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THE ROLE OF ARTIFICIAL INTELLIGENCE IN TRANSFORMING INTERNAL CONTROL WORKFLOWS

(İÇ KONTROL İŞ AKIŞLARININ DÖNÜŞÜMÜNDE YAPAY ZEKANIN ROLÜ)

Lale ASLAN[1]

ABSTRACT

Internal control systems rely heavily on well-defined workflows and procedures in business operations. The fundamental components of internal control systems encompass policies, procedures, and workflows, impacting various aspects such as the accurate establishment of internal controls, employees' adeptness in their application, defining authorities correctly, and ensuring business sustainability. This significance is further underscored by incorporating these elements into internal control standards and relevant legislation. The absence of documented internal control flows directly contributes to audit findings in numerous public institutions and private organizations. Therefore, this research highlights the critical role of policies, procedures, and workflows in internal control. It aims to explore the attributes of artificial intelligence applications across multiple dimensions to emphasize their potential in bolstering internal control systems. This study underscores the significance of internal control processes, emphasizing their crucial role in daily operations and the potential benefits of artificial intelligence in streamlining these processes, thereby making the audience feel the importance of their work.

Keywords: Internal Control, Artificial Intelligence, Control Standards, Internal Audit

JEL Classification: M40, M42

ÖZ

İç kontrol sistemleri, iş operasyonlarında iyi tanımlanmış iş akışlarına ve prosedürlere büyük ölçüde dayanmaktadır. İç kontrol sistemlerinin temel bileşenleri, iç kontrollerin doğru bir şekilde kurulması, çalışanların bunların uygulanmasındaki ustalığı, yetkilerin doğru bir şekilde tanımlanması ve iş sürdürülebilirliğinin sağlanması gibi çeşitli yönleri etkileyen politikaları, prosedürleri ve iş akışlarını kapsar. Bu önem, bu unsurların iç kontrol standartlarına ve ilgili mevzuata dahil edilmesiyle daha da vurgulanır. Belgelenmiş iç kontrol akışlarının olmaması, çok sayıda kamu kurumu ve özel kuruluştaki denetim bulgularına doğrudan katkıda bulunur. Bu nedenle, bu araştırma, iç kontrolde politikaların, prosedürlerin ve iş akışlarının kritik rolünü vurgulamaktadır. Bu makale yapay zekâ uygulamalarının niteliklerini, iç kontrol sistemlerini güçlendirme potansiyellerini vurgulamak için birden fazla boyutta keşfetmeyi amaçlamaktadır. Bu çalışma, iç kontrol süreçlerinin önemini vurgulayarak, günlük operasyonlardaki kritik rollerini ve yapay zekânın bu süreçleri kolaylaştırmadaki potansiyel faydalarını vurgular ve böylece izleyicilere çalışmalarının önemini hissettirir.

Anahtar Kelimeler: İç Kontrol, Yapay Zekâ, Kontrol Standartları, İç Denetim

JEL Sınıflandırması: *M40, M42*

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1. INTRODUCTION

A common point in almost all internal audit, independent audit, and public audit activities is that those who read audit reports encounter a problem with workflow procedures in the area examined in the business - this can be any subject, such as accounting processes, sales department audits, etc. This situation is reflected in many internal audit reports and is an area that finds itself in the warnings and penalties of regulatory authorities.

The reason for examining the workflow procedures of businesses in this study is that the documents in question essentially form the basis of all Governance, Risk, and Compliance (GRC) activities, such as internal audit, internal control, and risk management, and have the nature of a starting point and a foundation, and have found a place for themselves in the relevant legislation. Having policies, procedures, and directives that cover all functions and all areas of authority of the business and contain sufficient depth of information is not only a legislative requirement but also a vital necessity concerning the continuity of the business.

The purpose of this article is to present the current situation regarding workflow procedures, which should have an important place in businesses, by examining the warnings and penalties given by regulatory authorities and then to mention the benefits of artificial intelligence (AI) applications, which are perhaps the decisive technology in terms of many criteria. Regarding workflow procedures, the kind of usage areas AI incorporates, and their potential benefits will be discussed. The importance of AI in improving corporate internal control workflows is emphasized in this paper. It delves into ways to enhance the corporate internal control environment through constitutionalizing and information environments. The insights shared in this discussion are crucial for promoting the use of AI in businesses and strengthening their long-term governance abilities.

Since this subject is included in a study that will also bring the regulation of internal control processes to the agenda, it is thought that it will interest academics and those working in internal audit and internal control departments from various sectors. One of the things that makes this subject interesting is that although policies and procedures are the basis of internal control activities, they have rarely been included in the literature. This does not reduce the importance of the subject; on the contrary, it reinforces it.

This study consists of five parts. First, in the background section, where conceptual explanations are included, topics such as workflow procedures, in which sectors they are prominent, and why they are so important will be discussed. Then, the literature review section will discuss the relationship between artificial intelligence and internal control processes. In the methodology and findings section, the findings obtained after the methods preferred in the research will be presented, and finally, the results will be discussed.

2. CONCEPTUAL FRAMEWORK

The basis of institutionalization in a business depends on procedures and the automation of ways of doing business and putting them on paper. The word procedure means “an established or official way of doing something,” according to the Oxford Dictionary. This short expression also contains a vital issue for a business: “Know-how”. Under normal conditions, the know-how that businesses possess that makes them unique represents the embodiment of the company with how employees do their jobs, in other words, how they do business.

Therefore, it is important to document all the details about how the business is done without skipping any necessary steps. Procedures serve as insurance for businesses in many ways. However, they are generally seen as a chore when employees create them. In terms of this study, evaluating the word “procedure” alone will not yield a sufficient and valid result. Policies, procedures, and workflows should be considered parts of a whole. A policy is a document that should be determined by top management. It is a roadmap that determines the general direction of a business and covers all business dimensions as a guide that will ensure that the business acts in line with its strategic plan, goals, mission, and vision. Procedures are documents created within the policy's scope and the relevant legislative framework and include workflows that explain in detail how the work should be done. To make a comparison, policies tell which task will be done, while procedures tell how each task specified by the policies will be done.

Establishing policies and procedures is so important that they have been stipulated in the relevant legislation to provide assurance and reinforce institutionalization in various sectors. For example, the minimum workflow procedures and policies that brokerage firms and banks operating in the capital market must establish are specified together with their content in the Capital Markets Board legislation. Policies and procedures are given such importance in terms of enumerating the work to be done and in terms of know-how. Workflow procedures have effects in many areas other than this factor. Policies, procedures, and guidelines are documents that serve more than one purpose in businesses. These purposes can be listed as follows:

- To determine the work to be done,
- To determine how the work will be done,
- To determine the duties, authorities, and responsibilities related to the work to be done,

- To ensure internal communication,
- To be used as an internal training document,
- To ensure continuity within the institution,
- To determine the control points and places where precautions should be taken,
- To form the basis for risk management activities,
- To form the basis for information management activities,
- To be audit evidence for internal audit, independent audit, and public audit,
- To be used in determining criteria for performance measurement,
- To ensure institutionalization,
- To determine the tone at the top,
- To create a strong control environment.

In businesses, especially if institutionalization is not fully achieved, there may be communication deficiencies between employees. In such a case, even those working in the same team may not know each other's duties. This situation provides the necessary environment for work to be disrupted even under normal conditions and for errors and fraud to occur. Not knowing what work someone does and how they do it not only creates a control gap but also prevents performance evaluations of employees. Imbalances occur in the workload of employees, and employee dissatisfaction increases. In this case, it would not be an exaggeration to say that the workflow procedures prepared with the duties, authorities, and responsibilities will effectively create performance evaluation criteria (Bakan & Kelleroğlu, 2003). Another way of using procedures is to determine the authorities and responsibilities related to these duties. The first stage is determining the duties. After determining the duties and responsibilities, it is determined which authority is appropriate for which duty. In this way, determining the control points becomes easier, and instead of internal control practices being applied by rote in every business, an internal control system suitable for the business's know-how and characteristics is established. Therefore, the foundations of internal communication are also laid. Each unit is informed about employees' organizational duties, authorities, and responsibilities. If one of the employees leaves the job, there is no loss of know-how since all activities are documented. When a new employee starts working, the documents to be used in their training are ready. Providing training becomes easier. The adaptation period of the new employee to the job is shortened; most importantly, this element acts as a precaution to reduce employee turnover.

Since the procedures are documents consisting of instructions that show step by step how the transactions will be carried out, as stated above, they have a key role in terms of internal control systems because of the points at which the transactions should include control. The internal control system is defined in the Capital Markets legislation and is expressed as a set of activities that require the participation of all personnel. According to the Communiqué on the Principles Regarding the Internal Audit System to be Applied in Brokerage Firms (CMB, Series V, No. 68), the internal control system for brokerage firms refers to “the organization plan implemented in the brokerage firm and all the principles and procedures related to these in order to ensure that all the works and transactions of the brokerage firm, including its off-center organizations, are carried out regularly, efficiently and effectively within the framework of the current legislation and rules per the management strategy and policies, to ensure the integrity and reliability of the accounting and recording system, to ensure that the information in the data system can be obtained in a timely and accurate manner, and to prevent and detect errors, fraud, and irregularities.”

2.1 The Importance of Internal Controls in an Organization

The Turnbull Report, published in 1999, defines internal control and its scope by accepting the risks the organization may be exposed to and the responses to them as the internal control system (Kendrick, 2000). There are seven main points created based on this definition:

1. Compliance with laws and regulations
2. Answering risk points of organization
3. Ensuring effectiveness and efficiency in the organization
4. Timely preparation of financial statements
5. Completeness and accuracy of financial records
6. Preventing and detecting fraud and other unlawful acts
7. Safeguarding assets

Strengthening the internal control system will be possible by determining the control points and fulfilling this task by considering the risks the business is exposed to. On the other hand, corporate risk management requires evaluating the risks in question as a whole with a holistic perspective.

Internal control does not start with procedures (İbiş & Çatıkkaş, 2012); however, it is not possible to prove the physical existence of the internal control system without procedures. Of course, the control environment is the primary element of

internal control. However, it is quite common in real life to encounter businesses where it is not determined in writing who will do what. This study describes policies and procedures as the backbone of internal control (Gönen, 2009). The first condition for being able to talk about a controlled environment is that policies and procedures should be written, regularly reviewed, and approved by the board of directors. The Banking Regulation and Supervision Agency (BRSA) also states that this issue is an inseparable part of the internal control system. It is also emphasized that policies and procedures should be constantly updated (Elitaş & Özdemir, 2006). Despite this, most businesses do not make any updates once they have created policies and procedures.

Regarding the internal control system, it is not easy for the top management and the board of directors to adopt the motto: Everyone within the organization is involved in internal control within their specific responsibilities (Akyel, 2010). For this purpose, although the duties and responsibilities regarding internal control are specified quite specifically and clearly, the penalties imposed on the Board of Directors members by the Capital Markets Board (CMB) on this issue alone can be quite costly.

The tone at the top indicates the ethical understanding established by the top management and the board of directors, which is a part of the control environment. In public internal control standards, the control environment is "a general framework that forms the basis for the value elements of internal control and includes personal and professional integrity, ethical values of management and personnel, supportive attitude towards internal control, professional competence, organizational structure, human resources policies and practices, management philosophy, and business style". Standard 8 is about determining and documenting procedures (Public Internal Control Standards, www.mevzuat.gov.tr, 7.10. 2024).

Having effective internal controls enables an organization to clearly define its mission, establish goals and a strategy, and experience sustained growth with trust and integrity in all forms of information. According to The Committee of Sponsoring Organizations of the Treadway Commission (COSO)[2], one of the most important indicators of the control environment is determining the distribution of duties and authorities and matching responsibilities with each area of authority (Türedi et al., 2014). Documenting procedures is not a sufficient factor for risk management. This is because the procedures create a risk point (Praino & Sharit, 2016). Control and procedure issues are generally limited to occupational safety and health issues. However, based on the above, documenting workflow procedures is important for all organizations. A scale has been developed to measure the effectiveness of procedures in public auditing. This scale is given below. This table evaluates whether the procedure exists and whether the procedure is used in practice.

The Council of State's 2022 report's audit findings show striking deficiencies in procedures belonging to public institutions. These deficiencies are often the subject of Capital Markets Board audits, both in the public sector and capital companies. In particular, workflow procedures are included in the audit file as checklist items requested by the auditors in every audit as proof of the existence of an internal control system.

2.2. Internal Control Workflows and Their Importance in Information Management

Internal control workflows also have basic features regarding information management in businesses. This section will discuss information management and its relationship to artificial intelligence concepts.

According to The Association for Intelligent Information Management (AIIM), information management is a process that covers all physical and electronic information in a business and includes collecting information from every source in the business and its distribution to the relevant recipients (aiim.org, n.d.). What is specifically meant in this regard is documenting the business's operations and delivering this information to the relevant persons. In this case, simply creating this information will not be enough. At the same time, this information must be stored and delivered to the relevant persons on time (Güçlü & Sotirofski, 2006).

Today, an information/document management system is required to store such documents, and an intranet network is used within the company for their dissemination. These tasks, which seem very ordinary and a chore, are important areas requiring business cost and attention. Keeping this process tight reinforces the support management gives to internal control and forms a part of the "tone at the top". This directly feeds the control environment. In addition, the reason for

[2] COSO is an organization built with the mission of helping organizations overcome challenges concerning fraud, risk management, internal control, and governance issues. COSO has been active in internal control since 1992, when it published the integrated framework on internal control.

the existence of information management is to ensure that the organization and the business produce and obtain data and information, use and develop the information produced and obtained, transfer these to individuals who carry out certain tasks, and, therefore to business processes, and create added value (Özdemirci & Aydın, 2007). The successful implementation of information management will ensure that all explicit and implicit information in an organization is systematically documented. This will increase the information (data) that is the input of artificial intelligence and thus enable resource savings by automating processes with artificial intelligence.

2.3. The Role of Internal Control Workflows in Terms of Information Management

Workflows, which in some cases directly and in some cases indirectly include information within the company, are not sufficient to be written. The first step of information management is workflow procedures. The information and documents available in the company are determined. The next step is to determine the confidentiality levels of the documents and to associate them with the employees' duties, authorities, and responsibilities regarding their positions.

For this purpose, information management systems create workflows correctly and make them accessible to all levels of personnel. They not only provide this but also ensure that internal correspondence is documented. The usability of information management systems is also important. While information management systems have become commonplace in some sectors, such as higher education and hospital management, the information management systems currently used in the financial services sector, which has reached very large dimensions, are either problematic or not used at all.

In this case, there is a gap in information on the subject in the financial services sector and points that will cause many problems in the current information and workflow procedures. This finding is also indicated by Coşkun (2010) as the reason for the lack of development in brokerage firms, which is the lack of institutionalization. As can be seen, the basic institutionalization indicators are workflow procedures and ways of doing business. In addition, there is a relationship between information and quality management systems (Sipahi & Enginoğlu, 2013). Information management systems can also be used as an internal control and risk management tool. The rate of computer technology use in this area is estimated to be quite low. It can be predicted that companies that have not yet implemented information management will have difficulty adapting artificial intelligence to internal control processes.

Since the future of accounting and auditing is heavily associated with artificial intelligence, it is relevant to briefly mention what this concept includes, how it was developed, and how it can be related to internal control procedures.

2.4. The Emergence of Artificial Intelligence

Artificial intelligence, in its most basic form, means applying an algorithm (a problem-solving rule or calculation) to data to detect patterns, decide what to do, and perhaps predict future outcomes (Marr, 2022). Artificial intelligence can be described as an imitation, a copy of the human brain, a program designed to quickly do complex tasks that humans cannot do. It is not yet very successful in imitating humans; rather, the learning process continues. However, it has made significant progress in solving certain problems.

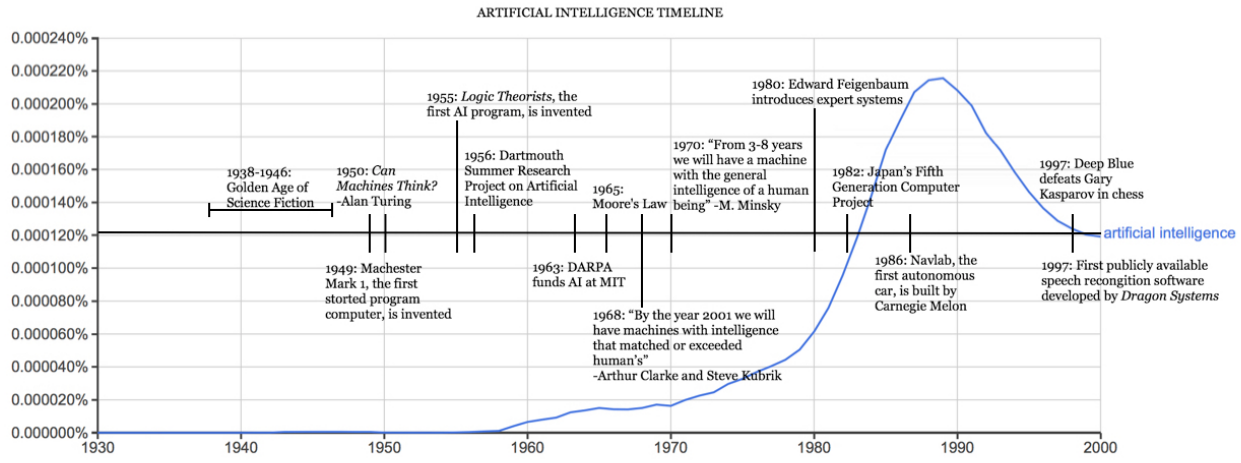
As in every subject, there are supporters and opponents. While Marr (2022) tries to prove that artificial intelligence exists in every field, Dörfler (2023) implies that artificial intelligence is just an advanced calculator that quickly performs complex operations. A brief definition of AI can be expressed as a program built on operating a structure that imitates neurons (nerve cells) functioning in the human brain.

The milestones in the emergence of artificial intelligence are listed in Figure 1 below. According to this figure published on the internet by Harvard University (https://sitn.hms.harvard.edu, 7.10.2024), the idea of artificial intelligence was a fictional product of the science fiction genre of literature until 1946. The Turkish Language Association defines a computer as an "electronic brain." This definition expressed by the Turkish Language Institution is a general definition used for computers since their invention. Such definitions of the past have also stimulated people's imagination, and many examples have been produced in the science fiction genre, explaining how the electronic brain will function and eventually have emotions and consciousness. Finally, science, inspired by science fiction, began to examine the concept of artificial intelligence in the 1950s, with Alan Turing posing the question, "Can machines think?" In the following years, precisely in 1956, the concept of "artificial intelligence" was first used at a conference held at Dartmouth University (The Economist, 2024).

Although the development of artificial intelligence did not progress much in these years, a new wave emerged every ten years until the 2000s (Buchanan, 2005). The development of artificial intelligence was caused by the perception change that occurred in the 1980s, which resulted in the changing definition of artificial intelligence. While the idea of making artificial humans was dominant before, the idea of developing machines that mimic human thinking became dominant after 1980 (Öztemel, 2020).

Artificial intelligence can be defined as the development of generative AI programs such as ChatGPT. As of this date, the fields that include artificial intelligence are image processing, sound processing, text processing, data processing, unmanned driving systems, agriculture and animal husbandry, and cybersecurity. The programs that write internal control procedures can be expressed as artificial intelligence robots specialized in language.

Figure 1. History of AI



https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/

3. LITERATURE REVIEW

The emergence of artificial intelligence in its current sense was with LLM (large language models). Such artificial intelligence applications specialize in performing the tasks of text generation, content summarization, AI assistants, code generation, sentiment analysis, and language translation. The emergence of the LLMs we use today began in 2020 with Open AI's release of ChatGPT-3. Of course, it was previously based on prototypes based on mechanical and technical developments; however, it is possible to determine this date as 2020 in terms of affecting today's ways of doing business. In this respect, it will be seen that the articles to be examined in the literature review section were written after this date. There are approximately 30 articles indexed in the Web of Science written on the subject. Only 10 of these 30 articles are directly related to the relationship between internal control and artificial intelligence. Although this subject is generally a subject of research, the number of indexed articles is not very high yet since it is a developing field. In addition, the research conducted in the Dergipark database again shows a limited number of articles.

The findings suggest that using AI in enterprises to develop internal control workflows will positively influence internal control performance. Internal control systems and external information environments mediate the relationship between AI and the internal control environment. According to Chen and Zhang (2024), using AI in business also enhances a corporation's Environmental Social and Governance (ESG) performance and supports the achievement of sustainable development goals. However, as shown by Crawford and Nilsson (2023), the current usage of AI in enterprises is quite low, highlighting the urgent need for its adoption in business practices.

Currently, the use of artificial intelligence in businesses is increasing, and employees' perspectives on artificial intelligence are gaining importance under these conditions (Bao et al, 2023). According to Novozhilov, et al, (2024) employees are not comfortable with AI's management, which is related to automation levels of the investigated domains. In fact, a study conducted by Commerford et al. (2024) revealed that internal audit employees do not yet trust artificial intelligence in decision-making processes. In this respect, it is seen that applications using artificial intelligence are still

open to development. According to Özyiğit (2023), employees' perspectives on artificial intelligence to be used in internal control systems are positive as their level of education increases.

The areas where artificial intelligence is most used include accounting, internal auditing, internal reporting, which can be briefly described as internal systems. It is expected that the use of regenerative AI in the field of internal auditing will provide significant developments in the field in question. According to Şentürk (2023), it is possible to benefit from the features of ChatGPT, which is also a LLM, in the field of internal auditing, such as creating a risk-based audit plan, obtaining audit evidence with data mining, and making decisions, creating forecasts and reporting. However, sufficient development has not yet been made. It can be predicted that LLMs will be beneficial, especially in determining the combinations of risk points.

The quality of internal systems is measured by the degree of adoption of artificial intelligence and the quality of internal control systems that are related to it (Monteiro, et al. 2023; Li, et al. 2024). Although internal systems are quite suitable areas for the use of artificial intelligence, the fact that not much progress has been made yet despite artificial intelligence being the fastest developing technology type is due to the attitudes of managers (Fu, et al., 2023). However, today's increasing competitive conditions and shrinking markets require businesses to undergo a digital restructuring in terms of cost, business efficiency and technological superiority (Wang, et al. 2022). The main point in digital transformation is that artificial intelligence increases the competitiveness of the business in question by covering internal processes along with service/production processes and reduces costs in the long term. (Benabed, 2024; Ashraf, 2024). In this transformation, businesses need to take into account the functioning of internal systems in addition to their business processes.

There are few studies in the literature on artificial intelligence and internal control. Studies in the literature generally focus on the relationship between accounting and artificial intelligence (Hasan, 2021; Leocádio, et al. 2024). Artificial intelligence provides useful results when used to automate processes used in businesses in every field. For example, according to Obaydin, et al. (2023), internal control processes that include artificial intelligence integrated into accounting processes increase the quality of financial reporting**.**

Data density resulting from big data causes bottlenecks especially in internal systems (Caruso, et al., 2023). Askary et al. (2018) show that Artificial Intelligence embedded in internal control systems allows managers to access high-quality accounting information by reducing risk. One of the factors that increase the success rate of internal control systems of enterprises is the integration of artificial intelligence in the field of identifying increasing risks related to big data environment (Chen, et al., 2021). What will make this integration more valuable is that in the future, regulatory bodies will determine the scope and move towards setting standards in terms of both ethical and usage methods in the adoption of new technologies (Seidenstein, et al., 2024).

4. DATA AND METHODOLOGY

Research method: The research is a case study that includes testing the use of generative AI in writing internal control workflow processes and testing 6 existing artificial intelligence-supported LLM applications that can be used in this field. As a test subject, a cash register transaction procedure created using 2 artificial intelligence applications and 1 man-made cash register transaction procedure that can be used for a business with 1 accounting personnel in a boutique brokerage firm are compared, the point that LLMs have reached within the scope of the workflow process is examined and the benefits they can provide to businesses are investigated. Since other artificial intelligence applications cover almost the same features as the existing ones, the focus of the current study is on 2 artificial intelligence applications. The reason why a boutique brokerage firm was chosen as the scope of the study is that brokerage firms can operate with a small number of employees, they tend to use cash accounts more than banks or portfolio management companies, and despite this, they are under strict supervision by the CMB and since the current internal control system is described in detail in the relevant legislation, it is suitable for a study in this scope.

The importance of the research: Artificial intelligence applications based on “Large Language Models (LLM)” were preferred as the scope of the study. LLMs are classified as highly effective advanced language models in this field. Among the features of LLMs are that they have the capacity to create and summarize text, thus providing support to businesses in saving time and reducing human errors. At the same time, it allows multinational businesses using different languages to eliminate the language barrier. The fast and efficient production of content can be effective in preparing both higher quality and more useful procedures by fitting the procedure preparation process, which would normally take months, into a short period of time such as one or two weeks, the feature of determining risky points can be developed in a way that allows businesses to use it in terms of determining control points, and it becomes possible to enrich the procedures with

company-specific features in terms of the way they are written. Despite all these benefits, it should be noted that artificial intelligence applications are not currently adopted by employees in businesses. It emphasizes the necessity of putting such artificial intelligence applications on the agenda in order to strengthen the internal control system and avoid penalties imposed by regulatory bodies, and contributes to these discussions through a new application phase in the literature on the relationship between internal control and artificial intelligence applications.

Framework and Limitations of the Study: The scope of the study is based on the comparison and examination of LLM-based artificial intelligence applications specifically designed for writing internal control workflow procedures. For this purpose, CoPilot and SweetProcess applications were examined. There are six similar applications, but since these types of applications have almost the same features, the scope of the review was limited to these two applications. The study limitations include the lack of sufficient budget as well as the inability to access the paid versions of the programs examined due to cost constraints. However, this is considered a minor obstacle for businesses that want to receive consultancy on this issue.

5. FINDINGS

Within the scope of this study, artificial intelligence programs used in writing procedures and policies were examined, and a selected artificial intelligence program wrote a policy and workflow procedure regarding cash transactions. The same policy and procedure were also written by an artificial intelligence program that does this job in return for membership and a particular financial payment, and the two policies and procedures were compared in terms of content and other various elements. In this application, artificial intelligence was asked to write policies and procedures regarding cash transactions of an accounting department with a single employee for a boutique brokerage firm. In reality, a boutique brokerage firm's cash transactions procedure workflow with a single employee in the accounting department was compared with the procedures in question. A conceptual methodology is proposed for integrating artificial intelligence (AI) into internal workflow procedures, drawing insights from existing research and investigating several AI applications.

5.1. Comparison in Terms of Format and Organization

The information in Table 1 below is the format, page title, procedure title, procedure no., creation and approval date, name, role and addressee departments, names and signatures of approvers, content (process transactions, control points, risk management, Key Performance Indicators[3] (KPIs), Forms), addressing style and writing style performed by a human-made, artificial intelligence chatbot and an artificial intelligence application with field expertise on the same subject are summarized.

Table 1. Content Comparison of Workflow Procedures

Procedure Elements	Human Written	CoPilot	SweetProcess
Format	Proper format concerning company standards	No format	Proper format, not aligned with company standards
Page title	There is a page title	No title	No title
Title of the procedure	There is a procedure title	No title	There is a procedure title
Identification number	There is an identification number	No identification number	No identification number
Date of publication	There is a date of publication	No date of publication	No date of publication

[3] KPIs are tools developed by Jules Dupuit in the 19th century to measure business performance across sectors. They are quantifiable performance measures over time for a specific objective. It can be a predetermined benchmark that changes over time.

Name, role, and department that the procedure applies to	All written in the procedure	No reference to any	No reference to any
Names and signatures of stakeholders who prepared and approved it	All written in the procedure	No reference to any	No reference to any
Content (Step-by-step procedures)	Included in the procedure	Included in the procedure	Included in the procedure
Content (Control points)	Included in the procedure	Not included	Not included
Content (Risk management)	Not included	Not included	Not included
Content (KPIs)	Not included	Not included	Not included
Content (Forms)	Included	Not included	Not included
Voice	Active voice is used	Active voice is used	Active voice is used
Writing style	Plain and straight to the point	Plain and straight to the point	Plain and straight to the point

The procedure topic was chosen to create a cash register transaction procedure for a boutique brokerage firm that has one employee and only transmits orders to the stock exchange. This topic is a starting point that will facilitate comparison in terms of not creating too many employees and control needs.

The comparison will begin by considering the created format. SweetProcess's advantage is that it acts as an information management system, and thus, a formatted and proper output can be obtained. However, since CoPilot is a chatbot, the data received is not in the proper format. In summary, the output obtained here is almost like a content template.

The presence of a title on each page is only available in the man-made procedure, which also has the most proper format. The procedure title is available in the man-made procedure; in addition, SweetProcess already asks the user for the procedure title on the procedure creation page, and this title is available in the output. There is no such title for CoPilot. In addition, procedures created using artificial intelligence applications have no procedure number, version information, etc.

Only the man-made procedure has the printing and creation date. No date is given in other applications. This is an interesting situation, especially for SweetProcess, which has a specific format. In addition, information about the department covered by the procedure is only available in the man-made procedure, and since CoPilot only produces a template, adding such details is not very convenient as it will extend the question asked in the chat. Similarly, the names of the company's approving persons are not available. While it is possible to define these persons in the SweetProcess application, this application is not possible for CoPilot.

5.2. Comparison in Terms of Content and Process

There are problems in all of the procedures examined in this article in terms of conveying the process step by step. However, if they are all brought together, a procedure with much richer content than the current procedure can be obtained. The table below summarizes these processes by comparing them one by one.

In terms of content, CoPilot and SweetProcess applications have created a procedure using exactly the same words. The feature of these procedures is that they are produced as a general template. For this reason, using them alone to create a procedure from scratch will not be successful enough to give the desired results.

Table 2 presents the content-wise comparison basics of the petty cash workflow procedure. The content of the said procedure is required to include essentials on how to establish the petty cash fund, disbursement procedure, expense nature, fund threshold, accounting process, internal control points, fund replenishment, fund management, periodic audits, and relevant cost-cutting preventions.

The content of the review should start with the creation of the cash fund. At this stage, who will be the custodian should be determined together with their duties, authorities and responsibilities. The custodian's responsibilities should include covering expenses, replenishing the fund and keeping accurate accounting records. This section is clearly established in the procedure created by CoPilot and SweetProcess.

The expected control points in a procedure of petty cash transactions consist of the following:

- Dual custody: The principle of segregation of duties is applied, and at least two people are responsible for recording and safekeeping the cash.
- Reconciliation: The bank statements are regularly matched with ledger balances.
- Physical safeguards: The cash amount must be kept in a locked safe box.
- Limited access: Cash and cash records should be limited according to titles.
- Timely deposits and payments: The cash balance should be optimum, without lack or excess, limiting the associated risks.
- Documentation: All cash transactions must be clearly documented, enabling the follow-up of each transaction.

The man-made procedure for expenses includes much more detailed procedures. For example, the types of costs deemed appropriate to be covered by the cash register are specified individually. There are also details on determining a threshold value for which type of expense will be paid by which method (in cash from the cash register or through the bank) and the maximum amount of money to be kept in the cash register. The details of the accounting process are also included in this procedure and can be summarized as follows:

• Any expenses to be paid by petty cash are to be justified by the related invoice, receipt, or an official payment check.

• The employee responsible for the expenses must fill out the expense form. A related invoice, receipt, or official payment check must be attached to the expense form.

• This expense form is to be handed to the accountant responsible for bookkeeping, controlling, and transmitting for approval of these forms.

• All expenses are to be approved by the COO before payments occur. For Cash Disbursements:

  - Employee signed forms backed with receipts and related evidence
  - Controlled by Accountant
  - Approved by the COO
  - Controlled monthly by the Compliance Department

• Petty cash count report is printed and signed by the Local Accountant and the Compliance Officer (or another employee when one of them is absent) at the end of each day.

• The local compliance officer will also prepare a weekly report showing the cash movements and supporting evidence from the accounting system.

• This weekly report enables cross-checking and comparing the cash amount in the safe box with the trial balance, expenses, and opening and closing balances attached to the report.

• These weekly breakdown reports will make up the monthly justification report.

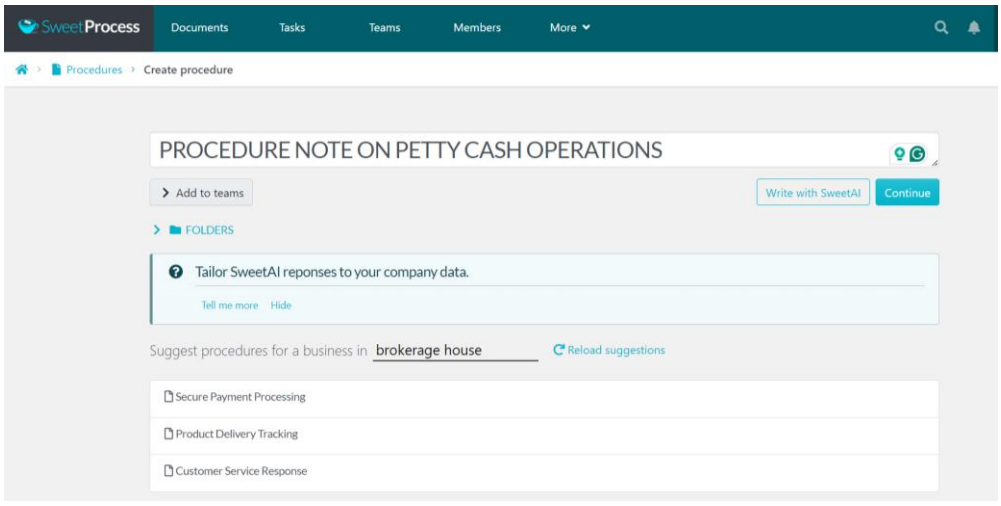
Table 2. Process Comparison of Workflow Procedures

Item	Human Written	CoPilot	SweetProcess
Establishing Petty Cash Fund	No	Yes	Yes
Disbursement Procedure	Yes	Yes	Yes
The nature of the expenses	Yes	No	No
Petty Cash Fund Threshold	Yes	No	No
Accounting process	Yes	No	No
Controlling petty cash expenses	Yes	No	No
Replenishment of Petty Cash Fund	Yes	Yes	Yes
Fund Management	No	Yes	Yes
Periodic Audit	Yes	Yes	Yes
Cost Cutting Preventions	Yes	No	No

5.3. Comparison of Artificial Intelligence Programs in Terms of Features

Table 3 below compares artificial intelligence programs used in creating policies and procedures. This comparison is based on the user interface, customization, version control, collaboration tools, access control, templates, integration, search and retrieval, mobile access, reporting and analytics, practicality, and cost. Figure 2 below showcases the user interface of the SweetProcess app and Attachment 1 shows the workflow of the SweetProcess app.

Figure 2. SweetProcess Application User Interface Screenshot



CoPilot and similar chat programs are superior to artificial intelligence-based programs with field expertise regarding user-friendliness and usability. When viewed in terms of templates, both programs are the same. In this case, the area where SweetProcess is superior can be revealed when consulting is received from an expert staff in the customization field. However, this will also have a specific cost to the business. When such programs are used as information management systems, they also bring about some security vulnerability problems. For example, workflow procedures can be used by third parties who can use them in a way that creates undesirable results, such as stealing know-how with

external access or detecting gaps in information technology systems. This will leave the business vulnerable to possible attacks.

Another problem is the inadequacy of templates and their lack of suggestions for internal control and risk management points. These systems are still based on manual add-ons, which are costly and not sufficiently specialized, and the role of artificial intelligence remains limited. (A template example created by artificial intelligence is available in Annex-1.)

Table 3. Comparison of Procedure Generating AI

Elements	CoPilot	SweetProcess
User-Friendly Interface	User-friendly	Not user-friendly
Customization	Not possible	Possible with restrictions
Version Control	Not possible	Possible
Collaboration Tools	Not applicable	Possible with restrictions
Access Control	Not applicable	Yes
Templates	Yes	Yes
Integration	No	Yes
Search and Retrieval	No	Yes
Mobile Access	Yes	Yes
Reporting and Analytics	No	Yes
Practicality	Good	Average
Cost	Free	Average

In accounting literature, the closest article to the scope of this article was identified as Şentürk (2023). Although there is no application in this article, the benefits that ChatGPT, another LLM, can provide in the field of internal audit are listed. Among these benefits, the improvement of business processes is also mentioned. In this article, the subject of what the improvements in business processes can be is expanded, and the effects of improving workflow procedures are discussed directly. As a result, it is possible to say that the expectations reported by Şentürk (2023) and the findings in this article coincide.

6. CONCLUSION

Artificial intelligence has started influencing all aspects of work life, and a company's internal systems are no different. Since the invention of computers, developing artificial intelligence to solve complex problems has been the target of scientists. Artificial intelligence effectively automates daily manual tasks, and internal controls fit this definition. Accounting, linguistics, or calculations are especially suitable to be processed by artificial intelligence. The core concept of this article is based on the idea of using AI-based applications to enhance the problematic areas of internal controls, and the foundation of internal controls is workflow procedures. The main question tried to be answered in this article is whether AI applications are efficient in creating internal control workflow procedures. The possibility of relying on AI to enhance internal control applications, including the construction of workflow procedures, is anticipated to help reduce costs associated with the creation and risks related to the workflow procedures.

This study aims to compare the role of artificial intelligence applications in enriching workflow processes in businesses in terms of format and organization, content, process, and program features of two artificial intelligence applications prepared for the same company and a human-written procedure. As a result of the comparison, although artificial intelligence-supported applications are determined to be successful and effective in writing basic policies and procedures, their use is difficult.

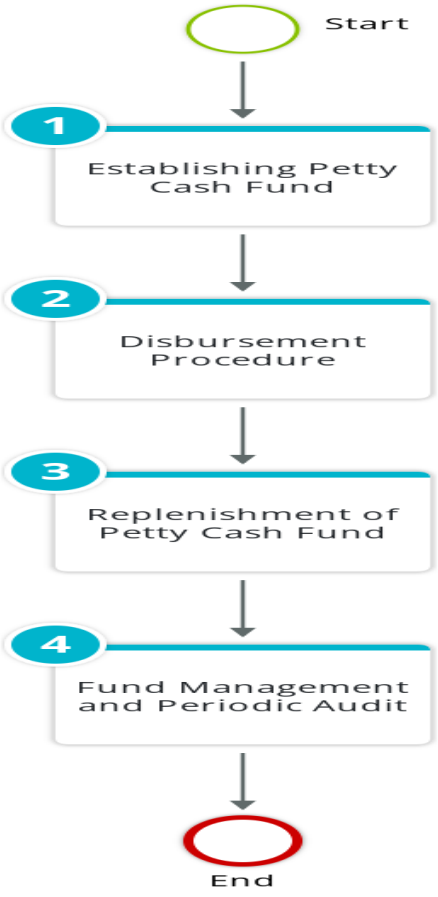
According to the comparison results, problems exist in the format and organization of applications created with artificial intelligence. The template created by artificial intelligence has deficiencies in terms of content and process. These deficiencies are significantly related to checkpoints. No checkpoints were created by artificial intelligence in the procedure in question.

When creating procedures, the need to add company-specific points and receive consultancy arises. For this purpose, most software companies offer personal support. This support is considered appropriate when the procedures created using artificial intelligence are examined. However, security gaps arise regarding privacy conditions related to data storage and processing. This point should be considered in terms of information security.

In terms of program features, free chatbots offer a start, but other software may also emerge if the user interface becomes easier to use and security measures are improved. In the later stages, the focus will be whether workflow procedures developed using artificial intelligence increase business efficiency, strengthen the control environment, and enhance the effectiveness of internal audit reports.

Considering that the formation of artificial intelligence applications has just begun, such problems are inevitable. Despite all of the issues, thinking that artificial intelligence is developing quite rapidly, it is foreseen that internal control workflow procedures will be updated with this method in most companies. This study draws attention to a different method of using artificial intelligence regarding internal systems. It provides information that can be found in the recommendations section of internal audit reports, especially for business employees and academics.

Attachment 1: Outline of the Procedure Created Using Artificial Intelligence



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