Artificial Intelligence Voluntary Disclosures and Their Effect on Firms' Financial Performance: Evidence from Egypt Firms on the EGX30 Index

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Abstract

The present paper, thus, investigates the link between AI-disclosure in annual reports and firm performance in the Egyptian financial industry. It explains how the number of appertained AI-words in the corporate disclosures would correspond to the different financial performance indicators to, inter alia, shed light on the effect that the implementation and reporting of AI has on the performance of the financial institutions. This study is a quantitative study that uses company-year data to conduct a simple linear regression analysis on 12 selected financial industry companies in EGX30 over the period of 2013-2023, giving a total of 132 firm-year observations. What this issue leads to is the fact that, in total, the relative frequency of all the terms associated with AI in the annual reports is captured by an independent variable called AIFREQ. Concerning dependent variables, it focuses on several financial performance indicators, including ROA, ROE, NIM, GPM, and OPM. The variables used in the model as control measures are firm size and capital adequacy ratio. The results revealed significant positive association of the frequency of AI-related disclosures with the financial performance measures used. Fixed frequency significantly explained 71.5% of variation in the NIM. Fixed The association with OPM was the smallest, but positive and significant. These findings give rise to the view that those firms that disclose more frequently in their annual reports on matters relating to AI also appear to be performing better financially across most performance metrics. This paper contributes to the literature by focusing on the Egyptian financial sector and investigating the effect of voluntary AI disclosures on financial performance, rather than the adoption of AI only. It provides new insights into the relation of the report of AI initiatives with various dimensions of financial performance in an emerging market setting.

Keywords: Artificial Intelligence; Profitability, EGX30, Financial Performance

1.Introduction

Artificial intelligence, or AI for short, is a science area that has appeared in the last decades, and it's a science area that aims to create systems to solve problems that require intelligence from a human being. AI is a subfield of computer science; the models are applied with the objective of emulating the brain's capacity to learn from, reason from, and make decisions based on data input to the computers (Jiang et al., 2022). Hence, within Egypt's new era for business, AI technologies are being used to replicate the mind, to analyze, to perform tasks, and to support several fronts cutting across various fields (El Bedawy and Elsayed, 2022).

On the other hand, the Egyptian stock market, which is the Egyptian Exchange index EGX30, consists of Egypt's 30 listed stocks that are most liquid and active. While these companies continue with efforts of operating at the international market to remain relevant in business, many firms are embracing the use of AI to improve their functioning (Saleh et al., 2023). Nevertheless, the role and consequence of releasing specific information on AI in the firm's profitability in Egypt have not received enough attention. The banking and financial services, which make up a vast portion of the EGX30, have seen enhanced efficiency, precision, and client satisfaction through the usage of AI (Ifleh and El Kabbouri, 2023). Thus, a variety of opportunities are being investigated by American and other Arabian financial institutions to optimize processes and innovate applying AI: data analytics, learning systems, customer segmentation and marketing, detailed automation, chatbots and head butters, natural language and voice recognition, predictive maintenance, and fraud detection (Stone et al. 2020).

As valuable as AI is to financial reporting and decision-making processes in Egyptian firms, it is not without its drawbacks, including bias, lack of third-party verifiability, data privacy, and compliance problems. The stakeholders involved may experience job displacement, skills gaps, rather high implementation costs, integration issues, and ethical issues (Shaltout, 2024). To counter these ill effects, Egyptian companies should enforce responsible AI practices, improve the quality and management of data they feed into AI systems,

and deal with bias in AI models if any (Jaldi, 2023).

This research is being conducted in the Egyptian environment for a number of reasons, one of which is to respond to the worries of stakeholders of AI systems in the EGX30 firms. Some of the local and international investors who are willing to make decisions based on the strength of technology might come in and alter the business value of a firm and its shareholders if the company declares its use of artificial intelligence. However, Egypt can meet the new legislative requirements and make its own contribution to the disclosure of artificial intelligence (Salah et al., 2022). This is because Egypt is shifting its focus towards the technical sector of the industry as the sector of the future.

Still, the AI disclosure in Egypt remains unchecked and done mostly on a voluntary basis, just as is the case in most emerging markets. Further, there is one more factor regarding which the who, what, when, and how of disclosure are uncontrolled in the majority of situations (Zamil, et al., 2024). At the moment, there is no general norm concerning the level of artificial intelligence disclosure presently beyond the legal reach of Egyptian companies to enforce. P.T. Due to the fact that there is no universally shared understanding of reporting and artificial intelligence on the use of which there are no commonly shared perceptions, this content will be transmitted in accordance with the impressions and objectives that the companies have with regards to this.

Nevertheless, research concerning the effect that AI disclosure exerts on the performance of the Egyptian market is scarce. This is so even though much research can be said to have been conducted on the role that artificial intelligence performs in a host of other industries across the globe. Thus, this article aims to fill this gap in order to give some clues about the value-relevant consequences of artificial intelligence disclosure for the EGX30 companies and the Egyptian economy. Therefore, the intended goal of this study is to meet this research gap by evaluating present practices of the firms in the EGX30 and the firms in the financial sector in particular, relating to the AI terms' disclosures. An artificial intelligence disclosure index is developed through examining the AI in the textual data of the annual reports and through studying the effect of the AI-related words on return on assets. This research aims at examining the feasible effect of revealing phrases relating to AI on the profit of Egyptian organizations.

This research aims to present the best available information to the field of discourse and present an understanding of how artificial intelligence contributes to the effectiveness of Egyptian enterprises depending on the ethical and applicable legislation points of view, as well as the financial and reputational aspects for the Egyptian market. Consequently, this paper aims to answer the following research question:

Does voluntary disclosure of artificial intelligence affect the financial performance of EGX30 firms in Egypt?

Therefore, the objective of the present study is to answer this question and therefore to contribute to the existing literature on artificial intelligence in Egyptian companies, to assess to what extent terms related to AI are disclosed by Egyptian firms, and to shed some light on the link between AI disclosure and the firms' performance in the context of the most representative Egyptian companies. To this end, the following are the recommendations of the study, which should be of help to policymakers, international authorities, and supervisory organizations of Egypt in particular on issues relating to the disclosure of artificial intelligence. Moreover, knowledge generated from these findings provided direction for the necessary disclosure guidance for the Egyptian market.

The structure of this document has been made as described below. The prior research that is considered literature is discussed in part two of this research. More specific examples of the presented methodology are provided in Section 3. Here the results and analyses provided in Section 4 are mentioned. However, the study comes to an end in Section 5.

2. Literature Review

2.1 The effect of AI applications on financial sectors

Meanwhile, Shadreck et al. (2024) realized that they had a more extensive understanding of how the installation of AI applications affects the profitability of the large-scale retailers in Gweru Urban, Zimbabwe. Second of all, this research aims to determine the level of optimization of operational processes, including but not limited to decision-making, customer service, and inventory management via the technologies that utilize artificial intelligence. Based on the

researchers' findings, AI applications enhance the efficiency of the processes, simplifying the processes while at the same time reducing costs and optimally employing the resources, factors that augment profitability. It has been found out that the use of artificial intelligence technologies can help merchants gain an edge over competitors. It is for this reason that the leveling of business activities that are brought about by these technologies improves.

Chhaidar (2023) aimed to establish the effect that application of financial technology (fintech) has on the profitability of a bank. In more detail, the researchers aimed at understanding how the size of the bank and the level of technological advancement of the company affect the connection. Thus, the present paper provided empirical evidence from the beneficial and statistically significant effect of investment in financial technology during the investigated time period, which was 2010 to 2019.

In fact, the positive effect that investment in fintech had on profitability was stronger in the latter period, that is, between the years 2015 and 2019, as compared to the earlier period, that is, between the years 2010 and 2014. One of them was the size of the banks, in which another factor was identified that moderated the relationship between digital investments, on the one hand, and profitability on the other during the study periods. In a more recent study, Rahman (2023) investigated the effects of business intelligence on the operational efficiency of banks and the perceived profitability of business operations within the setting of 27 branches of a commercial bank in Bangladesh. Thus, there seems to be a positive effect of business intelligence on operations and profitability in banks, although the result is based on partial least squares structural equation modeling on data collected from 259 respondents. Business intelligence going further to reveal to them that it can be a valuable asset in increasing competitive edge as well as performance in the banking sector. It was also recommended that operational efficiency, which is supported by business intelligence, boost branches' profitability. Consequently, it managed to establish that operations efficiency did enhance profitability.

Yiu et al. (2021) studied various aspects of corporate profitability and risk that are affected by business information systems. The research team "found that this impact can be mitigated by connecting employees and institutionalizing processes, particularly through ISO 9000 certification." As supported by the

research findings, the positive effect of business intelligence systems on the level of abnormal profitability was highly complemented by the existence of a positive employee nexus for reduction of organizational risky abnormalities. Furthermore, the companies that had gotten the ISO 9000 certification mean that they recorded higher profitability than the other companies that had not acquired the certification, notwithstanding the fact that their risks were also lower in that category. In light of this finding, the importance of institutionalization of processes and employee relations is underpinned in this research as key to providing the flexibility necessary in the BI systems for high levels of business performance.

In the same regard, Singh et al. (2021) analyzed the effect that has been posed by FinTech adoption on the banks in India. They did this by analyzing the impact that FinTech adoption has had on two crucial bank performance indicators, including return on assets and return on equity. The findings demonstrated that the implementation of FinTech has a significant and favorable effect on the profitability of banks. This finding provides support for the notion that the integration of finance and technology guarantees the effectiveness of operations and, consequently, financial performance. However, this is contingent upon the constraints imposed by the limited availability of data and the complexity of innovation within the banking sector.

Moreover, Wamba-Taguimdje (2020) investigated the ways in which artificial intelligence (AI) influences the performance of businesses, specifically the business value of AI-based transformation projects. The project studies the ways in which artificial intelligence technology could be implemented across industries in order to improve the performance of organizations. The purpose of this study is to establish how artificial intelligence (AI) influences the performance of organizations and what benefits organizations can receive from adopting AI technology.

A total of 500 mini-case studies from well-regarded AI solution providers are included in the research. Moreover, the study shows the possibility and sophistication of artificial intelligence. Knowledge about artificial intelligence, personnel experience, and the absence of rigid frameworks always advance AI effectiveness and hence bring about improvements in processes' competence as well as organizations' performance. Research conducted for the study reveals

that many AI technologies are useful to organizations. In all industries, the application of such systemic concepts will lead to enhancements in decision-making processes, productivity, creativity, and hence competitiveness. Based on the evidence, it can be seen that investment in AI capabilities and the underlying structures is of paramount importance these days in order to gain tangible business value for the projects related to AI transformation. This is a prospect for AI research and networking.

Zimbabwe-based accounting firms retain a great deal of human engagement in each account, and the goal of the study by Olan et al. (2022) was to explore the effects of AI on calculated methods conducted by accounting businesses in the southeast of Nigeria. Besides this, they focused more on the effects of intelligent agents and expert systems. There is evidence that the outcomes of both expert systems and intelligent agents' applications are well correlated ($R = 0.904$, $F = 608.447$, $p = 0.000$). In parallel, higher accuracy of intelligent agents was observed with $R = 0.754$, $F = 178.810$, and $p = 0.000$. Consequently, it was concluded that the appropriate use of AI increases the effectiveness of accounting in the region.

2.2 the effect of AI applications on business development

Furthermore, about this commerce's working and its change, the subsequent advanced technology has also been served: AI, machine learning, big data analysis, cloud services, and social media. These are applied by all aspects of contemporary civilization in their activities (Watson, 2023). Technology enables augmentation of transmutable and physical objects, enhances the quality of operations, and enables competence and capability for future business advancement.

AI's functional features that make its uses more adaptive (Gupta et al. 2020; Marinotti, 2020). First of all, artificial intelligence can guess what occurs in the surrounding environment due to the processing of audio, text, and computational linguistics. The second facet of artificial intelligence is that it functions through natural language processing (NLP) and supports humans in responding to machines with the help of related AI algorithms. The last feature is that modern artificial intelligence software systems can work without the participation of people. In addition, compared with routine machines, artificial intelligence is capable of enhancing the ability to perform better by means of self-learning, which arises from the operation experience (Garcia et al. 2020).

According to Shang and Zhang 2022, the new digital solutions are constantly causing a shift in the competitive strategies that are utilized in the corporate world and contributing to the development of new methods for the creation of value. The corporate industry is becoming increasingly open to the possibility of utilizing chatbots in its operations. For instance, a chatbot uses natural language technology in an effort to solve problems emerging from the user. Chatbots in the financial sector have caused a shift in how issues are solved or questions answered by customers (Anagnoste et al. 2021).

In addition to being able to grasp both spoken and written material, chatbots are also able to provide answers to ambiguous inquiries and communicate with other online data stores or portals. Through call handling, this particular field in chatbot technologies assists numerous clients and therefore motivates them to seriously consider banking and other related value-added services. Also, chatbots can manage many more accounts in comparison with human advisors, while at the same time keeping costs low and maximizing profits (Nirala et al. 2022). When artificial intelligence is implemented, the process of decision-making is improved and simplified, while at the same time being compliant with regulations. Artificial intelligence has the potential to decrease the number of erroneous contracts, improve the accuracy of forecasting operational resources, and ensure compliance with regulatory standards. Banks have implemented a wide variety of contemporary artificial intelligence tools in order to cut down on fraudulent processes (Loftus et al. 2020).

Those include data mining, fuzzy logic, Machine learning, sequence alignment, and finally, genetic programming. Thanks to the achievement of independent data control, the velocity, correctness, and efficacy of all operations at financial institutions have been enhanced. In online transactions through SSL, encryption, data storing, multi-level authorization, and device fingerprints, malware detection, token passwords while signing with their phones, and endpoint protection, fraud can easily be prevented by predicting the incidents before they occur. To ascertain the ability of financial institutions to use direct marketing and which of their clients is going to accept the marketing propositions, deep learning and artificial neural networks have been applied in

personalized retail banking (Dastres and Soori, 2020).

2.4 The effect of AI Voluntary Disclosures on Financial Performance

Numerous industries, including the banking industry, have steadily witnessed technological advancements, particularly in the application of artificial intelligence. The banking industry is not an exception to this trend. The adoption of artificial intelligence technology appears to have found its place in banking operations all over the world, which has resulted in the necessity to respond to the disclosure practices that use AI. This has led to the concern that has grown. The primary forms of products of all companies that imply a large number of consumers and their actions are text and speech processing. This includes buying, other financial transactions, as well as all the sectors with many customers involved. Such services have reported more often about the use of artificial intelligence and more often mentioned natural language, as was also noted by Chui and Francisco (2017).

That, however, does not mean that AI is not accompanied by many opportunities and benefits that can be obtained through its use. AI disclosure remains entirely optional. In almost all cases, the decision about whether or not such information should be shared, the amount of information that should be disclosed, and the type of information that should be disclosed is left totally up to the discretion of the companies. At the moment, there is no practice that is universally regarded for the level of transparency that pertains to artificial intelligence. Application of artificial intelligence is still in its infancy years. Regarding this particular field, there are no known specialist worldwide reporting standards that have been agreed upon by all parties involved. The rules that are currently in place for the disclosure of artificial intelligence do not adequately convey the one-of-a-kind consequences that AI has. This lack of a consistent vision and reporting standards for artificial intelligence (AI) results in divergent disclosure methods, which vary depending on the perspectives of companies (Naguri et al., 2024). A united vision and reporting criteria are necessary for AI.

Opacity is one of the most major risks that people are presented with in this day and age, which is characterized by the presence of Al. The existing disclosure framework, which is managed by corporate securities law, has a limited influence on reducing the degree of opacity that is present in Al systems. This is so because the structure I had in mind was very firm, mainly because it is bound by legal

constraints. The special approach to addressing the AI 'black box' issue can be seen in this line: as a solution, he offers a framework for the disclosure of artificial intelligence goods and services (Candrian and Scherer, 2022). It is therefore advisable for better operational openness to be embraced if the safety of the artificial intelligence algorithms is to be made better. This is because increased transparency emphasizes algorithm accountability. A sophisticated disclosure structure has the potential to contribute to the enhancement of transparency, which in turn can assist in reducing the risks that are posed to stakeholders, stabilizing financial markets, and promoting sustainability over the long term. Thus, this structure may be helpful in the development of a more transparent environment. Lately, the authorities' regulators and supervisors have considered the need to set the rules for artificial intelligence disclosure (Díaz-Rodríguez et al. 2023).

For instance, the Organization for Economic Cooperation and Development (OECD) has addressed the challenges of AI clarity to promote the use of AI, which is both creativity and trust. It should be clear who bears the liability for any AI system to people so that they can question the relevant AI-based decisions; this is in line with the OECD principles. This statement was made in response to one of the AI Principles to which the AI Principles were devoted. The consumers of financial services have to be sensitive to whether a certain product is delivered using artificial intelligence techniques and to whether they are dealing with an AI or a human being in order to chart their way through the number of choices that they have on the market (Galindo et al. 2021). In addition to this, another focus, as identified by the Organization for Economic Co-operation and Development (OECD), is the need for rules of disclosure that help financial services to better understand whether a potential customer has adequate understanding of how integrated use of artificial intelligence effects delivery of the product.

The European Union Artificial Intelligence Act, which is expected to be passed by the European Parliament by the year 2023, also elevates the demand for transparency. This law stipulates that all artificial intelligence (AI) systems employed in EU member states must comply with certain legislative provisions that are relevant to AI systems in the state. Further, it is one of the acts that inside the European Union can still influence the progression and usage of artificial intelligence techniques. In the case of the Artificial Intelligence Act of the European Union, one needs to mention that the requirements—to be met under

this category—concern the conditions and damage of the algorithm, the documentation condition, the condition of logging, auditing, and obligations (Laux, 2023).

2.5 Development of Hypotheses

As highlighted in the previous literature, a number of theoretical directions are associated with the focus area of voluntary disclosure. Agency theory is an example, which, on the basis of failed signaling, underlines the ways and means how managers with special information can improve the worth of the concern and reduce the cost of capital (Tekin and Polat, 2020). As it involves many areas, including investment possibilities and funding arrangements, the voluntary disclosure enables proper management reporting, and the value of the firm improves. Among scholars' feelings that analyze the agency theory, there are opinions that categorizing voluntary disclosure should be promoted to control the managers' behavior and enhance performance in organizations (Li et al. 2020).

A similar conclusion is made by the idea of capital needs, according to which voluntary.

Through information sharing, it is possible for the businesses to access more funds at cheaper rates. The provision of more information makes it possible to inform investors with extra information that helps them make more valuable economic forecasts about the company. This is so because enterprises need cash in order to finance their continued operations. From the viewpoint of signaling theory, corporations disclose more information than what is required for investors to pay attention to, reduce the informational gap between the firm and its investors, and convey their capabilities to the latter. They issue good information to report good events happening in the organization. Managers can also share bad news so as to keep records of steps to be taken in handling potential losses in the future (Cheng et al., 2023).

Managers of firms with actual and expected high levels of performance and fulfillment of prospect promises would like to release material information to the shareholders voluntarily to pass management information and signal realization of expectations. This is because such disclosure conveys the impression that the organization is profitable. Further, the legitimacy theory fits the rationality of the

disclosure of information in their study. Different approaches that firm use assist in defending their activity and process so that stakeholders can be convinced that it meets the expected standards (Flammer et al., 2021).

They include the achievement of transparency through the strategy of voluntary disclosure. As Bonsón and Bednárová (2013) have also mentioned, the organizations that invest effort and time in the practice of higher degrees of openness also have capacity to achieve popular acceptability of the acts that they perform. About the voluntary disclosure of AI, businesses aim to disclose more stakeholders to show improved organizational performance to indicate the creation of value, AI assurance, and, most importantly, the degree of competition on the respective market concerning AI products and processes (Zamil et al., 2023).

Hence, as additional information that concerns prospects of new AV technologies becomes available to the public, other stakeholders involved in the field would be viewed as more credible, while the field under consideration might attract more potential investors. Such information, regarding applied artificial intelligence methods, is disclosed to other stakeholders to gain their trust and support, as well as to gain the authority of the practice. The application of uses of AI models has various and serious disclosure issues in the financial sector, chiefly due to the character of the business and operational environment in which it is sited. This is the same as other barriers that are related to voluntary disclosure (Lee, 2020).

Hentzen et al. (2020) predict that as advancement in artificial intelligence continues to surge, there can be a significant effect on voluntary disclosure in the banking sector. The trend of whether or whether a company discloses information on the use of the artificial intelligence, in the banking business depends on the competition. Further information may also be declared at the sweet will of investors by these companies if, in their view, such information contains a bearing in the marketing competition.

For example, the financial institutions are likely to give some illustration of their levels of experience in the industry. Therefore, the financial institutions that work within the more competitive markets could agree to disclose additional information about their artificial intelligence systems in order to match with the competitors. On tasks that generate value at the industry level, the AI McKinsey

Global Surveys series revealed that organizations are most inclined to adopt artificial intelligence. According to our analysis, industries that have primarily adopted AI for use in service operations, marketing, sales, and risk activities are the financial services. However, the following is the list of industries that have adopted AI, which will impress everyone (Brandl and Hornuf, 2020).

It has been found that AI has a positive effect on the nonfinancial measures of a firm. Such indicators are the effectiveness of the accounting information system and the performance of the activity flow adopted by the company. AI is valuable for organizations, and, more specifically, it improves their ability to raise organizational (financial, marketing, and administrative) performance as well as process performance. Similarly, financial institutions that attach more importance to moral standings, integrity, disclosure, and social responsibilities will communicate information on their AI systems to other customers, regulators, and society if they believe that disclosure will enhance confidence and credibility (Wamba-Taguimdje et al. 2020).

Whenever information about the usage of artificial intelligence is placed out there, people see you as an innovative and excellent company, thereby pulling in more customers who see excellent value in your AI system. AI transparency also provides benefits to financial institutions that include enhanced reputation, customer loyalty, and, therefore, an increase in profitability (Johnson et al., 2022). However, relative to other forms of businesses, banking is relatively vulnerable to more stringent rules. This is particularly so because simple compliance with ethical industry standards may not be adequate to win over consumers in markets that are inherently skeptical of artificial intelligence systems. In order to assure the public that the AE systems are indeed ethical, the financial institutions, if they want to be competitive, may have to volunteer additional information.

In general, the tendency of voluntary disclosures using artificial intelligence is to report only that which will make a positive effect on the economy as well as appeal to the investors. It can help investors to get a better understanding of as much as the investments in artificial intelligence they have made as a company... On the basis of theoretical frameworks, hypotheses, and literature, it is assumed that firms that deploy AI into their operations and operations, and those organizations that have already realized monetary savings

(increase in revenues and decrease in cost), have info-announcement incentives towards the development, application, and usage of AI (Cao et al., 2023).

They also used the AI frequency to estimate that the firms that reported on their use of AI more than once per year have integrated AI into their company plans and have acknowledged the ROI related to using AI. Therefore, based on this assumption, it is predicted that the banks working in a country or region, the frequency of which the AI-related terms are disclosed in their annual reports, would influence its financial standing in terms of the higher income and lower cost compared to other similar identified banks (Tong et al. 2021).

The appearance of new technical solutions can be considered valuable due to the effect on several financial characteristics of organizations, including AI. The operating cost is one of the financial factors that is expected to be reduced through the use of AI techniques as part of the changes (Tang and Tien, 2020). This was because by adopting the AI techniques for personalized loan recommendation, the total cost that the bank was able to incur would be reduced. According to the study of Hentzen et al. (2022), which focused on the use of artificial intelligence techniques in the banking sector, it was realized that the application of the techniques is expected to enhance positive changes in the financial performance of the banking business.

Therefore, we suggested the following hypothesis:

H0. AI-related terms disclosure has an insignificant effect on firms' financial performance.

H1. AI-related terms disclosure has a significant effect on firms' financial performance.

2.6 Summarization of previous studies

The literature review demonstrates a many-sided interrelation of AI and the financial industry. Indeed, it significantly affected corporate performance and disclosure level. Researchers confirm that the consistent positive effect of AI on operation efficiency, profitability, and competitive advantage is present in the

retail and banking industries. Moreover, strikingly, the findings report that bank performance and fintech investments are positively related and have become much more pronounced in recent years. Business intelligence, which goes in close relation with AI, was found to have a positive influence on the operational efficiency and profitability of banks.

Machine intelligence, inclusive of other emerging technologies like machine learning and big data, has now become a key tool in the process of transforming business and e-commerce within the corporate world. However, chatbots, which are generated by artificial intelligence, have become popular in customer support teams in many financial firms. In addition, technologies in artificial intelligence will make it possible to enhance activities relating to decision-making, develop more skillfulness in the identification of fraud, and exhibit enhanced levels of the implementation of rules in the banking sector.

The use of AI deals mainly with operational and financial effect, and its application is expected to grow further. AI continues to be incorporated into many organizations, and one work indicates it could lead to improvement of bank profitability by as much as a third. First, AI creates competitive advantages in the form of efficiency enhancement, cost reduction, and improved service quality. Benefits derived from this include increased productivity, risk management, and customer experience.

This review also examines the domain of AI voluntary disclosures and their association with financial performance. Currently, AI disclosures are heavily voluntary and not yet tightly bound by widely accepted standards that constrain those disclosures. The OECD and the EU advocate for the emergence of transparency in disclosures on AI. The theories explaining the underlying motives in the issuance of voluntary disclosures on AI include agency theory, capital needs theory, signaling theory, and legitimacy theory.

Based on the literature, some hypotheses have been developed, such as the fact that companies implementing AI and perceiving financial benefits from this technology tend to disclose positive information related to AI. The frequency of the disclosures about AI in annual reports may influence financial performances; also, AI techniques are expected to improve several financial indicators in the banking and financial corporates industry.

Importantly, this review has highlighted that there exists a significant research gap. Past literature was focused on reviewing AI in banking sectors; thus, reviewing AI's effect on financial corporations, particularly in emerging markets, was not done. In light of filling this gap, the research will focus on investigating the influence of AI on financial corporations listed on the Egyptian Exchange, the EGX30. This research focuses on Egyptian financial corporations rather than banks alone, thus making a new contribution to the literature. It promises to yield some important insights into how AI affects a wider range of financial institutions within a specific regional context, perhaps with unique patterns or challenges in the adoption and disclosure practices of AI among Egyptian financial corporations.

3 Research Design

3.1 AI Disclosure

Content analysis is employed in this study and was developed from other research methods to measure the existing level of disclosable artificial intelligence within the financial industry. Below, please find the three steps that have to be followed to create an AI disclosure index. First, an artificial intelligence disclosure index is created by performing an extensive analysis of the literature on what aspects are most commonly incorporated into the financial industry. Earlier sources like Conac (2020) were used in order to filter the search query using synthetic intelligence, big data, cloud computing, and Machine learning as some of the keywords (Olan et al., 2022). This was done based on the analysis of the term as defined. Moreover, it even includes disclosure indices, which were generated by the author of this paper from prior studies (Jiang et al., 2022).

OW, using the documents studied by Omar et al. (2017) of the Malaysian public firms' annual reports, the authors searched for such keywords as "Artificial Intelligence", "Machine Learning", and "Big Data". Robotic Process Automation and virtual agents are part of the topics that have been examined by Lacity et al. (2017) while examining the uses of artificial intelligence in the US banking industry. In their investigation, Bonsón et al. (2023) worked with a sample of European publicly traded firms and used terms as AI and algorithm in their study. After McWaters & Hawkins (2018), an AI is analyzed from a broader

technical standpoint within the given perspective. This is done based on the premise that development of any technology leads to improvement on other technologies. An overview of our initial set of AI disclosure index keywords can be seen in the following Column A: Table A1 of Appendix A.

The second stage is to conduct the most efficient frequency analysis of the keywords that were already chosen. In order to determine the frequency of AI-related phrases that appear in the annual reports of the selected banks, the program known as "Maxqda" is utilized. As part of the examination of these keywords, it is necessary to investigate the more general context of each one in order to have an understanding of what AI business plans entail. As a result, this technique makes it easier to conduct a study of the manner in which artificial intelligence is being described and used within organizations operating in the financial sector. In the third stage, further subdivide the terms linked to artificial intelligence that have been identified into three convenient groupings. The first group consists of subgroups that are associated with digital capabilities, as well as digital intelligence and transformation.

When it comes to artificial intelligence, the second cluster is the one that is associated with its implementation, utilization, and the many different services, goods, and processes that are incorporated into it. Concerns and threats from artificial intelligence that are related to information and cybersecurity are of relevance to the final category. Details of Analysis for Classification—Appendix A Table A1 Column B contains a presentation of the keywords that are associated with these categories. First is the content data, which shall be analyzed with multiple regression analysis. Secondly, there are the behavioral data, which shall also be used in the multiple regression analysis. This way, it becomes possible to establish a link between the amount of AI disclosure and any other factors of interest so as to have a better feeling of the extent of the AI revolution and discussion in the financial sector. It will be provided with a more systematic appreciation of the practices in artificial intelligence disclosure and the effect they have on the financial industry.

3.2 Regression Model and Variable Definitions

The following regression model is used to measure the effect of mentioning AI-related

keywords in the annual reports on firms' profitability.

Linear regression Equation: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon$ (a)

$$ROA = \beta_0 + \beta_1 CAR_t + \beta_2 FS_t + \beta_3 AIFREQ._t + \varepsilon_i \quad (1)$$

$$ROE = \beta_0 + \beta_1 CAR_t + \beta_2 FS_t + \beta_3 AIFREQ._t + \varepsilon_i \quad (2)$$

$$NIM = \beta_0 + \beta_1 CAR_t + \beta_2 FS_t + \beta_3 AIFREQ._t + \varepsilon_i \quad (3)$$

$$GPM = \beta_0 + \beta_1 CAR_t + \beta_2 FS_t + \beta_3 AIFREQ._t + \varepsilon_i \quad (4)$$

$$OPM = \beta_0 + \beta_1 CAR_t + \beta_2 FS_t + \beta_3 AIFREQ._t + \varepsilon_i \quad (5)$$

To measure the performance of firm, in this research, we employ several different financial performance indices. In our basic analysis, we rely on accounting measures of performance which are; Return on assets (ROA), Return on equity (ROE), Net interest margin (NIM), Gross profit margin (GPM) and Operating profit margin (OPM). In the literature, ROA and ROE are adopted as measures of the efficiency of management in generating sales revenues from the overall asset base and shareholders' funds respectively. A relatively higher ROA and ROE suggest better performance of the firm (Sapitri, 2023).

The study also compares the use of NIM as another measure whereby it is believed that implementation of AI lower cost hence enhanced financial performance. NIM captures the income generating core operation of a bank of lending and borrowing, which should be most sensitive to the changes in revenue and expense of these basic services. These ratios offer an overall view of a firm's financial change over the period and has been noted to be applied on previous research in assessing financial performance (Govett et al. 2017).

Our key independent variable is AIFREQ, which captures AI-related terms disclosure frequency. This is measured as the frequency of the terms in each annual report in the sample period in Wang and Yen (2023). As is understood, AI practices and AI disclosure decisions at each bank depend on many factors, internal and external. The general nature of banks leads to incentives for managers concerning the utilization of AI and disclosures.

Moreover, the sample in this study comprises of a firm size (FZ), determined as the natural logarithm of the total assets, and capital adequacy ratio. These control variables allow an ability to control for the fact that a given bank performance and AI disclosure might be affected by the other boards that a given

bank is on. Basic statistical information on all the variables used in this research and the definitions of all the variables are provided in table 1 below. Thus, by including all the above elements in the analysis, we believe we can portray a comprehensive picture of the modality between the AI disclosure and the bank performance.

Table 1. *Names and defines of each variable.*

Independent variables			
Ratios	**Meaning**	**Equation**	**Source**
AI frequency	Ratio of Artificial Intelligence	The number of mentioned AI-related terms in each annual report No. of AI keyword / Total words x 100%	Firms' annual reports
Dependent variables			
ROA	Return on Assets	$\frac{Net\ Income}{Average\ total\ assets}$	Firms' annual reports
ROE	Return on Equity	$\frac{Net\ Income}{Average\ total\ equity}$	
NIM	Net Interest Margin	$\frac{Net\ Income}{Average\ interest-Earning\ Assets}$	
GPM	Gross Profit Margin	$\frac{Gross\ Profit}{Revenue}$	
OPM	Operating Profit Margin	$\frac{EBIT}{Revenue}$	
Control Variables			
CAR	Capital Adequacy ratio	$\frac{Tier\ 1\ Capital + Tier\ 2\ Capital}{Risk-Weighted\ Assets}$	Firms' annual reports
FZ	Firm Size	Natural log of Firm`s total assets	

3.3 Sample and Data

The list is broad but exhaustive, concerning both quality and quantity, by which financial analysts get a clear picture of how companies in different fields perform, and the annual report is one of the most valuable sources used by investors willing to deal with businesses engaged in the financial markets (Helmina et al. 2020). Therefore, this research employs a content analysis of the annual reports with special reference to the financial sector firms included in the

EGX30 for the years 2013–2023. Primary data, which is annual reports of the specific financial institutions under investigation, is found in PDF format on the specific firm websites, and the study will focus on the EGX30.

With a particular focus on the financial sector, we would like to offer a narrower view of what is happening in this industry regarding the implementation of artificial intelligence technologies. The research process requires exercising to look for predetermined keywords as identified when doing contextual analysis. For the purpose of comprehensively analyzing the trend of AI-related remarks that emerged in the following years, it'll be necessary to form a new keyword set based on these annual reports among the companies in the financial sector. This approach is more specific because it gives an insight into how artificial intelligence is influencing and integrated with important stakeholders within the financial sector of Egypt.

That is why the study focusing on the financial sector within the EGX30 can provide more specific recommendations on the use of AI in defining the prospects of the financial industry in the Egyptian market. In addition, after reviewing the EGX30 companies lists, the data collection is filtered from 30 companies to 12 companies that their sector is considered to be a financial sector, which are as follows:

Firm Names
1) Commercial International Bank
2) TMG Holding
3) Emaar Misr for Development
4) EFG Holding
5) Egyptian Kuwaiti holding
6) Faisal Islamic Bank of Egypt
7) Credit Agricole Egypt
8) Abu Dhabi Islamic Bank
9) Palm Hills Development

10) Beltone Holding

11) Madinet Masr For Housing and Development

12) B Investments Holding

Source: Trading view EGX30 companies list

The dataset collected for this study gives a good basis for the use of simple linear regression analysis. I use archival data on 12 financial sector firms from the EGX30 for a decade from 2013 to 2023 and achieve a total of 132 firm-year observations. Such a sample size is large enough and suitable for the linear regression model to have enough statistical strength to capture the variability in relationships among the variables. As the data covers a decade, the temporal snapshot facilitates identification of temporal changes in the variables, while the cross-sectional analyses across the 13 firms offer insights into cross-sectional heterogeneity.

This research will carry out a test of simple linear regression with ample precision. This approach will open the possibility of understanding how the variables of interest interact or not and give insights that are valuable and relevant to the adoption of AI and its effect on the Egyptian financial sector.

Moreover, performing such comparisons within companies and over years strengthens the reliability of our analysis and makes it more suitable for identifying trends and factors that are implanted in the overall dynamics of AI-related development in this important economic segment.

4 Results and Discussion

4.1. Descriptive Statistics

Table 2. *Descriptive analysis*

Variable	Obs	Mean	Std. Dev.	Min	Max
AIfreq	132	15.40	16.75	0.70	79.73
ROA	132	7.84	4.36	-1.42	16.50
ROE	132	0.19	0.13	-0.02	0.70

NIM	132	0.33	0.48	0.018	3.01
OPM	132	0.36	0.30	-0.22	1.88
GPM	132	0.49	0.31	-0.08	1.85

Source: Results from STATA 17. Output

4.2. Correlation analysis via Pearson approach

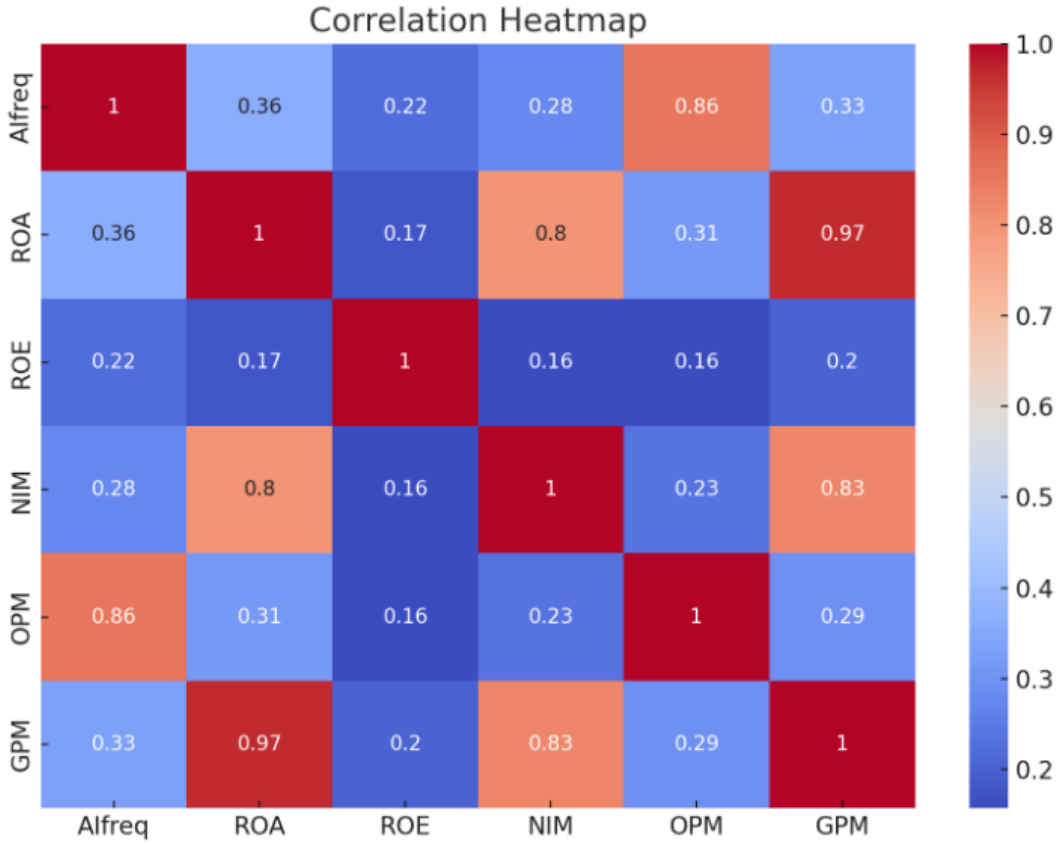

Figure 2. *Correlation analysis Heatmap*

Observing figure 2. The findings indicated that AIfreq has a significant positive moderate correlation with ROA at 99% confidence level and has a significant positive week correlation with ROE at 99% confidence level. In addition, the study reveals a positive moderate correlation between AIfreq and NIM at a 99% confidence interval level. However, there is a positive and strong relationship between AIfreq and OPM at a 99% level of confidence. At the end, there exists a positive moderate relationship between AIfreq and GPM at a 99% confidence level, as we shall be seeing in the result analysis.

Note: Figure 2. is the heatmap showing the correlations between AIfreq, ROA, ROE, NIM, OPM, and GPM. The values are color-coded to reflect the strength of the correlations, with annotations indicating the Pearson correlation coefficients.

4.3. Regression Model

Some of the most used statistical analysis technique is simple linear regression, which has been used in the current linear regression analysis. Table 3 presents the findings of this regression of AI-related term disclosure against a range of firm performance indicator variables. Models 1, 2, 3, 4, and 5 are designed to estimate ROA, ROE, NIM, OPM, and GPM, respectively. Dependent variable R-squared (R2) varies from 0.430 to 0.715, and the F-value shows significant at the 1% level of incremental.

Table 3. The Linear regressions of AI disclosure on firms' financial performance.

	1	**2**	**3**	**4**	**5**
Ratios	ROA	ROE	NIM	OPM	GPM
AIFREQ	0.186***	8.701***	0.079***	10.348***	2.243***
	(0.044)	(.831)	(0.029)	(0.659)	(4.832)
CAR	123828.36***	24344640***	0.079***	10.348***	292236.66***
	(35850.453)	(814395.77)	(0.029)	(0.659)	(53159.586)
FZ	5.292***	1.842***	2.243***	2.312***	21749870***
	(6.783)	(1.279)	(4.832)	(1.098)	(1002256.5)
_Cons	0.039***	0.278***	2.035***	0.691***	1.898***
	(0.027)	(0.102)	(0.330)	(0.221)	(0.216)
Obs.	132	132	132	132	132
R^2	0.504	0.602	0.715	0.430	0.576
Adj. R^2	0.502	0.600	0.714	0.428	0.574

t-statistics in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. AIFREC is the number of times that different AI associated terms are mentioned in the annual reports for each year. ROA is return on assets. ROE is return on equity. NIN is net Interest margin. OPM stands for Operating Profit Margin while on the other hand has GPM for Gross profit Margin. It is the natural logarithm of assets where BKSIZ is a shorthand for BKTOT1NAT surprisingly enough. Last but not the least, CAR stands for the capital adequacy ratio

Observing table 3. Using the 99% confidence level, it is discovered that AIfreq had a significant positive relationship with Argus' ROA, ROE, NIM, OPM, and GPM. This goes a long way in proving the fact that all models are acceptable. Hence, the first suggested hypothesis is accepted, H1: The results also attest that firms' AI-related term disclosure influences firms' financial performance. Which is why we may dismiss the first hypothesis.

The regression analysis that has been proposed gives information about the fact of how AIfreq affects different financial ratios, as discussed below. The set of models is characterized by rather dissimilar results, with ME values varying from 0.430 up to 0.715. As illustrated in the above graphs, the highest coefficient of determination is shown in the NIM model, where the AIFreq has been predicted with R-squared 0.715 and adjusted R-squared 0.714. Thus, it could be deduced that there exists a very strong, significant positive relationship between AI and net interest margin for the analyzed corporate annual reports. Other models that were also run include the ROE and GPM models, which were found to fit with the model fitness test, yielding an R-square of 0.602 for the ROE model and 0.576 for the GPM model. Based on these results, the frequency of AI in reports is most closely negatively related with the various measures of profitability.

A moderate positive correlation is revealed by the ROA model (R-squared 0.504), followed by a somewhat lower correlation in the case of the OPM model with an R-squared of 0.430. The small difference between the R-squared and the adjusted R-squared across all four models indicates the appropriateness of entering control variables, namely CAR and size of the banks (BANKSIZE) along with AIfreq. Due to the fact that the financial ratios are composite and can be affected by diverse factors, high R-squared values reveal that the frequency of AI refers in the annual reports has a meaningful role to play in the disparities in bank performance indices. The persistent values of AIfreq with '***' in all the models strengthen this evidence. However, the differences in the R-squared coefficients also indicate that the effects of AI-related communications are heterogeneous across aspects of bank performance, with the domestic bank's interest margins being the most affected and the operating profit margins being the least affected.

4.4 Discussion

This paper aims at establishing the relationship between the qualitative variable—disclosures of the AI-related terms in the annual reports—and the quantitative variable—financial performance of the banking sector. In fact, as this research has calculated, AI disclosure frequency positively affects ROA, ROE, NIM, OPM, and GPM in the assumed direction. It can be inferred that these research results support and extend existing literature on the subject of the utilization of AI in banking. These observations are in line with some previous studies that claim that AI and relevant technologies are directly associated with financial performance. For instance, using data from 2024, Shadreck et al. highlight that AI enhances business performance and revenues for retailers, as we have seen in the present study among banking organizations. Similar to Chhaidar et al. (2023), we confirmed that there is a significant and positive relationship between the investment made in fintech and the performance of the financial firms, as well as a positive relationship between the disclosures of AI and various measures of profitability.

The association we observed of the AI disclosures with Net Interest Margin (NIM) appeared substantial and highly significant. This study provides a theoretical underpinning to Rahman (2023), who stated that business intelligence has positive effects on operational performance and profits of banks. This research implies that AI might have a significantly greater effect on the bank's most basic measure of operational profitability (NIM) than the BI tool. In contrast to the prior studies, which have focused on the extent of AI and the direct effect on performance, this research addresses the research question and covers the relationship between voluntary disclosures on AI and financial performance. This is in conformity with the signaling theory that has been examined in the work of Cheng et al. (2023) that the use of AI may be an attempt by the banks to signal about their current level of technological development as well as their future performance.

That the researcher discovered diverse degrees of relationship between AI and performance figures, we did highlight new knowledge about how AI may be influencing one or another aspect of banking operations. This conception was lacking and provides for a much more refined picture of how AI affects banking. The implications endorse the assumptions of Enholm et al. (2022) and the AI McKinsey Global Survey series that AI could enhance the incomes of banks substantially. The correlation we identified, covering all evaluated KPIs, suggests that the banks reporting more about their AI activities do experience improved financial performance.

The current study has also posed new questions. For instance, the correlation coefficient of operating profit margin is comparatively low with other benchmarks, indicating that although AI may be growing the profitability of businesses, it is also reopening questions about its influence on operating profits. This comports with Hentzen et al.'s (2022) prediction about AI being helpful for enhancing financial outcomes in banks, although some aspects of banking are likely to benefit more than the others. Furthermore, our study offers evidence for the theoretical frameworks of voluntary disclosure articulated by Tekin and Polat (2020) as well as Li et al. (2020). This positive relationship between the AI disclosures and performance indicates that the notion of firms using these disclosures as a signaling mechanism is plausible.

5. Conclusion and Recommendation

The material compiled in this paper has provided evidence for the positive coefficients of the AI-related term disclosures in the annual reports of the banking sector regarding the evaluation of various angles of the sector's total financial performance. As we can observe, high positive correlations between AI disclosure frequency and the overall financial performance metrics: ROA, ROE, NIM, OPM, and GPM suggest that the use of AI in the banking sector has been progressing and has gained more importance as a tool in recent years. These results not only support the prior literature extolling the virtues of AI implementation in finance but also expand upon the findings of extant research by showing that voluntary AI reports can also be beneficial in signaling a bank's overall technological competence and performance expectations.

It is clear that the strength and nature of the relationship differ across all of the various key performance indicators: the strongest association is observed for NIM and the weakest for OPM. This implies that even though the results for the disposition are mostly positive, its influence for every operation area of an organization may not necessarily be positive for overall profitability. The findings of this study provide evidence to the theoretical rationale expecting positive reactions for voluntary disclosure and signaling theory specifically in relation to emerging technology such as AI.

Practical Contributions

In light of the findings of this study, we suggest that banking institutions should consider the following approaches: This research establishes that there is low relevance of information and knowledge on projects and adoption of AI in banking institutions. The findings of a positive with high significance degree of relationship between AI disclosures and financial performance suggest that higher AI disclosures could be welcomed by investors and stakeholders. To meet this growing demand, banks should start to put in place a proper AI disclosure policy as part of the company's communication and investor relations policies.

However, it was established that there is a significantly positive and robust relationship between AI disclosures and the net interest margin of the banks, particularly; therefore, they should enhance the use of AI technology in areas that have an effect on the core lending and deposit-taking business of the bank. This can range from simple credit scoring, whereby the algorithm used is based on artificial intelligence, to more complex product promotions or even more complex risk management promotional technologies.

From the perspective of the regulatory authorities, the conclusions indicate that there could be benefits in adopting specific sets of disclosure rules relating to AI applications in the banking industry. It could clarify organizational practice and make comparisons easier, thus expediting the construction of more efficient markets and better-informed markets.

Academic Contributions

From an academic perspective, the present study seeks to fill the gap in the literature concerning the technology adoption within the scope of the banking system, voluntary disclosure theory, as well as the application of AI and its effect on the financial performance of a financial corporation. It follows that by shifting our focus from AI implementation towards AI disclosures, we've added a fresh perspective to analyze the interaction of AI and financial performance. This approach connects two existing lines of literature related to adoption of AI and corporate disclosure policies.

The results further inform the debate on how new technologies are helping financial institutions transform their performance and market image. The emerging extent and nature of relations in terms of various performance indicators offer a greater detail of potential AI effects to help guide future research in this field.

Finally, as AI continues to transform the banking industry, understanding its effects on financial performance and the role of voluntary disclosures will remain crucial. This work wants to represent a basis for investigating new solutions in this field that is likely important for further analysis in academic research and for the improvement of banking and financial decisions.

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Appendix

Appendix A

Table A1. Keywords search items and list of AI-related disclosure terms.

Column A	Column B
AI-related terms disclosure/keywords search item	
Digital transformation, fintech, financial technology, modern technology, AI digital strategy, latest technology, advanced technology, AI computing technology, digital infrastructure, digital library, electronic channel, electronic system, Internet of things, 5g technology, advanced technical experiences, digital platform, digital technology, 5g networks, blockchain, smart connection, digital awareness, digital capabilities, digital culture, digital economy, digital futuristic, digital transition, augmented reality technology, technical platform, web technology, machine learning, deep learning, augmented intelligence, natural language processing (NLP)	Digital awareness, transformation,and capabilities
Ro botics, robo-advisors, automation, digital banking, mobile banking, online banking, digital services, mobile apps, electronic payment, Internet banking service, mobile branches, mobile payment, robots, mobile ATMs, digital payment, digital identity, smartphones, smart bank websites, digital product, electronic service, intelligently analyses, digital wallet, electronic wallet, mobile device service	AI application, product, service,and process
Information security, cyber security, electronic security, it risks security, electronic security policies, card security, cyber risk, electronic security, cybercrime, bank electronic security, customized electronic security methods, cyber breach, cyber resiliency, defense technology, cyber intelligence, electronic attack, global security, information security breaches, security vulnerabilities.	AI information challenges andcyber security threats

الإفصاحات الطوعية للذكاء الاصطناعي وتأثيرها على الأداء المالي للشركات: دليل من الشركات المصرية المدرجة في مؤشرEGX30

المستخلص

يهدف البحث الى استكشاف العلاقة بين الإفصاح الطوعي عن الذكاء الاصطناعي في التقارير السنوية للشركات المصرية المقيدة في البورصة المصرية وتأثيره على أدائها المالي متمثلاً في ربحيتها. وذلك من خلال فحص دلالة تكرار مصطلحات الذكاء الاصطناعي في إفصاحات الشركات وتأثيره على مؤشراتها المالية. وقد اعتمدت الباحثة على استخدام تحليل الانحدار الخطي البسيط لـ ١٢ شركة مصرية من الشركات المقيدة في مؤشر البورصة المصرية EGX٣٠ خلال الفترة من ٢٠١٣-٢٠٢٣، بإجمالي ١٣٢ مشاهدة لمصطلحات الذكاء الاصطناعي.

وقد أظهرت النتائج، تسجيل التكرار النسبي لجميع المصطلحات المرتبطة بالذكاء الاصطناعي في التقارير السنوية بواسطة متغير مستقل يسمى AIFREQ. وفيما يتعلق بالمتغيرات التابعة، تم الاعتماد على مؤشرات الأداء المالي التالية (ROA و ROE و NIM و GPM و OPM)، وتم استخدام حجم الشركة ونسبة كفاية رأس المال كمقاييس رقابية. كما أظهرت النتائج وجود ارتباط إيجابي كبير بين تكرار الإفصاحات المتعلقة بالذكاء الاصطناعي ومقاييس الأداء المالي المستخدمة، بنسبة تصل إلى ٧١,٥ ٪ مع صافي هامش الفائدة NIM، ووجود ارتباط إيجابي ومعنوي بنسبة أقل مع الأداء التشغيلي OPM. تؤدي هذه النتائج إلى قبول فرض البحث أن الشركات التي تكشف بشكل متكرر في تقاريرها السنوية عن المسائل المتعلقة بالذكاء الاصطناعي تبدو أفضل أداءاً ماليًا عبر معظم مقاييس الأداء. تعد هذه الورقة مساهمة في الأدبيات التي تركز على القطاع المالي المصري والتحقيق في تأثير الإفصاحات الطوعية للذكاء الاصطناعي على الأداء المالي، بدلاً من اعتماد الذكاء الاصطناعي فقط. وهو ما يوفر رؤى جديدة حول علاقة تقرير مبادرات الذكاء الاصطناعي بأبعاد مختلفة من الأداء المالي في بيئة الأسواق الناشئة.

الكلمات المفتاحية: الذكاء الاصطناعي ، الربحية، مؤشر البورصة المصرية EGX٣٠ ، الأداء المالي