the two surveys conducted in 2015 and 2021, that is, whether there is a significant difference in the observed two research sets. In 2015, before the implementation of ICT, the number of employees was 20 and 11 of them responded to the questionnaire. The same year, in the sample of 240 companies (without crafts), authors received answers from 18 of them. In 2021, after the implementation of ICT, the number of employees was 20, and 10 of them responded to the questionnaire. Regarding BA clients in mentioned year, there were 243 companies (without crafts), and authors that received answers from 14 of them.

### 4. Research Results

In order to see the change in perception during the introduction of digital technologies, and consequently the perception related to the introduction of new business models, an analysis of the two aforementioned research samples was made.

The research is divided into two sets - one set refers to the research conducted in 2015, while the other set refers to the research conducted a few years later, in 2021. Since the survey was repeated in 2021 with the same but lightly modified questionnaire that was sent to the reference bookkeeping agency, the data were analyzed using the analysis of variance (ANOVA) method. If we compare the size of the research sample, the 2015 survey was conducted on sample of 11/20 bookkeeping agency employees and 18/240 clients, while the 2021 survey counted 10/20 responses from employees and 14/243 responses received from clients.

ANOVA sought to determine whether there was a statistically significant difference between the two observed data sets, between the 2015 and 2021 surveys. In general, a statistically significant difference in ANOVA can be determined by comparing the values of *Alpha*, *P-value*, *F*, and *F crit*, where the Alpha value is set to 0.05. The analysis was performed using the Microsoft Excel spreadsheet program, since it offers advanced data processing capabilities. As the questionnaires are divided into two parts - one relating to employees of BA and the other relating to clients, the analysis was made by these segments.

The paper will first consider whether there are changes in employee attitudes and perceptions, and then will look at attitudes and perceptions changes on the clients' side.

### Employees

If we look at the employees, ANOVA results showed that there is no statistically significant difference in the workload of employees with the total number of incoming / outgoing invoices / excerpts per employee (Table 1). This means that all employees in the first and the second research are equally burdened at work. If the questionnaire was filled out by different employees, with regard to the sample and the number of completed questionnaires, this indicator shows that the respondents from both samples are similar to each other, i.e., equally burdened.

It is visible from the Table 1 that the *P-value* is greater than *Alpha* (the value is set to 0.05) and the *F value* is lower than the *F crit* value, which indicates that the results show a statistically insignificant difference between the two observed sets, with respect to the values that they are examining.

Table 1. Analysis of variance – employee burden with the total number of incoming/outgoing invoices/excerpts

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	21157,61	1	21157,61	0,006046	0,938834	4,38075
Within Groups	66486564	19	3499293			
Total	66507721	20				

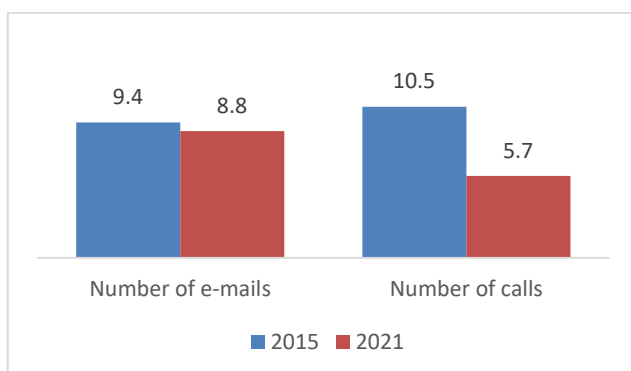


Figure 1. Average number of emails and calls from clients per employee in the observed periods

Furthermore, if we compare 2015 and 2021, the daily number of emails and calls from clients in 2021 decreased.

On average, the number of emails from clients to BA employees decreased by 6%, while the number of calls from clients to BA employees decreased by 47% on average per employee (Figure 1). This shows a reduced load of calls and emails.

Considering the above, Table 2 shows a statistically significant difference between the two observed data sets. The *P-value* is less than the *Alpha value*, while the *F value* is greater than the *F crit* value. This indicates statistically significant differences between the conducted research, or a 47% reduction in clients calls. It can be concluded that application of web services has reduced the number of clients calls, and that is merit to implemented technology.

Table 2. Analysis of variance - number of calls per day that employees receive

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	122,9823	1	122,9823	9,169595	0,006917	4,38075
Within Groups	254,8273	19	13,41196			
Total	377,8095	20				

In addition to the previously highlighted questions, in the continuation of the paper, several questions from the questionnaire will be singled out, which value is not statistically significant, i.e., it indicates that the attitudes of employees have not changed in relation to the two observed studies. These questions refer to (i) receipt of documentation in PDF format or on paper, (ii) independent entry of business data by clients, (iii) perception of time savings by introducing e-business / digital transformation, and (iv) direct insight into business data by the client in the bookkeeping agency database online in cloud.

As far as the delivery of documentation by clients is concerned, the employees of the bookkeeping agency would still prefer to receive the documents for posting in paper form, rather than as a PDF version. Furthermore, employees are still willing to leave clients to enter basic data into the information system of the bookkeeping agency independently, whereby employees would only control the entered data. Employees consider that this makes clients more involved and more responsible for their business, data is updated quickly, responsibility for data entry is shared, the way of working is simplified, and only control of data (without data entry) would save employees time significantly.

Employees still find the introduction of e-business / digital transformation between the bookkeeping agency and clients as a useful option in terms of saving time. On the other side, for clients, this option allows better information about their business. In both conducted surveys (2015 and 2021) perception of employees about the possibility of direct insight of clients into their own business data remains the same. Their perception is positive when talking about the possibility of direct client insight into their own data, using the bookkeeping agency information system, without communication between clients and employees of the bookkeeping agency.

Following above mentioned statement, it can be initiated that employees have not changed their attitude on the willingness to accept new ways of working and implementation of digital technologies in doing business with their clients.

### Clients

The second part of the research focused on identifying the difference between the two observed data sets (2015 survey and 2021 survey) on the side of clients, consumers of services of bookkeeping agency. The results of the analysis of variance (ANOVA) show a statistically significant difference in the attitude and perception of clients that e-business / digital transformation initiatives affect the time savings of certain business operations. 61% of respondents (clients) in 2015 did not think that the introduction of e-business / digital transformation would save time and that it would affect better information about the state of the clients business. Unlike the first observed year (2015), 93% of clients in 2021 consider the introduction of e-business / digital transformation initiatives useful in terms of saving time and better business performance. Interestingly, in 2021, only one client in the sample does not find e-business / digital transformation initiatives useful (Figure 2).

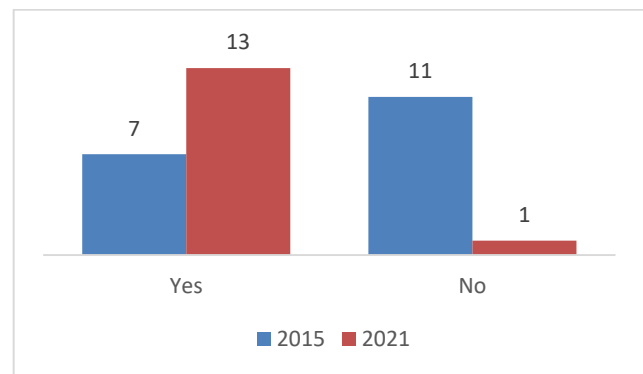


Figure 2. Usefulness of e-business / digital transformation initiatives in the eye of clients

The results in Table 3 show the analysis of variance of the usefulness of e-business / digital transformation initiatives from the perception of the bookkeeping agency clients. In order to determine a statistically significant difference, it is necessary to compare the Alpha value and the P-value.

Since the case in Table 3 shows that the *P-value* is less than *Alpha* (the *Alpha value* is 0.05), it follows that the analysis shows a statistically significant difference between the two observed sets. Furthermore, the *F value* is higher than the *F crit*, which also indicates a statistically significant difference between the two surveys, which was

determined based on the responses received from clients. In this way, the results of the research from 2021 confirm the change in the attitude and perception of clients in the usefulness of e-business / digital transformation initiatives. Clients now think e-business / digital transformation is very useful for them.

Table 3. Analysis of variance - usefulness of e-business / digital transformation from client perception

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2,293651	1	2,293651	13,21646	0,001029	4,170877
Within Groups	5,206349	30	0,173545			
Total	7,5	31				

Since the conducted research did not show other statistically significant differences between the questions asked to clients, the following is an overview of those questions in which clients attitudes did not change in the observed years of the research. Questions refer to (i) carrying documents in physical form, (ii) scanning documents in PDF format and sending them electronically, (iii) entering basic data from client documents (incoming and outgoing invoices) directly into the database of the bookkeeping agency using a web application.

In the two observed years (2015 and 2021), clients are still advocates of carrying physical documents to the bookkeeping agency, although the results of research in both observed years show that scanning documents in PDF format and sending them electronically via the bookkeeping agency website would not represent a problem. Minor differences, which show that there is no statistically significant difference between the two observed groups, are visible in the attitudes of clients regarding the independent entry of basic data from, for example, incoming and outgoing invoices directly into the agency database. Thus, in the 2015 survey, eight respondents (from the set of 18 respondents) answered that data entry would not be a problem for them, nine respondents stated that such an entry would be a problem for them, while one respondent did not express his opinion. A new survey conducted in 2021 shows that data entry by clients would not be a problem for eight respondents (from the set of 14 respondents), while six respondents believe that independent data entry into the bookkeeping agency database would be a problem for them (Figure 3). It is obvious that the results indicate some uncertainty for clients in accessing new ways of working and using technology in communication from clients to bookkeeping agencies.

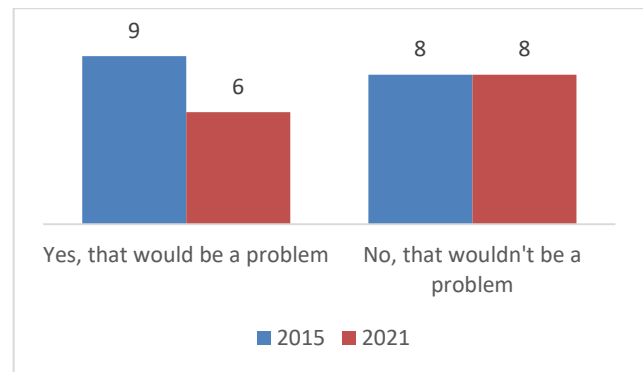


Figure 3. Data entry by clients into the bookkeeping agency database

## 5. Discussion

The idea of this research was to look at the attitude and perception of employees and clients of the bookkeeping agency in terms of new ways of doing business and implementing digital technology into business processes, using two surveys and the ANOVA method. Since the surveys were conducted with a certain time lag (the first survey was conducted in 2015, while the second was conducted in 2021 after several years of usage of implemented technology – web services), an attempt was made to identify a discrepancy between them.

On the employees' side, the results show that there are no statistically significant deviations in terms of changing attitudes and perceptions of employees (RQ1), i.e., those changes are visible only in the number of calls employees daily receive. The research shows that employees are still inclined to introduce new working technologies (RQ2), but also new ways of working in the business relationship on the level bookkeeping agency - client.

For example, employees would allow clients to independently enter data from certain accounting documents into the information systems of the bookkeeping agency, and that they have the role of controllers of the entered data. They are advocating the constant availability of business data of clients within the information system of the agency, i.e., the availability of the service 24 hours a day, 7 days a week. Advocating such an innovative way of doing business within the bookkeeping agency would contribute to time, financial, and human savings.

A statistically significant deviation in the perception of clients, in relation to the two surveys, is visible on the e-business side. Since clients did not consider e-business in 2015 as something that added value in providing bookkeeping services, this changed in 2021 (after the proof of new technology implemented in the processes). Clients are becoming advocates of e-business, and research has shown that there are positive developments in the willingness to accept the possibility of online retrieval of information about their business (24/7) using web services, with the purpose of streamlining business and facilitating communication with bookkeeping agency. Although the reference bookkeeping agency did not classify the web service as mandatory, clients state that in order to optimize e-business, the online application of the web service by clients should be mandatory. The results of the research initiate that there is certain insecurity of clients in the application of new ways of working - clients know about the benefits of digital transformation of business, but they need a certain "wind in the back" to cope with the transformation of their own business processes.

In order for such attitudes of clients and employees to change, it is necessary to direct the culture of the organization to digital. Trust in technology, adequate implementation of new technologies, the need to upgrade (digital) skills within bookkeeping agencies, investing in innovation culture, resistance to change and new ways of working are some of the topics that agencies will have to think about in the near future. Changing the perception of bookkeeping agencies employees about the complexity of the transformation and the shift towards a digital way of working will enable capacity building on the client side, which will improve the bookkeeping agency - client relationship over time.

## 6. Conclusion

The accounting industry is now experiencing a revolutionary shift towards an innovative future. For the coming period, increasing working cooperation of human capital with machines is envisaged, and such cooperation will pose a kind of threat to traditional ways of working and delivery of accounting services.

The implementation of digital technologies in accounting business processes will lead to new roles and business tasks. The reason for all this is the digital transformation by which organizations generally seek to modify their business models, expecting it to improve business processes, create an innovative digital culture within organizations that will further influence the adoption of new technologies, changing work habits and skills of employees.

A literature review and the results of the research indicate that bookkeeping agencies have noticed the opportunity that digital transformation brings and that some agencies have dared to think about the implementation of technologies in their own business processes implementing e-business in communication with their clients, but without imposing the solution and just the availability of technology and solutions, does not imply wider use without of guidance or additional motivation.

One of the key roles in the implementation is played by the employees of the bookkeeping agencies, who will improve the work with clients by changing the previous ways of working and using various technology compatible with the agency processes. This research provided an overview of the perception of employees and clients, in terms of acceptance of new technologies and new ways of working of the bookkeeping agency. The results show the willingness of employees to adopt new work habits, while clients have some uncertainty in using new technologies in communication with bookkeeping agency employees.

Since digital transformation requires engagement of different resources, both parties, it is important to look at the internal and external aspects of the ecosystem in which bookkeeping agencies operate. External aspects such as legislative, legal, and tax are often difficult to influence, but need to be implemented in business on daily basis. In the last few years, the national financial policies of the Republic of Croatia have recognized the advantages of digital, so through various legislative frameworks, direct bookkeeping agencies to new ways of doing business and delivering services (e.g., application of e-invoices in everyday business between taxpayers (B2B), and between entrepreneurs and public administration (B2G)). Unlike external aspects and influences, bookkeeping agencies can more easily manage internal factors and available resources and thus the resources needed to digitally transform their business.

Advocating for an innovative culture in general, identifying the various benefits and new opportunities that technology brings, will influence changes in perceptions among both employees and clients of bookkeeping agencies.



Because it is a broader set of internal and external factors that influence the change of entrepreneurial mindset, it will take some time for the benefits of technology to be truly recognized in the accounting system. All stakeholders in the accounting system are burdened with the elements of Industry 4.0, and it is up to them to recognize the opportunities in the first step and then use them to the best of their ability.

## 7. Limitations and Future Work

The authors of this paper have identified several limitations of the conducted research, the shortcomings of which can be corrected by future research ideas. Since the research was conducted on a target sample of respondents (reference bookkeeping agency, employees and clients of the same), it is possible to expand it to more bookkeeping agencies and thus include a larger sample of employees and clients. This idea can be used for future research, with the purpose of expanding knowledge about the perception of employees and clients in initiating a digital transformation project. As the research on the selected sample showed (for now) a positive perception of employees in terms of acceptance of new technologies and ways of working, future research could identify existing technology used by bookkeeping agencies in everyday business (AS IS state) and create recommendations for improvement using new digital technologies (TO BE state).

### References:

- [1]. Pihir, I. (2022). Digital transformation as university course - development and implementation. *EDULEARN22 Proceedings*, 7725–7729. Doi: 10.21125/edulearn.2022.1799.
- [2]. Diller, M., Asen, M., & Späth, T. (2020). The effects of personality traits on digital transformation: Evidence from German tax consulting. *International Journal of Accounting Information Systems*, 37, 100455. Doi: 10.1016/j.accinf.2020.100455.
- [3]. i-SCOOP. (n.d.). *What is digital business transformation? The essential guide to DX*. i-SCOOP. Retrieved from: <https://www.i-scoop.eu/digital-transformation/> [accessed: 22 June 2023].
- [4]. Kutnjak, A. (2021). Covid-19 accelerates digital transformation in industries: Challenges, issues, barriers and problems in transformation. *IEEE access*, 9, 79373-79388. Doi: 10.1109/ACCESS.2021.3084801.
- [5]. Vidačić, S., Pihir, I., & Kutnjak, A. (2021). E-business and Digital Transformation in Client to Bookkeeping Communications: Longitudinal Case Study. In *Central European Conference on Information and Intelligent Systems*, 65-84. Faculty of Organization and Informatics Varazdin.
- [6]. Kutnjak, A., Pihiri, I., & Furjan, M. T. (2019, May). Digital transformation case studies across industries—literature review. In *2019 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)* (pp. 1293-1298). IEEE. Doi: 10.23919/MIPRO.2019.8756911
- [7]. Pihir, I. (2019). *Knjigovodstveni servisi i digitalna transformacija—mogućnosti, pretpostavke i moguće koristi*. Zbornik radova s međunarodna znanstvena i stručna konferencija Računovodstvo i menadžment, 20, 153-167.
- [8]. Vidacic, S., & Pihir, I. (2015). Towards e-business in bookkeeping agencies: perceptions, problems and efficiency. In *Central European Conference on Information and Intelligent Systems* (p. 135). Faculty of Organization and Informatics Varazdin.
- [9]. Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation?. *Technological forecasting and social change*, 114, 254-280. Doi: 10.1016/j.techfore.2016.08.019.
- [10]. Berikol, B. Z., & Killi, M. (2021). The effects of digital transformation process on accounting profession and accounting education. *Ethics and Sustainability in Accounting and Finance*, 2, 219-231. Doi: 10.1007/978-981-15-1928-4\_13.
- [11]. Leitner-Hanetseder, S., Lehner, O. M., Eisl, C., & Forstenlechner, C. (2021). A profession in transition: Actors, tasks and roles in AI-based accounting. *Journal of Applied Accounting Research*, 22(3), 539-556. Doi: 10.1108/JAAR-10-2020-0201.
- [12]. A. Patil. (2018). Digital Transformation in Financial Services and Challenges and Opportunities. *IJTSRD*, 10–12. Doi: 10.31142/ijtsrd18661.
- [13]. Tuan, N. M., Hung, N. Q., & Hang, N. T. (2021). Digital transformation in the business: a solution for developing cash accounting information systems and digitizing documents. *VNUHCM Journal of Science and Technology Development*, 24(2), 1975-1987. Doi: 10.32508/stdj.v24i2.2526.
- [14]. Phornlaphatrachakorn, K. & Kalasindhu, K.N. (2021). Digital accounting, financial reporting quality and digital transformation: Evidence from Thai listed firms. *The Journal of Asian Finance, Economics and Business (JAFEB)*, 8(8), 409-419. Doi: 10.13106/JAFEB.2021.VOL8.NO8.0409.
- [15]. Izzo, M. F., Fasan, M., & Tiscini, R. (2022). The role of digital transformation in enabling continuous accounting and the effects on intellectual capital: the case of Oracle. *Meditari Accountancy Research*, 30(4), 1007-1026. Doi: 10.1108/MEDAR-02-2021-1212.
- [16]. Gil, M. A., & Montoya, M. A. (2021). Digital Transformation and Corporate Sustainability Accounting. *The Palgrave Handbook of Corporate Sustainability in the Digital Era*, 651-669.

- [17]. GÜNGÖR, N., Özveren, C. G., & Selçuk, Y. E. K. E. (2020). The psychosocial antecedents of the accounting digital transformation of the companies: a model proposal in terms of the technology acceptance theory. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(1), 36-55.  
Doi: 10.17218/hititsosbil.740045.
- [18]. PAN, G., & LEE, B. (2020). Leveraging digital technology to transform accounting function: case study of a SME. *International Journal of Accounting and Financial Reporting*, 10(2), 24.  
Doi: 10.5296/ijaf.v10i2.17052.
- [19]. Huttunen, J., Jauhainen, J., Lehti, L., Nylund, A., Martikainen, M. & Lehner, O.M. (2019). Big data, cloud computing and data science applications in finance and accounting. *ACRN Journal of Finance and Risk Perspectives*, 8, 16-30.
- [20]. Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2020). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives*.  
Doi: 10.35944/jofrp.2020.9.1.007.
- [21]. Mosteanu, N. R., & Faccia, A. (2020). Digital systems and new challenges of financial management—FinTech, XBRL, blockchain and cryptocurrencies. *Quality—Access to Success*, 21(174), 159-166.
- [22]. Marshall, T. E., & Lambert, S. L. (2018). Cloud-based intelligent accounting applications: accounting task automation using IBM watson cognitive computing. *Journal of emerging technologies in accounting*, 15(1), 199-215. Doi: 10.2308/jeta-52095.
- [23]. Kruskopf, S., Lobbas, C., Meinander, H., Söderling, K., Martikainen, M., & Lehner, O. (2020). Digital accounting and the human factor: theory and practice. *ACRN Journal of Finance and Risk Perspectives*. Doi: 10.35944/jofrp.2020.9.1.006.
- [24]. Thipwiwatpotjana, S. (2021). Digital Transformation of Accounting Firms: The Perspective of Employees from Quality Accounting Firms in Thailand. *Human Behavior, Development & Society*, 22(1).
- [25]. Lombardi, R., & Secundo, G. (2021). The digital transformation of corporate reporting—a systematic literature review and avenues for future research. *Meditari Accountancy Research*, 29(5), 1179-1208. Doi: 10.1108/MEDAR-04-2020-0870.
- [26]. Nordgren, A., Weckström, E., Martikainen, M. & Lehner, O. M. (2019). Blockchain in the fields of finance and accounting: a disruptive technology or an overhyped phenomenon. *ACRN Journal of Finance and Risk Perspectives*, 8, 47-58.
- [27]. Aguiar, G., & Gouveia, L. (2020). The digital transformation in academic accounting research: literature review. *Journal of Organizational Knowledge Management*, 2020, 1-9.