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Information technologies as one of the important factors in the development of the effectiveness of internal audit

Abstract

Object: The main idea of the research work is to define the usage of information technology concept of internal audit in the commercial organisations in Kazakhstan and its impact on the effectiveness of internal audit. There were many reasons to switch to a new way of working: pandemic during COVID 19, new IT technologies and also new market demands.

Methods: The collected theoretical and practical data were analysed using the SWOT analysis and structuring information.

Findings: IT transformation in the business after pandemic reveals new opportunities for internal audit, however at the same time it opens up new technological risk which lead to new threats. So the internal audit should decrease the risk to the acceptable level, the article offers several ways to mitigate these risks.

Conclusions: Remote audit will not be able to replace the on-site audit; however, the transformation has started. It was caused not only due to pandemic reasons, but also due to the the development of the market and information technologies.

Keywords: internal audit, commercial organisations, information technologies, internal audit development, digitalization, effectiveness of internal audit, SWOT analysis.

Introduction

The whole world is living in rapidly changing environment, more and more different risks are arising in today's lives. COVID, political issues in the country where business operates and even problems and events in neighboring countries have a crucial effect on the organizations' working process. COVID had distractive effect on business and at the same time it opened new opportunities for using innovative technologies, online work, and brought some positive changes in each organization (Albegova & Vasyutkina, 2022).

Taken into consideration all the above technology environment and technologies themselves are becoming more and more commonly used in entities, accompanying by other risks such as cyber security issues, what type of technologies organization should use and what technologies will have the greatest effect on organizations' performance. It is also the issue for internal auditor departments in the organizations. As they need regularly to reassess these new types of risks using advanced technology as the volume of information and data processing is also increasing (Ramazanova & Nurgaliyeva, 2022).

Growing global digital reach makes feel necessity for transfer from traditional methods of internal audit work to modern one. Digital services in internal audit incorporate different types of high-tech programs, software, new forms of report and ways of its delivery to stakeholders. So, innovation technologies research in internal audit area is highly relevant.

This research paper provides with the ongoing state of affairs and its analysis in Kazakhstani commercial organizations and organizations that provide services of internal audit on outsource/co-source basis. New challenges such as COVID, political events in Kazakhstan and outside introduced application of new methods which also allows to provide its assessment based on SWOT analysis.

The research question if there are new technologies used by internal audit and to perform SWOT analysis on assessment of the strengths and weaknesses, opportunities and threats of the technology development in the internal audit functions.

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Literature Review

Technology does not stand still and in addition changes our lives, science and all areas of life, including internal audit sphere. In addition, COVID, online live during the last two years gave a strong push to its development and usage in people and organizations' everyday life. Even if there were organizations that did not want to introduce new methods were forced to apply, adapt and start to use IT features and changed their way of work.

Even before all the global events, there were some studies that showed the positive correlation between information technology usage and effectiveness in the internal audit (Bierstaker et al., 2001; Meyyappan & Lee, 2011). Information technology and its proficiency are essential for internal audit process (Henderson III et al., 2013).

There are a lot of ways how information technology can be used in the internal audit and at the same time there are many applications, software and programs that help to facilitate the information processing such as Alteryx, power BI, Spreadsheet Auditor, Excel Smart Tools Auditor and other audit packages. In addition, there are computer assisted auditing techniques (CAATs) that helps to increase productivity and improves the internal audit functions. All the above mentioned tools can help on each stage of internal audit (Pedrosa & Costa, 2012).

Management of the organizations allows internal audit to use new software technologies and expects its work to be higher quality. There was a research that found the correlation between the importance of technology usage and performance of internal audit; in addition there was a positive relationship between management support and internal audit effectiveness (Alkebsi & Aziz, 2017).

It was found that there was a low level adoption of new technologies in the internal audit (Smidt, 2016). However, organizations have a demand for auditors with adequate IT skills in a current business environment where technologies are a driven factor (Le Grand, 2013). Previous researchers found that information technology improves efficiency of the departments in organizations and even has a positive side effect giving the prestige to the organization for its usage (Yam et al., 2004; Curtis et al., 2009).

Technology helps to accurate recalculation and check the information in financial statements (Pedrosa & Costa, 2012). Organizations that use technology can have competitive prevalence. The effectiveness of internal audit can change due to the quality of used innovation technology (Yam et al., 2004). The technology includes electronic data processing and this also had effect on the style of business performance and managerial process (Lin et al., 2006).

However, the management and internal audit staff should always assess what type of technology to use in its working process and provided cost and benefit analysis, security check before starting to integrate all these new technologies (Alkebsi & Aziz, 2017). If the IT will not be on high quality, it can have effect on the whole organization and be risky.

Nowadays IT can cost to organization a lot of money, it is one of the major investments and management with internal audit should evaluate whether they get value from its IT software. Mostly there is requirement and need for IT for public organizations due to international standards, laws and regulations specification, for example the Sarbanes-Oxley Act (SOX). There are no strict requirements from Kazakhstani legislation, however it is known that international practice can be implemented very soon. So the organizations should assess, design and implement all procedures regarding new and existing IT software and applications. This process was speeded up by Covid-19, as many organizations were forced to adapt to significant changes. The most significant one in the internal audit was remote work.

Earlier the employees from the internal audit department mostly sat in conference rooms or its own cabinets looking through and checking the financial reports, documentation physically. In the beginning of pandemic it could not be imagined any other way how the work could be performed. It seemed that online work is impossible and could not bring the same value as offline work. This change exposed a problem and the working process had to be rethought so that accountants and auditors – all organizations' employees could access, create, analyze and work with the primary documents. Here came the solution of using clouds, drives with the permission to edit files online and these files could be used, reviewed by several users. As example it could be Google applications (including Google documents, drive and Gmail itself), Dropbox, our Kazakhstani web-site and application egov.kz, where easy to obtain official documents, doculite.com can be used to sign documents and other relevant application and documents.

Additionally, one of the services is the Blackline systems; they provide software for the audit and accounting spheres. Blackline system had an online webinar in December 2021 and collected data about implementation of additional controls during the pandemic period among the participants. 50 % of participants

introduced at least one new IT control, 32 % did not know and only 18 % did not introduce any other additional control (Metzler, 2021).

Automation and implementation of IT technologies are one of the best methods to mitigate risks that come from manual process and remote audit work. Examples could be reducing dependence on the spreadsheets, centralize documentation and control, modernize and improve internal processes and increase the transparency of internal controls. Automation of internal audit process should start from the area where obstacles exist, so again these are manual spreadsheets, large amounts of data that exist on paper, or data stored electronically but in different locations. So, at least data storage needs to be automated.

During pandemic it was identified that organizations do not have one centralized location where all controls, policies, and procedures are stored. This was the first step in applying technology. Documents are needed for verification certain transactions, but they are located in different offices and departments and cannot be accessed remotely. So, organizations should use internally created clouds or use the global services, like Google that includes drive service. Corporate system like Google can cost a lot, but it is very thoughtful and modern program, however only large organizations with good budget can afford it.

Most organizations that are on the path of digital transformation do not have a comprehensive IT/ digital program and just implement some IT/digital solutions. In the context of full-scale digitalization, Kazakhstani organizations lack the maturity of existing business processes and competent experts.

To address these problems state program “Digital Kazakhstan” was introduced. Three main directions of the state program “Digital Kazakhstan” are:

- the development of a reliable, affordable, high-speed and secure digital infrastructure;
- the development of a creative society, the development of competencies and skills for the digital economy, improvement of the digital literacy of the population, training IT specialists for industries;
- the digital transformations in the economy sectors, the widespread introduction of digital technologies to increase the competitiveness of various sectors of the economy (Electronic government of Kazakhstan, n.d.).

The Figure 1 shows the digitalization of economic sectors in Kazakhstan as of 2021:

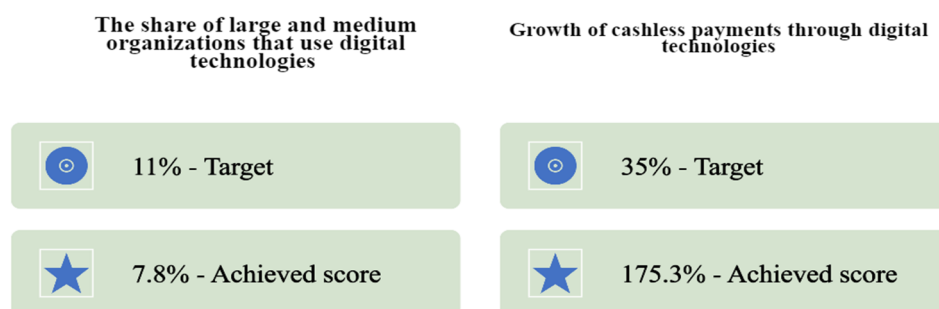


Figure 1. The digitalization of economic sectors in Kazakhstan as of 2021

Note: made up by author on a basis of (Electronic government of Kazakhstan, n.d.).

The use of information technologies in the activities of a commercial organization avoids many risk factors including the minimization of the human factor. The human factor is one of the main problems of all information technologies. According to the results of the state program “Digital Kazakhstan” the human capital development in Kazakhstan can be seen on the Figure 2.

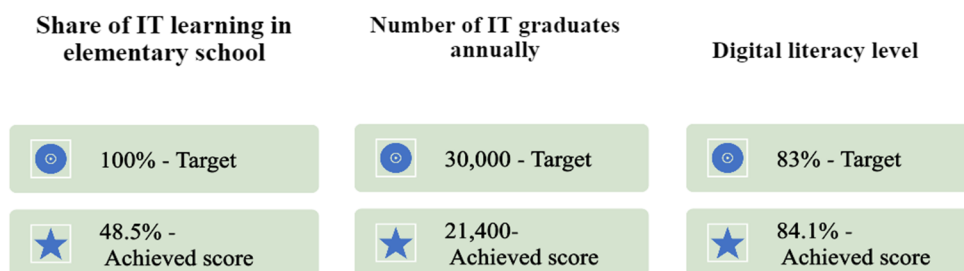


Figure 2. The human capital development in Kazakhstan as of 2021

Note: made up by author on a basis of (Electronic government of Kazakhstan, n.d.).

Human factor error includes negligence that can have effect of fatigue or even fraud and lead to the bankruptcy of organization. Earlier 5-10 years ago personnel were a core of organizations development, but now technology is a basis of a commercial organization. Nowadays global investment includes research in the area of artificial intelligence, big data processing technologies and other start-ups technology.

In order to eliminate such type of risk factors, it is necessary to build strong internal control using specific technologies (Adejumo, 2019). There is number of such technologies, one of them, digital analysis allows to select documents for verification using different parameters on the random basis to investigate certain errors and inconsistencies. This program helps to reduce human judgment and bias and really perform investigation on haphazard or random basis.

In addition, there is big data technology that allows organization to work with a large volume of information (financial transactions, customer data, accounting, contracts, etc.) This technology allows to store, process and analyze information about all types of activities of organizations. So the time for any types reports preparation can be significantly reduced. It should also be taken into account that the digitalization of any organization requires significant financial investments, so there is an investment risk.

Nowadays, data analysis using artificial intelligence and machine learning is gaining popularity. It is not the only way to used data analysis in the business. If the system is set up to recognize the correct forms of primary documents and integrate with accounting or audit information systems it will reduce the manual work of its registering, verifying and storing. Measures to improve the primary accounting and data processing lead to better internal auditing within the organization.

From foreign experience in the implementation of digital platforms in the commercial sector had a success, just need to take into account the readiness of the IT market in the country. Also, the market itself must have a large number of participants, both suppliers and consumers. The platform infrastructure for all market participants must be open and have a very low entry.

Kazakhstan started to implement the development of information system and forced small and medium enterprises to develop its own IT systems. Primary accounting is an integral part of the information system and the basis of internal control, and first of all it is necessary to improve and automate the accounting of basic documents. Kazakhstan launched the process of obtaining and submitting basic (main) documents like Electronic Invoice and Electronic Certificate of Completion of Works and Services. These documents serve as evidence of the business transactions and it is part of the primary accounting documents, however, they can be enclosed both in paper and in electronic form.

The basis for issuing Electronic Invoice when selling services is Electronic Certificate of Completion of Works and Services. The online transfer of the Electronic Invoice and Electronic Certificate of Completion of Works and Services between counterparties is carried out using the state information system "Electronic Invoice" (IS EI). The ability to send and receive electronic documents extends to the use of various control systems based on simple algorithms, such as data verification. The main goal here is to check the incoming electronic document according to certain criteria (Zakon Respubliki Kazakhstan, 2022).

Due to the technological growth organizations are becoming more vulnerable. The growing dependence on computers, networks, programs and applications have a side effect too. The transition to a digital economy implies not only the introduction of efficient business models, but also the revision of historically traditional IT control applications in favor of information protection systems that provide cyber security guarantees.

Methods

SWOT analysis was used as a method to analyze and identify the advantages and disadvantages of information technologies in the process of internal audit. International and Kazakhstan reports about the usage of information technology were used as a methodological basis of the research. Content analysis helped to summarize the information obtained.

Results

SWOT analysis helped to understand the development of the information technologies usage in internal audit and analyze its pros and cons, side effect and areas for the development. The whole analysis was included in the tables, the Table 1 shows the strength of the usage of information technologies in the internal audit, Table 2 describes the weaknesses, Table 3 contains information about the opportunities and Table 4 illustrates the threats of the usage of information technologies in the internal audit.

Table 1. Strength of the usage information technologies in the internal audit

| Title | Description |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access to data of organization from any place and any time | It can save time and money. The use of a remote (online) audit will significantly reduce the cost of money and travel time to the office, free conference room (do not occupy it), less business trips. |
| Avoid bad places (inhospitable, inauspicious, inimical unfavorable places) | Outsourced internal audit or centralized internal audit (located in head office and not attending other branches) maybe due to of epidemiological conditions, political considerations, geographic location (too far or hard to reach), health and safety considerations. The use of remote (online) audit avoids these obstacles. |
| Increased efficiency of internal audit procedures | The efficiency of remote (online) internal audit will be greatly improved and the time required to complete the task will be reduced. |
| <i>Note – compiled by the author</i> | |

Table 2. Weaknesses of the usage information technologies in the internal audit

| Title | Description |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical problems | Remote audit is highly dependent on the Internet and IT hardware. If there is a problem with network or other technologies that are especially needed for certain tasks, the remote (online) audit will not be performed. |
| Communication problems with other departments of the organization | When the auditor performs a remote (online) audit, he may need the participation of the relevant personnel of the other organization's departments. If this needed person does not pay enough attention, it will not be possible to conduct a remote (online) audit. |
| Credibility problems | It could be easy to hide issues in the remote (online) audit process. Remote communication, especially non-verbal communication, does not reveal the kind of hidden information that can be obtained in an on-site interview process, which can be very important to the auditor's judgment. |
| Knowledge and Skills problem | Specific information and communication technologies need to be used for remote (online) auditing. If auditors lack experience in using these technologies and there is no sufficient and effective technical training, auditors may not be able to gather sufficient audit evidence. |
| Risks of remote auditing | Due to the high dependence of remote auditing on electronic data, network communications and information software, auditors should pay special attention to the risks inherent in remote auditing. Such risks include the security of data transmission and storage, the authenticity and integrity of the data itself, the reliability of information tool software, the suitability and effectiveness of audit procedures and the collection of audit evidence, and compliance with confidentiality obligations and other professional integrity requirements. |
| High costs | Using technologies can require investments, additional funds to hold, update the programs. Cost and benefit analysis should be performed. |
| <i>Note – compiled by the author</i> | |

Table 3. Opportunities of the usage information technologies in the internal audit

| Title | Description |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standardization of auditing procedures | Increasing the efficiency via standardization of procedures |
| Digitally maintain database | To have databases with certain categories of business information |
| Introduce new areas (online consultations) | Remote auditing can create new opportunities for online consultations to other departments. In case of outsourced internal audit – online consultations to other organizations. Auditors can provide consulting services on how to set up financial software, implement effective system security controls and improve the existing financial management model, and comprehensively confirm the integrity, authenticity and reliability of online business in accordance with standards. |
| Cooperation between internal auditors and other departments | More effective and efficient communication between auditors and departments. |
| Collection and processing information in real time | No need to wait till the end of reporting period, internal auditors can collect, review and check information at once it appears in the system. |
| <i>Note – compiled by the author</i> | |

Table 4. Threats of the usage information technologies in the internal audit

| Title | Description |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Information technologies has a limited life time | Any used technologies can have a very short life span, so benefit-cost analysis should be done before introducing new IT systems. |
| Dependence on third parties, outsourcing of usage IT contains operational risks | Some IT systems can be outsourced, as not internally generated new risks appeared to cyber attack or loss information. Before attracting 3 rd parties detailed analysis should be performed and check the safety of the programs. |
| IT usage has a location risk: natural phenomena (floods, fires, earthquakes) and criminal activities can harm the organizations' operations | Control mechanisms should be introduced to mitigate risks, like the security measures and backup systems to avoid financial data loss and operational disruptions |
| Dependence on information technology has direct relationship with information security | Information security includes confidentiality of data, additional security policies, software, programs, biometric check and digital signatures should be implemented in order to decrease the risk. |
| Ineffective legal regulations and supervision on the Internet | Technologies are developed rapidly, no adequate laws and regulations in case of information losses or any other disruptions via Internet. |

Note – compiled by the author

Discussions

SWOT analysis showed the above results regarding the technologies and digitalization of internal audit services in organizations. The remote mode of internal audit operation currently should be performed with on-site auditing together and should not affect the quality of the internal audit. Remote audit cannot replace all internal audit procedures, there are some that cannot be shifted (e.g. inventory, PPE stock take; management inquiries).

Auditors should be fully aware of the limitations of remote auditing, check the availability and reliability of the electronic data and update audit strategy and plan based on its results. For processing data, internal auditors will need modern online (remote) working environment for auditors. Development of such remote working environment requires the development of the information system that could include the entire audit process from the plan to the report.

Such system should be constructed based on the advanced network technology with high safety control with a set of modern computer equipment and powerful system software. The main software program can be developed independently or outsourced. A prerequisite for the development of the main audit software is the understanding the accounting software and the possibility of its integration. The best option is a universal software that can work with all accounting system. However, it could not work with complex program that have huge information volume (thousands of transactions).

Such audit software should be accessed and used at any time during the audit. It can greatly reduce working time and improve audit efficiency. The program can contain a library of internal audit procedures suitable for the organization, in accordance with the requirements of auditing standards and experience, which not only helps to guide the auditors, but also contributes to the standardization of the organization's audit work.

In the Table 4 “Threats of the usage information technologies in the internal audit” the audit risks were described. In the context of information technology, the audit is faced not only with the ordinary risks, but also with network security, which creates new risks for the audit. During remote audit the security and reliability of network information became the subject of preventing and controlling audit risks. So the auditors should understand the system and timely check and verify the software. If there are loopholes in the system, this will lead to losses. The participation of auditors in the development of systems contributes to the elimination of errors at an early stage.

Auditors need to have sufficient knowledge of information technology and it is the main key to successful implementing remote auditing. Currently, the biggest problem faced by auditors is the lack of qualified specialists who are computer savvy and familiar with audit work (Ramazanova & Lambekova, 2022). Therefore, it is necessary to appropriately include information technology in future qualification and preparation of comprehensive experts based on staff training. Additionally, strengthen audit theory research, relevant standards, laws and regulations can help to develop efficient remote internal audit.

Conclusions

Such events like pandemic, remote work can have negative or positive impact, or even both effects. Events with a negative impact represent risks, which can prevent value creation or erode existing value. Events with positive impact may offset these negative impacts or show the opportunities. SWOT analysis helped to identify strength, weaknesses, new opened opportunities and threats to internal audit in relation of new technologies and rapid digitalization.

Due to the development of information technology, more organizations start to implement computerization/digitalization of accounting and networking. Additionally, improvement of the corporate system, communication between organizations and external parties such as customers, suppliers, financial institutions, etc. are also starts to carry out through the network. All this requires the internal audit also to extend into “cyberspace” to monitor the organizations’ business in real time, which can only be realized by remote auditing with the help of Internet.

On the other hand, the development of the market and new terms of the business also require the introduction of a remote audit. Investors, stakeholders and those charged with governance need timely, relevant and reliable information, which requires organizations to improve the efficiency and quality of internal audit and process a large amount of information in a short time. Therefore, remote auditing is not only a result of the pandemic, but also a necessary requirement for audit modernization in the area computer and network technologies development.

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**Ақпараттық технологиялар ішкі аудит тиімділігін дамытудың
маңызды факторларының бірі ретінде**

Аңдатпа:

Мақсаты: Зерттеу жұмысының негізгі идеясы Қазақстанның коммерциялық ұйымдарында ішкі аудиттің ақпараттық технологияларын пайдалану тұжырымдамасын және оның ішкі аудиттің тиімділігіне әсерін айқындау. Жаңа жұмыс форматына көшудің көптеген себептері болды: COVID-19 кезіндегі пандемия, жаңа IT технологиялары, сондай-ақ нарықтың жаңа сұраныстары.

Әдісі: Жиналған теориялық және практикалық деректер SWOT талдауы мен ақпаратты құрылымдау арқылы талданды.

Қорытынды: Пандемиядан кейінгі бизнестегі АҚ-трансформация ішкі аудит үшін жаңа мүмкіндіктер ашты, бірақ сонымен бірге жаңа қауіп-қатерлерге әкелетін жаңа технологиялық тәуекелдерді де ашты. Осылайша, ішкі аудит тәуекелді қолайлы деңгейге дейін төмендетуі керек, мақалада осы тәуекелдерді азайтудың бірнеше жолы ұсынылған.

Нәтижелер: Қашықтағы аудит жергілікті аудитті алмастыра алмайды; дегенмен, трансформация қазірдің өзінде басталып кетті. Бұған пандемия ғана емес, сонымен қатар нарық пен ақпараттық технологияның дамуы себеп болды.

Кілт сөздер: ішкі аудит, коммерциялық ұйымдар, ақпараттық технологиялар, ішкі аудитті дамыту, цифрландыру, ішкі аудиттің тиімділігі, SWOT-талдау.

К.М. Рамазанова, А.М. Нурғалиева

**Информационные технологии как один из важных факторов
развития эффективности внутреннего аудита**

Аннотация

Цель: Основная идея исследовательской работы заключается в определении концепции использования информационных технологий внутреннего аудита в коммерческих организациях Казахстана и ее влияния на эффективность внутреннего аудита. Причины перейти на новый формат работы было много: пандемия во время COVID–19, новые IT-технологии, а также новые запросы рынка.

Методы: Собранные теоретические и практические данные были проанализированы с использованием SWOT-анализа и структурирования информации.

Результаты: IT-трансформация в бизнесе после пандемии открывает новые возможности для внутреннего аудита, однако в то же время она открывает новые технологические риски, которые приводят к новым угрозам. Таким образом, внутренний аудит должен снизить риск до приемлемого уровня, в статье предложено несколько способов снижения этих рисков.

Выводы: Удаленный аудит не сможет заменить локальный аудит, однако трансформация уже началась. Это было вызвано не только причинами пандемии, но и развитием рынка и информационных технологий.

Ключевые слова: внутренний аудит, коммерческие организации, информационные технологии, развитие внутреннего аудита, цифровизация, эффективность внутреннего аудита, SWOT-анализ.

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