Chapter 5

The Future of the Internal Audit Profession and Its Change Due to the Development of Artificial Intelligence Solutions

Iztok Kolar

University of Maribor, Slovenia
e-mail : iztok.kolar@um.si

ORCID: 0000-0002-2014-973X

What will the future of internal audit be? Will we still have an internal auditor in 10 years, or will an AI solution replace it? There is still no clear answer to this today. This research aims to analyse the thoughts on the future of internal auditing as a profession and to give some thoughts on what internal auditing will be like in 10 years, focusing on the possible impact of AI solutions on internal auditing in the next decade. We have collected thoughts from various authors and opinions from internal auditors in Slovenia.

Today, the question of what the future changes in internal audit will be and whether the internal auditor job will remain or be replaced by an AI solution has not yet been researched and answered. An important limitation of our research is that we are not exploring possible legislative changes in this area, which, like AI, could significantly change the profession and the tasks of internal auditors. We limit ourselves to looking at internal auditing in general, as no specific area/topic within this activity has been selected. The chapter assumes that internal auditing in small and large organisations, in the private and public sectors, in different industries, etc., is not the same and will not be the same in the future; due to the limitations of the research, we do not explore internal auditing from all these different perspectives.

However, taking a 10-year perspective is long enough that we can still make changes to ensure the existence of an internal audit.

The chapter consists of four parts. Section 5.1 elaborates on the future of internal auditing based on the literature review. Section 5.2 introduces the research methodology applied. Section 5.3. presents the results of the survey of Slovenian internal auditors on how they see themselves in the future and how AI will affect internal audits. The last section concludes the chapter and presents the prospects of internal audit.

5.1. Thinking about the Future of Internal Auditing: The Results of Literature Review

The future of internal audit and the internal audit profession is a hot topic of research at the moment, with AuditBoard (2023), Chambers (2024) and the Institute of Internal Auditors (IIA Global) (n.d.), which is currently undertaking a project to renew its vision for internal audit by 2035. The IIA Global project involves research, surveys and interviews with internal auditors, managers and other stakeholders to help the IIA, the professional body for internal auditors, arrive at a renewed vision for internal auditing by 2035. Preliminary findings from The IIA Global (2024) project suggest that internal audit in the future will be more strategic: focused on key risks and opportunities to move the organisation forward. Internal auditors will need to demonstrate interdisciplinary competence, using a wide range of skills and knowledge, and will be technologically up-to-date.

Some writers on the future of internal audit, e.g. Franco (2021), have argued that the evolution of the internal auditor has stalled, that the development of ethics and the link to the investigation of economic crime has been too slow and that internal audit is therefore losing ground and that it is currently facing bad times ahead. According to the World Economic Forum's report 'The Future of Jobs' of 20 October 2020, accounting and auditing rank 2nd-4th on the list of jobs that are in declining demand and could disappear in the future (World Economic Forum, 2020). Franco (2021) believes that more attention will need to be paid to scientific research on internal auditing in the future and that this should be applied to its work. Kristensen et al. (2021) argue that internal audit in the future will be based on the development of new skills and expertise and helped by introducing new technologies and approaches. Thus, it should seek strategic support from management and play a key role in changing the organisation's culture.

Internal auditing as a profession is at a crossroads (Lenz and Jeppesen, 2022). It is losing attention and relevance in its operating environment. Stakeholders now see less and less added value in internal auditors, and in the contributions of internal auditing, and at a macro level, Lenz and Jeppesen (2022) predict a threat to the legitimacy and relevance of internal auditing as a profession. The good news and

the bad news are that the future of the internal auditor is uncertain and can still be influenced. Deloitte (2018) predicted that the next generation of internal audit would be internal audit 3.0, which focuses on providing trust, advice, and foresight. This approach is more proactive and helps management manage emerging risks, technologies, innovation and disruption, with internal audit using innovative approaches and technology such as data analytics and robotic automation to deliver real-time services. For some authors, the internal audit functions may be the most suitable for implementing AI tools in continuous auditing, as Miszczuk and Bednarek highlight in Chapter 2.

In substance, the internal audit has lost focus recently, so Lenz and Jeppesen (2022) say that internal auditors should focus on five key areas of action and focus, i.e. Planet, Public, Profession, Prosperity and People. This will save the future of the internal auditor's job. These focuses mean (Lenz and Jeppesen, 2022):

Planet

No planet, no (internal) audit, and no Plan B – environment, society, and governance (ESG) are key, literally speaking, and internal audit has an important role to play in this. Internal auditors need to ask themselves critically whether internal audit has engaged satisfactorily in the ESG debate. It will be necessary to do more and better as an internal auditor for the planet. Chambers (2022, as cited in Lenz and Hoos, 2023) warned that internal auditors are unduly sidelining environmental, social and governance (ESG) risks. Internal auditors do not currently have a meaningful role as assurance providers and are absent from potential ESG advisory services – on both sides of the Atlantic. Chambers (2022, as cited in Lenz and Hoos, 2023) argues that internal auditing is suffering from the "ESG powerlessness syndrome". Similar to the animal world, the internal audit function is in a state of frozen response when it comes to ESG issues. The ESG challenge is so great, and the threats to the role of the internal audit function (IAF) are so real that the profession reacts like animals to a threat: frozen. We discuss and challenge the professional requirements of 'objectivity' and 'independence' in the context of ESG, as they may represent obstacles to the IAF playing a meaningful role in the ESG agenda. We suggest that practitioners consider broadening the repertoire of internal audit. We propose an ABC-model © of internal audit, adding "building" as a new third pillar of internal audit value creation, complementing traditional assurance and advisory services. We encourage internal auditors to become "builders" in addressing ESG challenges in their organisations. We borrow the words of Yvon Chouinard, founder of Patagonia, which is often used as a model ESG company when we suggest "Let Internal Auditors Go Surfing" as a call to action.

Public

No third-party evaluation, no (internal) audit; this means – no client – no audit, in other words. Internal auditors' self-assessments are biased and of very little value. For internal auditors to be better accepted, to be relevant and to increase their impact,

stakeholders need to see and value the service provided. Internal auditors need to be actively involved in promoting and influencing regulators as well as boards and increasing awareness and understanding of the value proposition of internal audit, as all stakeholders need to understand how internal audit differ from external audit.

Profession

No unique selling proposition, no USP, no "focal area", and no (internal) audit, after all. The internal audit profession still has no common core. With this vague value proposition, the internal audit profession is constantly at risk of over-promising, under-delivering, and being seen as a 'jack of all trades' and a 'master of none'. Internal audit needs to reduce the diversity of practice and focus on what distinguishes it from external audit, i.e. the ability of internal audit to participate in the organisation's governance processes, which external audit cannot do for reasons of independence. We also believe that internal audit needs a more compelling and sticky idea and story to tell about its remit. For this story, we suggest using a compelling metaphor, as this facilitates understanding by transferring experience from one context to another (Lakoff and Johnson, 1980, as cited in Lenz and Jeppesen, 2022). Accordingly, we propose the use of the "management gardener" metaphor to explain the value proposition of internal audit.

Prosperity

No business, no (internal) audit; an internal audit must find ways to add value to the private company or public institution it serves. Chambers (2016, as cited in Lenz and Jeppesen, 2022) says that an internal audit is more than just the brakes in a car. It is part of the navigation system. Internal audit must serve the overall strategy of the organisation and its well-being. If the organisation fails because it is not profitable, an internal audit fails too.

People

People make all the difference. People use technology. Internal auditors are not robots. Neither are their colleagues and clients. Business is about people working together.

AI has and will have a drastic impact on the future of internal auditing (Griffin, 2019). Matis (2015) wrote about what IA itself predicts for internal auditing, and he got this answer from AI about the future of internal auditing: "Over the years, the scope of internal auditors' work will continue to evolve and expand, especially in strategic and operational efforts to verify an organisation's compliance at all levels. Looking ahead, it is anticipated that internal audit will play an important advisory role, becoming an important catalyst for business development and focusing organisations on emerging risks. This transformation of the whole internal system, consisting of control and audit, which seeks to foster a risk-focused organisational

culture, is in the process of evolution but is complex, with conflicts of interest and little understanding by most companies when it comes to the introduction of such a system, as well as various credibility issues, are limiting the pace of development for the time being." This account by Matis (2015) shows an unambitious thinking about the future of internal auditing in 2015. Today, it seems that the slow pace of development is the key stumbling block in the future existence of internal auditing. Whether internal auditing is outpaced by the use of AI or the pace of development is too slow, the future of internal auditing may be badly affected.

As indicated by D. Tal (n.d.), according to Oxford report, 47% of today's jobs will disappear, mainly due to machine automation. If one watched the film Ex Machina (2014), one might have wondered whether we could really be replaced by robots in our own image and human intelligence. Whether we will one day come to work and there will be a black box or even a humanoid at our workplace. Or is this just an image in the movies, and for us, tomorrow, there is no fear that something like that could happen to us?

The future is never completely fixed, but we can always influence it to a greater or lesser extent. If we want to predict whether AI will abolish the post of internal auditor, we first need to define what that post represents. If the internal auditor is a job where tasks are repetitive deterministic process tasks, in that case, it is more likely that these tasks will be automated and replaced by AI. However, if the job is characterised by complex consultancy tasks, soft skills, experience, other complex non-repetitive (always different) tasks, and an ever-new work methodology, it is more likely that AI will not replace these tasks.

McCafferty (2023) finds that internal audit leaders are delaying critical technology investments in generative AI and automation: 75% have not yet implemented generative AI in internal audit, only 40% have a clear understanding of how AI is being used in their organisations, and a whopping 25% have identified risks or created guidelines for the use of AI. Computers and networks provide most of the information needed for auditing. To be effective, internal auditors need to use the computer and specific computer software as an audit tool, audit automated systems and data, and understand the business purposes of systems and the environment in which systems operate. Audit administration is another important use of computers and networks by auditors. By finding new ways to use computers and communications, auditors improve their ability to review systems and information and manage their activities more effectively. Automated tools, now often referred to as AI tools, enable auditors to increase the individual productivity and efficiency of the internal audit function.

The development of AI solutions will fundamentally change the internal audit profession over the next decade. Studies show a shift from routine tasks to more strategic analysis and advisory roles for auditors (Deloitte, 2018). AI is expected to dominate mundane tasks such as data collection, anomaly detection and control testing, allowing auditors to focus on higher-value activities such as interpreting results, identifying emerging risks and providing insights to improve performance

(Savage, 2023). This transition will require new skills for auditors, who must have technical knowledge of AI capabilities and strong critical thinking skills to effectively evaluate AI results and ensure overall audit quality (Savage, 2023). Auditors must adapt to new technologies and processes to do their job effectively (Rausenberger and Prenrecaj, 2017).

From a review and analysis of the writings on the future of internal audit today, there is no prediction that the internal auditor will disappear in 2033, but we note that the writers predict that the content and way of practising the profession of internal auditor will be different in the future. Therefore, in order to test amongst internal auditors what they think about their future, we put forward the following positive research hypothesis:

> **H1: In 10 years, the internal auditors will still exist and will still have a place and a job, but they will have to be different and do their job differently than today.**

The survey will also seek to answer the question of how internal auditors themselves see their work in the future and how AI will affect internal auditing. Our survey aims to look at least 10 years into the future.

5.2. Description of the Research Design:
A Survey on Internal Auditors in Slovenia

A survey on how internal auditors see themselves in the future and how AI will affect internal auditing was conducted in Slovenia. At the end of 2023, there were 506 state internal auditors in Slovenia registered in the Directory of State Internal Auditors, of which 112 were tested state internal auditors. Internal auditors in the private sector in Slovenia are organised by the Internal Auditors Section of the Slovenian Institute of Auditors, which each year devotes a few words to the state of internal auditing in Slovenia and is an integral part of the annual report on the work of the Slovenian Institute of Auditors. In this report, we can find, among other things, the information that as of 31 December 2023, 275 tested internal auditors in Slovenia held a certificate of professional title and that as of that date, 92 active tested internal auditors in Slovenia were listed in the register of active tested professional title holders. In 2018, the Slovenian chapter of the American umbrella organisation of the IIA (The Institute of Internal Auditors) also became independent and is expected to have around 267 members at the end of 2022. However, internal auditing in Slovenia also involves professionals who are not covered by any of the organisations, statistics and reports mentioned above. The current situation in the field of internal auditing in Slovenia is unclear, which does not bode well for the future of internal auditing in Slovenia. The members of these associations are the entire population of internal auditors in Slovenia covered by this survey.

Our research on the future of internal auditing is based on data collected through a questionnaire among Slovenian internal auditors, and we asked all internal auditors in Slovenia to participate. The questionnaires were sent to all tested internal auditors in Slovenia at the Slovenian Institute of Auditing (92 of them in 2024) and to all members of the Slovenian IIA Chapter (about 270 of them) at their e-mail addresses with an invitation to participate. We do not have an exact number of respondents who received the questionnaire. The questionnaire used had ten short questions and was open-ended. The questionnaire was made available on the *1ka.si* website (https://1ka.arnes.si/IA2033), and a link to it was sent with the invitation to fill in the freely accessible online form via e-mail. The survey was active between 25 February 2024 and 15 March 2024. Each respondent or e-mail address could only fill in the questionnaire once. 247 respondents clicked on the survey, and 91 internal auditors completed the survey, i.e. they were the respondents or respondents to our survey.

We were thus able to collect 91 completed and usable questionnaires. Of these, 16 men and 74 women took part, or 18% men and 81% women and 1% other gender. This is already the first figure that can be interpreted differently. Firstly, those men have a greater affinity for completing surveys than women, since among the list of tested internal auditors of the Slovenian Institute of Auditors, only 12% are male internal auditors, and in the percentage of completed surveys, they took 18%. Secondly, those male internal auditors are relatively more interested in disclosing how they envision internal audit in the future. However, this gender composition may be purely coincidental and influenced by other unknown factors. The sample of respondents among internal auditors shows that the average age of an internal auditor in Slovenia is 48.7 years, with a standard deviation of 6.78 years. The youngest internal auditor in the survey was 31 years old, and the oldest was 64 years old. On average, the respondent has 22.2 years of experience. The sample includes a respondent with 4 years of experience and one with 39 years of experience. From this point of view, we can conclude that the sample reflects well the entire population of internal auditors in Slovenia, both younger and less experienced, as well as older and more experienced internal auditors. Therefore, our survey findings are valid and can be generalised to the entire population of internal auditors in Slovenia.

The sample of questionnaires obtained also had very dispersed participation of respondents in the activity variable. Thus, the largest number of state internal auditors were from the public administration sector, accounting for 34%, followed by the banking sector with 32% and the insurance sector with 6%, with the remaining 27% belonging to the business and other activities sector. The respondents represented a variety of activities as internal auditors appear in these activities. The sample thus covers the activities well, which is an additional reason why we consider the resulting data sample to be a good and representative representation of the population of internal auditors in Slovenia. We have also verified this, and the chi-square test for the normality of the distribution confirmed our initial findings, as the actual and theoretical distributions were in good agreement.

We used content analysis, simple statistical indicators such as frequencies and proportions, and bivariate correlations to process the data.

5.3. The Future of Internal Auditors' Profession and Auditors' Tasks: Research Findings

The first question of the questionnaire was directly related to our hypothesis: "On a scale of 0-100%, how likely do you think it is that an internal auditor will still have a job in 10 years' time?".

The results collected through the survey show that the arithmetic mean of the responses of the internal auditors surveyed is 75% on a scale of 0% to 100%. On average, respondents think there is a 75% probability that an internal auditor will still have a job in 10 years' time. The standard deviation of the arithmetic mean is 27.13% (N=90). Hypothesis H1 can be accepted, which means that internal auditors in Slovenia believe that in 2033, the internal auditor will still have a position and a job. The responses received on the existence of an internal auditor as a post are shown in Figure 5.1.
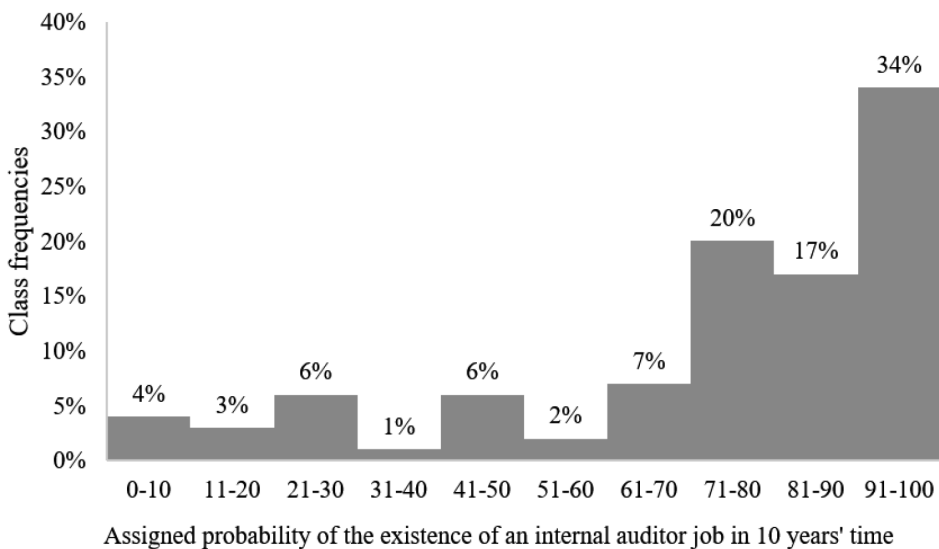
Figure 5.1. Existence of an internal auditor job in 10 years

Source: own study.

The data collected through the survey show that there are some estimates of internal auditors who think there is less than a 50% probability that the internal auditor job will still exist in 10 years' time, with 20% of all respondents giving such estimates.

The remaining 80% of respondents predict that there is at least a 50% probability or more that the internal auditor job will still exist in 10 years' time. The estimate of 100% probability that the job of the internal auditor will still exist in 10 years was given by 19 out of 90 respondents, which means that 21.1% of internal auditors consider that the existence of their job is not threatened in any way by 2033. This may be a lot or a little, but if we look at the opinion writers, we do not find anyone who questioned the existence of the internal auditor's job. In practice, the situation is different, with some internal auditors seeing their jobs under threat and 2% of respondents believing that it is certain that the internal auditor will no longer exist as a job for human beings in 10 years' time.

In order to explore the question of what threatens the job and, thus, the profession of internal auditor, two variables were designed to address this. The first measure was how many internal audit tasks respondents believed AI would take over in 10 years' time.

We asked respondents: **"How many internal audit tasks will be done by artificial intelligence in 10 years' time? Note: A Mark of 100 means the AI will perform 100% of the internal auditing tasks".**

Respondents' answers on how many internal audit tasks will be performed by AI in 10 years' time are fairly normally distributed. The normality of the distribution is shown in Figure 5.2 (n = 86).
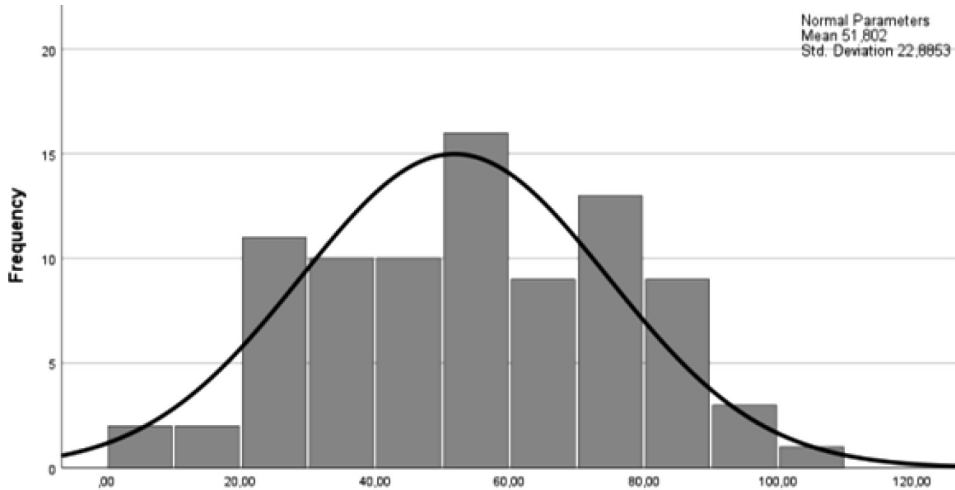

Figure 5.2. One-sample Kolmogorov-Smirnov normal test

Source: own study.

The results of the respondents' answers on how many internal audit tasks will be performed by AI in 10 years' time show that the average estimate of the internal auditors surveyed is 51.8%, with a standard deviation of 22.89 (n = 86), which can be

interpreted as meaning that, on average, the respondents believe that AI will perform less than 52% of the tasks of internal audit activities in 10 years' time. The results of the responses collected for the analysed question are also shown in Figure 5.3.
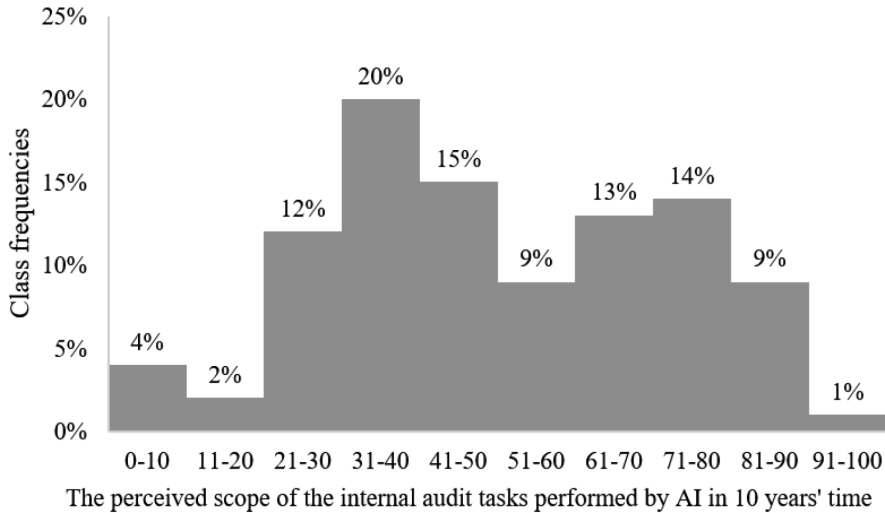
Figure 5.3. AI takeover of internal audit tasks in 10 years' time

Source: own study.

The results of the data collected show that only 1% of the internal auditors surveyed believe that AI will do absolutely zero of the internal audit tasks in the future, as well as 1% of the respondents believe that in 10 years' time, AI will do all the internal audit tasks by itself. The opinions of internal auditors on how many internal audit tasks AI will perform are mixed. The answers of respondents are very scattered, with 20% of respondents (the largest group) believing that AI will perform between 31% and 40% of internal audit tasks in 10 years' time, and the second largest group, with 14% of respondents, believing that AI will perform between 71% and 80% of internal audit tasks in 10 years' time. Based on these results, we believe that AI will largely determine the future of internal audit, and it is high time that internal audit pay more attention to this area. The third question in our survey was also dedicated to the future of internal audit. This question gathered a large number of descriptive responses with respondents' thoughts on the future of the internal audit profession.

As expected, the topics around AI were featured most frequently in the responses of internal auditors to our key open-ended question, which asked: **"What are your thoughts on the future existence and changes of internal audit over the next 10 years? Please briefly write down your thoughts!"**

Of the 91 internal auditors, 72 answered this question. The fact that the majority of respondents answered this question and the length of the answers received suggests

that internal auditors themselves feel that a critical moment has arrived for the future of internal auditing and the job of internal auditors.

In their replies, the internal auditors briefly described their vision of the workplace and internal audit in the 10-year future. The longest answer was a full page, and the shortest was two words. We have conducted a content analysis of the collected responses and present the results below. The most frequent responses were that in the future, their workplace will place a strong emphasis on the use and control of information technology and that they foresee changes in their work in the form of strong support for internal auditors from AI. In second place is a group of respondents who predict that everything will be the same in the field of internal audit as it is today and that the future of work will only see an increase in consultancy engagements, such as process improvement, finding strategic competitive advantages and helping to formulate strategies, were the most similar in terms of the range of related responses. From a several similar or typical responses, we have selected up to three typical (repeated) responses from respondents, which we believe provide a good illustration of how the internal auditors in the sample envisage the future of internal audit (responses are taken verbatim from the survey):

"I believe that the existence of an internal audit is absolutely necessary in the future, but there will be major changes in the way it operates. The process will be largely automated. Personal contact with auditees, knowledge of the organisation's work processes and interpretation of findings will still be important. The emphasis will be on IT, so additional skills will be required. There will be more consultancy work (e.g. improving processes, looking for competitive advantages)."

"Internal audit will have to adapt to the fast pace of change. The time it takes to perform and document the procedures carried out is sometimes not competitive with other areas of the organisation. With its analytical thinking skills, its access to all areas, and its comprehensive overview and knowledge of the organisation, it should remain an important and very useful link to the organisation. However, if auditors are too focused on assessing past practices, internal audit will lose its relevance."

"More AI work on routine tasks, more involvement of the internal auditor as a person in strategic discussions with management."

From the other responses collected, where the internal auditors in the sample are not thinking about their future or have not yet formed an idea of how their work will be in the future, we also carry over some typical responses. For example:

(1) "I have no idea what internal audit will be like in the future....";

(2) "I'm not thinking that far into the future...";

(3) "I'll be retired by then...";

or the short and succinct thought of one respondent:

(4) "Drastic changes!!!".

The content analysis method was used to examine the responses collected, and the key findings on the 10-year view of the future of internal auditors can be summarised in a few areas, namely:

1) The impact of AI on internal auditing in 10 years will be significant.

- AI will take on many routine and administrative tasks, such as checking data, looking for outliers and comparing against standards.
- AI will enable faster and more comprehensive analysis of large amounts of data.
- AI will help detect anomalies and potential risks.
- The human factor, or the internal auditor as a human, will still be needed to judge the results of AI, think critically, and accept the conclusions.

2) There are changes in the tasks of internal auditors.

- The focus will be on strategic advice and assisting management in achieving the organisation's objectives.
- The increased focus will be on IT audit and information security, especially in relation to the use of AI tools.
- There will be a need to develop new competencies for auditors, such as analytical thinking, knowledge of IT tools and the ability to interpret data.
- There will be an increased use of automated controls and continuous audit tools.
- There will be a need to work with external specialists on complex tasks.

3) Internal auditors will have to change and adapt to the new circumstances.

- The profession will remain important, but it will change dramatically.
- Auditors will need to be more flexible, innovative and able to learn new skills.
- The role of the internal auditor will become more advisory and focused on adding value to the organisation.
- The human factor will still be key to judgement, ethics and communication.
- AI will need to be used as a tool to enable auditors to work faster and better.
- Internal auditors will need to actively prepare for the future by developing new competencies and adopting new technologies. It will be important to work with management and other stakeholders to shape the future of internal audit. It will also be necessary to monitor the development of AI and other technologies and assess their impact on auditors' work.

Additional findings from the responses collected include:

- The role of internal audit will continue to evolve and adapt to new challenges.
- The human factor will continue to be key to the success of internal audit.

The biggest unknown and the greatest uncertainty is, therefore, AI. Many respondents say they do not trust AI today. This is and can be one of the key areas for internal auditors to focus on in developing their internal audit and professional competencies. Chambers (2024) writes differently about the impact of AI on internal auditing, having collected over 1,000 responses on its website in early 2024 to a question on what internal auditors think about the future of internal auditing. Chambers (2024) says that from the responses of internal auditors, it was found that two threats to the existence of the internal auditor did not rank in the top three

risks. These were "AI taking over part or all of our role", with only 17% of respondents rating it as their top three risks, and "inability to meet new IIA standards" with 5% of respondents (Chambers, 2024).

Let us look at a few specifically selected responses from respondents to our survey on AI and their work. Our results show that 96% of respondents believe AI will be a large part of internal audits in the next 10 years. We have analysed some of the responses collected from respondents on the topic of AI taking over internal audit tasks. Here are some interesting reflections:

"We could already do certain continuous auditing processes with the help of artificial intelligence."

"Artificial intelligence can help internal auditors with planning procedures, but not with the audit itself. This represents some 30% of the internal auditors' work (I estimate that the total planning procedures cover some 40% of the time of an audit). If there are reports of deviations already detected, the internal auditor will still have to examine them, assess the risk and the impact on the business and make recommendations for improvement. It is expected that this will enable the internal auditor to carry out the same audit more quickly. However, this should take into account the more frequent audits resulting from the audit of individual programmes – specifically on the audit of programme records in compliance with legislation and internal rules, controls to detect indications of deviations and errors and fraud..., so I also see no reason why the profession of internal auditing should die out. Moreover, artificial intelligence will not be free either, so it will be up to investors to decide whether to buy it to replace internal auditors. I estimate that in the future, there will be an increase in the number of audits of information systems, with a focus on auditing applications, which will require the auditor to have knowledge of programming, the processes supported by the application..., and a basis of economic and legal knowledge and other disciplines of the business, or programmers will also start to carry out audits and participate in audit teams."

"There is certainly 30% of data handling, pattern recognition, analytical processes, etc., which can be replaced by artificial intelligence."

"AI will make it possible to carry out much more sophisticated and complex analyses in less time. But it will still be the internal auditor who will manage the AI and draw the final judgements and conclusions".

On average, therefore, respondents believe that AI will replace a good half of the internal audit work (see results of the second variable and Figure 5.3 of this chapter) but that it will not be able to replace all that internal audit represents and that the presence of the human factor will still be needed in terms of control and the interpretation of findings. Respondents believe that this is due to advances in technology and digitisation and that AI will help in the execution of planned procedures and save time for internal auditors to collect and process data, leaving them more time to assess and interpret the results obtained critically and to discuss them with the clients of the business.

Among the answers on the future of internal audit, it is also worth highlighting the answers on professional competence. Respondents consider that the required qualification has a major impact on internal auditors. Therefore, continuous training will continue to be a constant feature of internal audit. According to the respondents, complexity and dynamism in operations are also very important. Therefore, the internal auditor's business and work will become more dynamic and complex in the future, which will also be reflected in the qualifications required.

We also carried out tests for independent samples by gender, work experience, age, different activities, and according to the legally mandatory presence of internal audit in organisations, and the t-tests of the means of all possible groups were not statistically significantly different for both the variable future existence of internal audit and the variable extent of internal audit tasks taken on by AIs.

Finally, we tested whether there is a correlation between the opinion on the existence of an internal auditor post in 10 years' time and the percentage of internal audit engagements expected to be undertaken by AI in 10 years' time (Figure 5.4).

The perceived scope of the internal audit tasks performed by AI in 10 years' time
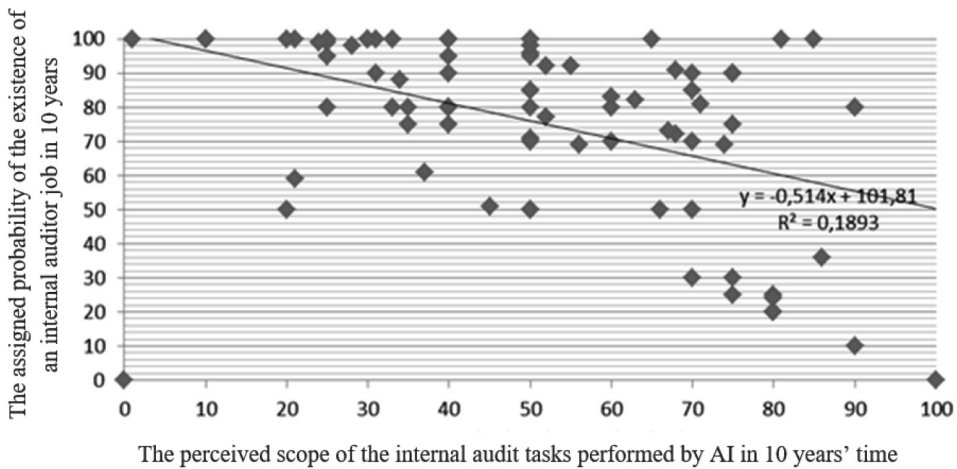
Figure 5.4. Scatter plot illustrating the relationship between the two study variables

Source: own study.

Figure 5.4 shows a correlation between two analysed variables with a coefficient of determination (R^2) of 0.1893. This means that 18.93% of the variation in the probability of the existence of an internal auditor post can be explained by the extent to which AI takes on internal audit work. Also, the Pearson Correlation calculation showed a statistically significant correlation (Sig. (2-tailed) <0.001) and the Pearson Correlation value of -0.427. This means that there is a medium-strong negative correlation between the existence of an internal auditor job and the extent of AI taking

on internal audit tasks, or in other words, the respondents' opinion indicates that the more internal audit tasks are taken on by AI, the lower the respondents' assessment that an internal auditor job will exist. Despite this finding, we believe that the future of the job and the profession of internal auditors is not as bleak as this correlation makes it seem. In the next section, we will consider what we see as the future and changes in internal auditing.

5.4. Conclusions

Internal audit is an activity that can significantly contribute to improving the efficiency and effectiveness of all organisations. In order to achieve this, it is necessary to continuously review the performance and effectiveness of all it represents. Internal auditors help an organisation achieve its objectives by assessing and providing advice. They need to keep abreast of all technological, business and societal changes occurring today and in the future so that they can add value to the organisation as much as possible.

With the Fourth Industrial Revolution, we are all caught up in the tide of change. 3D printing, AI, the sharing economy, the Internet of Things, self-driving cars and other changes are just "drops in the ocean" of innovations that will soon become commonplace. Of these, it is safe to say that AI will largely shape the future of internal auditing.

The tipping point for internal audit, expected to be reached by 2025-2030, suggests that 30% of internal audit tasks will then be able to be performed by AI. Deloitte (n.d.) forecasts the uptake of robotic process automation (RPA) in internal audit. The authors (Deloitte, n.d) argue that RPA can bring a number of benefits, such as increased efficiency, reduced costs and improved audit quality. RPA is expected to make audit processes more dynamic, safe, and reliable, and, in short, they are of higher quality (Mookerjee and Rao, 2021).

The most important technologies that enable intelligence, flexibility and interconnectivity include technological sensors, cyber-physical systems, the Internet of Services and the Internet of Things. Future sensors will have the function of data acquisition and processing, will be able to communicate, and will thus completely replace humans in data collection (Abdelli et al., 2021; Chen et al., 2019).

In the future, internal audit work will be facilitated by a number of software solutions, thanks to advanced technology and the associated digitisation, as more and more software providers have been working in recent years to create these so--called audit and accounting solutions.

Technological innovation, the rapid development of AI, and political and macroeconomic pressures will all influence changes in all professions in the future, and internal auditing will be no different. In the future, internal auditing will be ubiquitous, simultaneous, continuous and uninterrupted, so plans will no longer be needed;

thus, this time will be dedicated to in-depth interviews and specific assignments for clients (SAP AG, 2019). Internal audit will offer the opportunity to transform in the coming years and become indispensable for effective governance, control, and risk management. An innate sense of risk perception, technological dexterity and technological fearlessness, constant curiosity and professional scepticism, intellectual honesty, foresight of ethical changes or problems, and inheritance of professions that are not necessary are the qualities that internal auditors will need to have developed in 10 years. They will be essential for the effective performance of internal auditing work.

However, we should not forget that AI also brings new risks, and this is the field of new services for internal auditing. Potential risks with the use of AI nowadays manifest themselves as the problem of accidents in machine learning systems, defined as unintentional and harmful behaviour that can occur due to poor design of AI systems in the real world (Amodei et al., 2016).

Computing technologies by 2033 are predicted to be completely transformed (Fox, 2024), e.g. two such architectures are in advanced stages of development. The first, quantum computing, and the second, neuromorphic chips, mimic the design of the human brain.

Of particular interest for internal auditing by 2030 will be the field of quantum computers (Fox, 2024). Quantum computers will be so powerful – and with such long coherence times – that they can unlock a previous high-level encryption of hundreds of digits in a matter of seconds. They will emerge as a revolutionary alternative to "classical" computers. While the latter is limited to binary ones and zeros, quantum systems have the advantage of using multiple values simultaneously, allowing them to work with astronomically large amounts of data and numbers that would normally take millions or billions of years to calculate. The arrival of quantum computers in 2030 will bring new data security risks. Quantum computers (Fox, 2024) may provide vast amounts of users' personal data and the ability to hack into RSA-2048 keys, which also risks revealing state and industrial secrets and information relating to long-standing conspiracy theories, historical archives, etc. Quantum computers may also be able to provide information about the security of users' personal data. The website – https://www.futuretimeline.net/21stcentury/2031.htm – predicts that the media reports of this time (2030) will be full of news about intrusions into the information systems of organisations and individuals and about leaks of information, encouraging greater scrutiny of quantum computing technology and encryption in general.

The development of AI, therefore, also brings many opportunities for fraud and abuse. It will be possible to design immoral AI to attack specific targets, steal, kill and more in the name of engineering. There is already a TV series about this (Mr. Robot, https://en.wikipedia.org/wiki/Mr._Robot); it will be possible to use mind-reading devices, access sensitive or confidential information of a targeted victim or implant false memories of the said victim (similar to the movie Inception, https://en.wikipedia.org/wiki/Inception). Whether the AI can violate rights or carry out a killing and will

be recognised as a legal person is still unknown. Anyone interested in learning more about these predictions should read https://www.quantumrun.com/.

The key question of research is whether AI will take over the key oversight tasks in 10 years' time. Thus, will the internal auditor no longer be needed? In this case, the post of internal auditor would indeed be at risk. Is it only a matter of time before all aspects of world affairs are controlled by a super-intelligent entity made up of billions of inorganic minds acting in concert? No one is predicting this by 2033, so we believe the internal auditor in 10 years' time will still be its own entity and will be a human and not an AI.

What does all this mean for the future of internal audit itself? From the results of the survey and the thoughts of the writers on the future of internal audit, it can be summarised that today, only a small percentage of internal auditors (respondents) agree that there will not be major changes in internal audit in the future. Drastic changes will and are needed, not only because of AI but also because the use of AI should be integrated into internal auditing immediately. Therefore, the first suggestion of this chapter is that we need to increase the proportion of internal auditors who believe that there will be major changes in internal auditing in the future and that AI is important for internal auditing both as a tool and as a risk that needs more attention from internal auditors. We all need to join in this thinking, including those who believe that change is not expected or currently perceptible or that it is too far away for them to think about today. Those who will be retired at that time will still have a significant dependence on society and how it works because pensions, healthcare, culture, etc., will not exist without our descendants and the environment (the state).

It is inevitable that we think about internal audit in 2033 today. Thinking about the future is not easy. There are many versions of the future and many unknowns, but without trying to know them, we know we are on the wrong track. AI is not a bad thing. AI will make internal audit different, better and hopefully more accepted by stakeholders. AI has and will shape the future of internal audit. The report of AuditBoard highlights huge opportunities for internal audit in two main directions: integrating AI into internal audit processes and providing guidance and assurance to organisations (AuditBoard, 2023). AI tools such as ChatGPT are presented as capability multipliers that can improve planning and decision-making. The report encourages internal auditors to educate themselves on the potential of AI, as top talent expects organisations to take advantage of next-generation AI technologies.

Chambers (2024) believes that internal auditors need to change if they are to survive. Changes in internal auditing can be predicted through 7 strategic risks that internal auditors need to be alert to in the future. These are (Chambers, 2024):

1) **failure to attract and retain talent** – this risk ranked first among US internal auditors. It is not surprising, given the general shortage of talent in overheated economies around the world. However, this risk also reflects the challenges (as many other strategic risks show) of recruiting and retaining skills that are critical to the mission of the profession – especially technology.

2) **inability to make effective use of technology** – as with the talent risk, the ability to leverage technology in the delivery of the internal audit mission remained second place in each of the surveys. Leveraging technology solutions is no longer considered a leading practice in the profession. Instead, it has become essential for delivering value and meeting stakeholder expectations. Nevertheless, the importance of this risk reflects the realisation that we still have much work to do to harness the power of technology, as internal audit is still under-active.

3) **failure to use AI as a multiplier of capacity** – in the past year, we have witnessed a stunning acceleration in the adoption/expansion of AI. It is, therefore, not surprising that the profession's ability to harness AI is now seen as a strategic imperative. Generative AI presents enormous opportunities for the profession, but today, "no more than 10% of internal auditors use generative AI in any way in their work, and 50-75% do not. Every internal auditor should strive to explore or implement at least generative AI in internal audit". This is a strategic risk that will not go away.

4) **lack of IT expertise** – this strategic risk is different from No 2. Here, internal auditors acknowledge that we lack skills and expertise in auditing technology risks. The gap is likely to widen as the risks of AI in our organisations become more pronounced.

5) **failure to identify critical risks** – not surprisingly, this continues to be seen as a strategic risk. Fortunately, it is no longer to be seen in the top three. However, for those internal audit departments that fail to assess and address the critical risks facing their organisation, this risk can be existential,

6) **stakeholder audit/oversight fatigue** – the first quarter of the 21st century is almost in the history books. One of the key trends in the corporate sector has been the proliferation of second and third lines of defence and risk management functions such as compliance and even internal audit itself. Some industries, such as financial services, have seen exponential growth in these functions. For internal audit, the risk is the inability to differentiate the value we provide from that of second-line functions. Stakeholder fatigue refers to the risk that our stakeholders will not support us (especially in times of economic crisis) because they believe there are "too many supervisors and not enough practitioners".

7) **failure to identify emerging risks** – the profession remains concerned that challenges in identifying emerging risks will lead to inevitable "where has the internal auditor been" moments. It is striking that this risk has diminished at a time when risk chaos and uncertainty have never been greater.

In conclusion, in the future, internal audit needs to be better able to present itself to stakeholders and thus also act as a key player in helping organisations to identify and understand the use of AI risks, advise on processes and governance, monitor regulatory progress and provide assurance on compliance readiness. Internal audit should not hesitate to invest in AI as it represents a tremendous opportunity for the profession, without which its very existence may be threatened.

Do not turn a blind eye; be bold. AI and all future technologies and changes will have both good and bad implications for internal audit, and we need to understand both if we are to help manage risk and add knowledge and value to our profession and our organisation. Be brave and start with the future today, and let us hope AI does not turn our blue screen on.

References

Abdelli, M. E. A., Youssef, W. A.-B., Özgöker, U., and Slimene, I. B. (Eds.). (2021). *Big Data for Entrepreneurship and Sustainable Development* (1st ed.). CRC Press. https://doi.org/10.1201/9781003090045

Amodei, D., Olah, C., Steinhardt, J., Christiano, P. F., Schulman, J., and Mané, D. (2016). *Concrete Problems in AI Safety*. Retrieved March 29, 2024 from https://arxiv.org/pdf/1606.06565.pdf. Open Document.

AuditBoard. (2023). *2024 Focus on the Future Report: Widening Risk Exposure Gap Demands Internal Audit Transformation*. Retrieved March 29, 2024 from https://www.auditboard.com/resources/ebook/2024-focus-on-the-future-report-widening-risk-exposure-gap-demands-internal-audit-transformation/

Chambers, R. (2016, January 11). *Internal Audit: More than Brakes, It's Part of the Navigation System*. Audit Beacon. Retrieved March 29, 2024 from https://www.richardchambers.com/internal-audit-more-than-brakes-its-part-of-the-navigation-system/

Chambers, R. (2022, December 1). *2023 Focus On the Future Report, Internal Audit Must Accelerate Its Response in Addressing Key Risks*. AuditBeacon. Retrieved April 17, 2024 from https://www.richardchambers.com/news/2023-focus-on-the-future-report-internal-audit-must-accelerate-its-response-in-addressing-key-risks/

Chambers, R. (2024, January 17). *7 Strategic Risks That Threaten the Future of Internal Auditing*. Audit Beacon. Retrieved March 29, 2024 from https://www.richardchambers.com/7-strategic-risks-that-threaten-the-future-of-internal-auditing/

Chen, J., Viardot, E., and Brem, A. (2019). Innovation and Innovation Management. In J. Chen, E. Viardot, A. Brem (Eds.). *The Routledge Companion to Innovation Management* (1st ed., pp. 3-16). Routledge.

Deloitte. (2018). *Internal Audit 3.0. The Future of Internal Audit is Now*. Retrieved March 29, 2024 from https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-internal-audit-3.0-the-future-of-internal-audit-is-now.pdf. Open Document.

Deloitte. (n.d.). *Adopting Automation in Internal Audit. Using Robotic Process Automation and Cognitive Intelligence to Fortify the Third Line of Defense*. Retrieved March 29, 2024 from https://www2.deloitte.com/us/en/pages/risk/articles/internal-audit-robotic-process-automation-adoption.html. Open Document.

Ex Machina. (2014). http://www.imdb.com/title/tt0470752/

Fox, W. (n.d.). *2033 Predictions: Future Timeline: 2033 Technology Trends: 2033*. Retrieved March 30, 2024 from https://www.futuretimeline.net/21stcentury/2033.htm

Franco, A. (2021). The Future of Auditing: A Critical Review. *Malaysian Journal of Business and Economics*, *8*(2), 91-92. https://doi.org/10.51200/mjbe.vi.3665

Griffin, O. (2019). *How Artificial Intelligence Will Impact Accounting*. ICAEW. Retrieved April 17, 2024 from https://www.icaew.com/technical/technology/artificial-intelligence/artificial-intelligence-articles/how-artificial-intelligence-will-impact-accounting

Inception. (n.d.). https://en.wikipedia.org/wiki/Inception

Kristensen, I., Manocaran, M., Sannini, E., and Usman, H. (2021, February 18). *Building the Internal-Audit Function of the Future*, McKinsey & Company. Retrieved March 30, 2024 from https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/building-the-internal-audit-function-of-the-future

Lenz, R., and Hoos, F. (2023). The Future Role of the Internal Audit Function: Assure. Build. Consult. *The EDP Audit, Control, and Security Newsletter*, *67*(3), 39-52. https://doi.org/10.1080/07366981.2023.2165361

Lenz, R., and Jeppesen, K. K. (2022). The Future of Internal Auditing: Gardener of Governance. *The EDP Audit, Control, and Security Newsletter*, *66*(5), 1-21. https://doi.org/10.1080/07366981.2022.2036314

Matis, C. D. (2015). The Future of Internal Audit. *Annals – Economy Series*, *1*(1), 194-197. Constantin Brancusi University. Faculty of Economics.

McCafferty, J. (2023, November 20). *New Report Considers the Future of Internal Audit*. Internal Audit 360. Retrieved March 30, 2024 from https://internalaudit360.com/new-report-considers-the-future-of-internal-audit/

Mookerjee, J., and Rao, O. R. S. (2021). A Review of the Robotic Process Automation's Impact as a Disruptive Innovation in Accounting and Audit. *Turkish Journal of Computer and Mathematics Education*, *12*(12), 3675-3682.

Rausenberger, R., and Prenrecaj, K. (2017). Audit 4.0- Digitale Wirtschaftsprüfung: Der Einsatz von Innovativen Technologien Verändert Abschlussprüfung und – prüfer. Expert *Focus*, *11*, 779-783. Retrieved March 30, 2024 from https://www.pwc.ch/de/publications/2018/Expert_Focus_Digitale_Wirtschaftspruefung.pdf. Open Document.

Quantumrun. (n.d.). https://www.quantumrun.com/

SAP AG. (2009). *A Look Into the Future: The Next Evolution of Internal Audit: Continuous Risk and Control Assurance*. Retrieved March 30, 2024 from https://www.iia.nl/SiteFiles/CRCA%20Final.pdf. Open Document

Savage, N. (2023, February 24). *Why Artificial Intelligence Needs to Understand Consequences*, *Nature*. Retrieved April 02, 2024 from https://www.nature.com/articles/d41586-023-00577-1

Tal, D. (n.d.). *Automation Is the New Outsourcing*. Quantumrun. Retrieved March 29, 2024 from https://www.quantumrun.com/Macro-prediction/automation-new-outsourcing-future-work-p5. Open Document.

The Institute of Internal Auditors (IAA Global). (n.d.). *Internal Audit: Vision 2035*. Retrieved March 30, 2024 from https://www.theiia.org/en/internal-audit-foundation/latest-research-and-products/ia--2035-project/

World Economic Forum. (2020). *The Future of Jobs Report 2020*. Retrieved April 02, 2024 from https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf. Open Document.

Year 2031. (n.d.). https://www.futuretimeline.net/21stcentury/2031.htm