

Artificial Intelligence in Action: Exploring Financial Management Practices in Moroccan Universities

Dounia Berrachid

Higher School of Technology – Laayoune, IBN Zohr University, 25th March avenue, Laayoune, Morocco

E-mail: d.berrachid@uiz.ac.ma

NABIL BERRACHID

FSJES, CADI AYYAD University, Morocco

Abstract

In the rapidly developing era of technology and digitalization, artificial intelligence (AI) has gradually evolved and reached our vision. AI has the ability to revolutionize traditional learning and teaching patterns by enhancing educational performances, personalizing learning experiences, and streamlining administrative tasks (Popenici & Kerr, 2017; Fowler, 2023).

The significance of this research is motivated by the emergency of Moroccan public universities' financial challenges, which demand innovative measures to enhance their financial management. Through the adoption of Artificial Intelligence (AI) in these processes, the universities are able to leverage technology for enhanced efficiency and optimization of resources. The immediate impact of AI on learning outcomes remains a subject of investigation and discussion (Hadithy et al., 2023). This study seeks to explore how the perceptions of AI by financial managers and educators can inform its effective uptake, paving the way for sustainable financial management reforms in Moroccan universities (Hajam & Gahir, 2024).

Thus, universities have gradually introduced new technologies to make their management modern. Moroccan public universities are experiencing considerable financial strain in terms of funding and substantial operational expenses. Hence, integrating AI into financial management practices within Moroccan universities is considered a significant tool to enhance efficient financial management reform.

This study aims to investigate the perceptions, experiences, and potential difficulties that could be faced by financial administrators and professors of higher education regarding the implementation of AI tools in optimising the financial management practices of Moroccan public universities to ensure better educational outcomes.

Through a qualitative study using semi-structured interviews with deans, professors, financial responsables, and administrators from different universities operating in the public sector in Morocco, the research seeks to provide insights into the potential benefits and challenges of integrating AI in the management of their financial practices and its implications on educational sustainability.

Keywords: Artificial intelligence, financial management, higher education.

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1. Introduction

Integrating artificial intelligence (AI) into the management of financial practices has emerged as a revolutionary force in various sectors, including education. AI use in financial management procedures in Moroccan public universities could offer substantial advantages, although it presents several challenges and issues that need to be addressed (Lin & Yu, 2023).

Chen (2023) states that AI has enormous potential to change the world. The author highlighted AI's great transformative potential due to its ability to enhance decision-making processes through insightful data analysis and effective risk management capabilities.

This author also points out that, in addition to this, machine learning progress is perceived as an enabler of openness and flexibility in financial transactions and operations within universities so that administrators can allocate resources more efficiently and effectively and react swiftly to the evolving educational environment.

In the study of Zakaria et al. (2023), AI was explored in terms of being a pivotal factor in releasing human resources by providing an automatic method to conduct repetitive financial activities, thus offering more

productivity, productivity and effectiveness by allowing the human capital to focus on strategic initiatives. In this regard, the authors reinforced the necessity of optimisation, which could potentially improve institutional efficacy commensurate with more apposite education standards and judicious budget management, particularly as financial sustainability becomes increasingly pivotal.

Though, it is admitted that shifting to AI-integrated financial management implies complexities. These later arise from ethical considerations, including algorithmic bias, the equitable accessibility of AI tools among departments and mainly data protection.

In this vein, Ríos-Campos et al. (2023) highlight the administrative advantages associated with these issues, stressing the need for robust governance frameworks to tackle potential ethical concerns and disparities.

Hidayat et al. (2024) assert that neglecting ethical considerations in AI adoption may perpetuate prejudices and erode stakeholder trust (Hasas et al., 2024).

Besides that, Eden et al. (2024) added that considerable disparities in AI literacy among employees are another barrier to the effective implementation of such technologies.

Building an educated workforce capable of leveraging AI to its full potential will require substantial investment in professional training and development. For financial accountability to align with the equity and inclusion goals of institutions, educators need to be empowered to ensure their comprehension and utilisation of these AI tools. Educators must be prepared to understand and effectively use AI tools to ensure that financial commitments align with institutional goals of accessibility and inclusivity (Eden et al., 2024).

Hence, the use of AI in the financial management processes of Moroccan universities is very much promising for driving efficiency and sustainable savings; however, one will need to intelligently tackle the challenges discussed in the above lines. A fair approach which places importance on ethics alongside facilitating efficient training frameworks is essential for leveraging the power of AI.

The findings of this investigation not only reflect the level of sophistication in the integration of AI in education finance systems but also set the ground for further investigation that provokes the ideas that will underpin innovations promoting the long-term sustainability of higher education in Morocco. However, this study is so delimited as a study on potential benefits and challenges to the integration of AI in the financial activities of public Moroccan universities and its impact on educational sustainability. Artificial intelligence units like machine learning and predictive analytics offer room for more flexibility and transparency in university financial activities.

2. Literature review and research question:

2.1 AI and Financial Management:

AI and Machine Learning (ML) are the future of multiple industries, including the financial sector. El Hajj and Hammoud (2023) explored how industry professionals view AI and ML as having a positive impact in terms of more efficient and accurate financial operations.

Their research outlines that such innovations not only create more efficient processes as well as lead to cheaper costs and higher performance overall in financial markets.

Moreover, Riani (2024) emphasises this point by charting a remarkable rise in publications associated with AI and ML from 2015 until today, underscoring the use of AI and ML in a variety of situations such as bankruptcy prediction, forecasting stock prices, and portfolio management. The increase indicates that AI is more widely recognised and having a significant impact on the evolution of financial practices. Besides, Kumar (2024) asserts that the integration of AI and Blockchain presents opportunities for improving decision-making and securing financial transactions. This convergence is fundamentally altering accounting by automating decision-making processes and enhancing financial transactions. Nahar et al. (2024) conduct a bibliometric analysis that reveals research frontiers and elucidate the evolution of AI applications in finance, particularly in risk management and predictive analytics. These studies collectively illustrate a trajectory towards progressively data-driven and technology-enhanced financial management.

However, nobody can deny the important aspect of ethics regulation as a main challenge in front of AI use in the financial landscape.

The intersection of the three pillars, which are innovation, regulation, and ethical responsibility, is critical for ensuring the responsible deployment of AI into the banking and finance ecosystem, as highlighted by Ridzuan et

al. (2024).

According to the authors, the potential of AI to enhance customer service and risk assessment lies with the need for an effective governance structure to alleviate risks and foster accountability (Ridzuan et al., 2024). According to Jain, while AI deployment increases banking functionalities, it is underscored by the needs of data quality requirements and security measures challenges (Jain, 2023). Artificial intelligence is also gaining traction in education financial management. Lin and Yu (2023) delve into how it enhances transparency and efficiency in managing financial affairs in educational institutions. Artificial intelligence technologies, as per Lin & Yu (2023), enable automated repetitive processes, which allow for data-driven budgeting and forecasting. From the aforementioned scholars, we can say that “AI has moved into educational finance more than it has traditional finance.”

Thus, In the study of Bouchetara et al. (2024) analyse how artificial intelligence (AI) is enhancing risk management strategies and so transforming public finance management. Their study details the ways in which AI-powered predictive analytics can help with better resource allocation, better public budget forecasts, and the detection of financial crime. By utilising machine-learning algorithms, governments can detect inefficiencies in fiscal management, reduce the likelihood of fiscal instability, and promote openness in public spending. The study also highlights the need to incorporate AI into current financial management processes to make it more responsible, reduce bias, and improve public sector financial decision-making. Traditional methods of lowering risk have become increasingly ineffective as financial markets have developed. Machine learning algorithms and other forms of artificial intelligence offer state-of-the-art risk discovery and mitigation capabilities for public finance managers. Additionally, concerns pertaining to liquidity, operations, credit, and market volatility. Better fiscal planning, better debt management, and early detection of hidden financial weaknesses are all possible thanks to predictive modelling and scenario analysis. More efficient use of public funds is possible with AI-driven resource optimisation, leading to data-driven, future-oriented fiscal management that is in line with economic viability and fiscal responsibility. However, there are a number of issues that come up when thinking about using AI in financial management systems, including data protection, the need for trained staff, and the development of strong regulatory frameworks to guarantee honest and open use.

AI integration has immense possibilities; however, its challenges in finance are multifaceted. Yi et al. (2023) point out that whilst AI technologies these days are set to fix many application issues (connected with traditional accounting and finance), the academic community continues to face challenges related to knowledge about AI and how to implement it (Yi et al., 2023). Furthermore, Sonkavde et al. (2023) review multiple machine learning models for stock market forecasting and their applications, underlining the challenges of model interpretability and data quality that need to be addressed within AI's deployment settings. Until the end of October 2023, this is a reflection of a broader concern within literature, as being able to capture the best of both worlds with AI predictive modeling comes with its challenges in terms of data as well as how the model has got to function.

This paragraph is meant to indicate a more nuanced landscape in which the powerful benefits of AI and ML — better decision-making, leaner operations and new modes of applications in service to our stakeholders — come with serious ethical, compliance and engineering challenges.

2.2 AI in financial management of public universities:

This research delves into the usage of Artificial Intelligence (AI) in the realm of financial management within public universities, an area yet to be fully explored. This literature review aims to provide a synthesis that examines how the adoption of AI technologies, including machine learning (ML) and predictive analytics (PA), can be utilised in the financial management of higher education institutions (HEIs).

The role of AI in financial management within public universities is multidimensional. Huang et al. (2024) show how machine learning-based clustering algorithms can be applied for the identification of financial fraud. According to the authors, these algorithms can process large sets of data rapidly for the discovery of trends that may not have been evident to the human analyst during typical fraud detection processes, expanding their potential utility within financial institutions; this minimum application may also augment efforts by educational institutions. This came in line with Zhao's (2024) findings, who conceptualises a predictive model based on RPA (Robotic Process Automation) technology for monitoring and supervision of financial operations that could lead to improved financial risk management. The advent of these technologies together demonstrates how AI could augment financial supervision by enabling faster and automated processing of non-telegraphic financial data in bulk.

The literature shows that AI can be an agent for impactful innovations in educational management. For Siminto et al. (2023), public universities can optimise financial management through AI. Their research pinpoints areas where AI could fit into existing administrative structures and thus lead to more creative and productive financial practices.

Additionally, other studies focused on how "smart finance" management, which is driven by AI, can change the way organisations evaluate their financial condition and minimise manual workloads to prepare more strategic financial allocation (Ma, 2022). More so, it shows banks moving to a data-centric method of educational finance, portraying how AI is opening doors to greater resource facilitation.

Furthermore, one cannot overlook the significance of financial literacy in university students, as mentioned by Al Maalouf et al.(2023). They propose that students with a greater understanding of financial principles significantly improve their financial behaviours and decisions, indirectly swaying financial management strategies in the university (Al Maalouf et al., 2023). This study highlights the importance of leveraging AI as a tool for educational initiatives aimed at improving financial literacy, ensuring future leaders are well-prepared to navigate intricate financial challenges.

So, when it comes to applying AI in financial management, there are significant challenges, especially with respect to ethics and data security. It is well known that data confidentiality and biases within AI systems are the growing concerns for machine learning models that are used to make decisions. In this regard, Abuzov(2023) addresses the regulatory consequences of using AI in capital markets, highlighting that ethical and data protection issues must accompany technological advancement (Abuzov, 2023). Such ethical considerations are invaluable as public universities continue to adopt specified AI technologies in their finance processes.

Hence, research by Sujith et al.(2022) show how data interpretation and risk management strategies can help make better financial decisions using machine learning (Sujith et al., 2022). Moreover, the focus on predictive modelling to evaluate financial risks and automate the steps for approving different financial transactions taking place in universities indicates a transformative potential that will help improve the efficiency and responsiveness of the financial operations (Fadtare et al., 2024).

Overall, the opportunities and challenges AI brings to the financial management of public universities are significant and complex. AI technology literature lends itself to explaining a positive correlation between the aforementioned features and efficiencies, better risk management and transparency in financial operations. Yet, issues of ethics, data privacy, and the need for strong governance frameworks are critical for the successful deployment of such technologies.

2.3. AI in financial management of public universities in the Moroccan context:

Artificial Intelligence (AI) utilised in the financial management of public universities in Morocco is an ever-growing dimension of research. It aims to field operational efficiency, financial transparency, and data-driven decision-making processes.

A study by Moukhliiss et al. (2024) stresses the role that AI can play in transforming the landscape of higher education and research in Morocco. AI, they argue, can fill significant gaps in traditional educational systems and improve financial operations via higher efficiencies and tailored management strategies. Their research also indicates that public universities need to port AI in many dimensions of the financial management and create an environment for innovation conducive for such changes. Moreover, a national AI strategy that is holistic, responsible and ethical is recognised as essential for Morocco's competitiveness and strategic intelligence in various sectors, including education (Lafram and Bahji, 2024). This finding is consistent with the analysed trends towards integration of digital transformation technology, which can improve financial management in the public universities.

Additionally, Dhewi and Hadiwidjaja (2022) demonstrated how proper financial management methods in university settings are necessary for creating sustainable practices and operations. In their study they emphasise the necessity of applying diverse financial behavioural models and postulate that AI-powered instruments can improve budgeting, resource distribution, and financial tracking (Dhewi & Hadiwidjaja, 2022).

This integration enables the public universities to gain access to sophisticated financial management tools in a time where education institutions are making drastic changes while offering personalised services that respond to their specific operational needs. Meanwhile, AI implementation in financial management is not without challenges. The review shows that although AI technologies can provide higher education with multiple advantages, including improved risk

management, personalisation and efficiency, there are many ethical issues and data security concerns arising from the use of such systems in a higher education context.

For example, Omari et al. (2023) highlight the pressures on the financial side of health, echoing potential macroeconomic forces that may seem similar in tertiary education funding. While the public universities continue to use technology to manage their finances and processes, this underscores the need for robust frameworks for the effective use of AI and guarding sensitive financial data.

In addition, Zhang (2023) suggests the prospect and challenge of digital intelligence in the aspect of university financial management. As predictive analytics becomes more and more the norm, they will form the bedrock of effective university management (Zhang, 2023). Kanupriya (2024) supports this perspective, discussing how AI goes from the reactive to the proactive, revolutionising financial risk assessments to predict if a challenge may arise and prevent it from doing so.

Adopting AI within financial management of public universities in Morocco is considered a transformative potential which is going to improve all the practices of higher education by ensuring more efficiency and transparency.

2.4 Research problem:

There are few works or research on the contribution of AI to financial management in Moroccan public universities. The research question that guides this study is: What are the perceptions, experiences and potential challenges facing financial administrators & faculty in Moroccan public universities in using AI tools for optimising their practices of managing finances to improve educational outcomes? This research question reflects the purpose to adopt a multifaceted approach and examine stakeholders' perceptions of and direct experiences with AI tools in inducing education change and challenges they might face through presenting Moroccan HE as a holistic case of incorporating AI.

3. Theoretical framework:

According to scientific literature, Riantini et al. (2018) mentioned that the Technology Acceptance Model (TAM) is established as one of the most widely used to investigate the adoption of new technologies, including the tools provided by AI, since it is considered as a concise theory by the academic community dedicated to the aspects of information systems.

The TAM was proposed by Davis in 1989 while building upon the principles of the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB). In the context of educational institutions, especially in implementing AI technologies for financial management along with other educational applications, TAM offers insights into how different factors can drive or impede user acceptance.

TAM primarily consists of two core constructs: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**. These constructs serve as key determinants in understanding how users accept and utilize technology. Specifically, perceived usefulness refers to the degree to which a user believes that using a particular technology would enhance their job performance, while perceived ease of use denotes the degree to which a user believes that using the technology would be free of effort. Together, these constructs help predict users' intentions to use the technology and ultimately influence their actual usage behaviors (Vionita & Siburian, 2024, p. 6). In the university financial management context, PU can be measured through several indicators:

- **Increased Efficiency:** The extent to which AI tools can automate repetitive tasks, such as budgeting, forecasting, and transaction processing, is significant. Evidence suggests that financial administrators who perceive that AI accelerates these processes are likely to have a higher intention to adopt such technologies. Research indicates that AI technologies can streamline operational tasks, enhancing efficiency and enabling staff to focus on more strategic activities. Zakaria et al. (2023) discuss how AI can influence financial management practices, highlighting its potential to improve effectiveness in various administrative functions.
- **Better Decision-Making:** The perceived ability of AI to analyse financial data and provide actionable insights. Administrators may evaluate how AI-driven analytics improve the accuracy of financial reports and aid in strategic planning (Wang et al., 2022).
- **Enhanced Financial Transparency:** The degree to which AI applications promote transparency in financial reporting, compliance, and auditing processes. Transparent processes are seen to mitigate risks

- and instill trust among various stakeholders (Lee & Wan, 2010).
- **Improved Financial Risk Management:** The perception that AI can assist in identifying potential financial risks and suggesting preventive measures, thereby safeguarding university resources (Teo & Jarupunphol, 2015).
- **User Experiences with AI:** A positive experience with AI in a related context may enhance users' perception of its usefulness in financial management. Users' past interactions with AI technologies can significantly shape their expectations (Wang et al., 2022).

On the other side, the perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. For AI in university financial management, this can be broken down into:

- **User Interface Design:** How intuitively the AI application is designed. A user-friendly interface can greatly enhance perceived ease of use, facilitating a quicker adaptation process (Sullivan et al., 2023).
- **Learning Curve:** The perceived time and effort needed to learn how to use the AI tools effectively. Familiarity with technology directly impacts perceived ease of use; institutions should invest in training programmes to ease this transition (Valerio, 2024).
- **Technical Support and Resources:** The availability of tutorials, help desks, and user manuals that support staff in using AI applications without leading to frustration (Oktaria et al., 2024).
- **Integration with Existing Systems:** The ease with which AI tools can be integrated into current financial management practices. If stakeholders perceive that new technologies can seamlessly fit into their work processes, their intention to adopt is likely to increase (Amarilis et al., 2024).
- **Training and Workshops:** The extent and quality of training and workshops offered by the institution to build confidence in using AI tools could significantly influence perceived ease of use, resulting in higher acceptance rates (Perwira & Dellyana, 2023).

4 Research Methodology

4.1. Qualitative Exploratory Approach

The choice of a qualitative explanatory study in examining perceptions of Artificial Intelligence (AI) in financial management is grounded in the necessity to delve deeply into the multifaceted experiences and attitudes of financial professionals.

Management sciences typically employ qualitative research as a way to look for information. Yin (2014) states that a qualitative study is «empirical research that studies a contemporary phenomenon in a real context, where the boundaries between the phenomenon and the context are not clear and in which multiple empirical sources are mobilised».

Qualitative research, notably in-depth interviews, can also enable researchers to extract the dominant attitudes and delve into motivations, concerns and contextual factors underpinning AI adoption amongst social workers (El Hajj & Hammoud, 2023). Specifically, a qualitative lens may provide insights into the ways in which AI and machine learning are viewed within this intricate ecosystem of financial markets — shedding light on nuanced differences among finance managers as per how they imagine these trends to be (ibid.). Moreover, qualitative data can help generate depth of subjective experience that cannot always be addressed through quantitative measures alone, which leads to a deeper understanding of how AI enhances operational efficiency and decision-making processes in financial management (Mogaji & Nguyen, 2022).

This is also in line with the conclusions presented by Kanupriya (2024), where he stresses the learning challenges and opportunities AI brings to financial risk management. This enables researchers to infer insights on how Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) interact with one another, leading to behavioral intention; hence, it enriches the understanding of organizational dynamics in the context of emerging technologies such as AI (Kuzminska et al., 2024). Using a grounded theory, qualitative studies can uncover newly arising patterns on ethical considerations and stakeholder issues which represent mandatory context for the general discussion of AI acceptance in financial management (Pant et al., 2024). As such, the qualitative explanatory nature of this study is an apt approach which we believe contributes a rich narrative to both academia and practice on the transformations in university financial management occasioned by AI technologies.

4.2 Selection of the Sample and Study Area: Methods

This research targets Morocco's public universities, considering the various reforms and innovation projects that have been undertaken over the last decade.

The method used is a qualitative cross-sectional interview-based study. Statistical analysis or numerical data are rarely used in this type of research. It is generally not a large study with many people or situations researched. Subsequently, the conclusions are applied to supposable forecasts in that area. A cross-sectional study is when all measures are taken once or should be collected over a short time (Marshall, 2006). Research materials used in this research are interviews, they are considered as primary data sources. Semi-structured interviews with predetermined statements in a predetermined order. Unplanned questions were additionally asked in response to the flow of the interview or a follow-up on what was said by the respondent (Marshall, 2006). There was no open-ended question, except at the very end of each interview, where respondents were asked if they would like to make any comments. A purposive sample was employed in the research, where respondents selected a method and frequency measures that are particularly appropriate for interviews (Marshall, 2006). Hence, the expert sample was selected according to their area of specialisation and occupation. They need to have worked in the field of higher education and also have experience in financial management of public universities, as well as they are supposed to be familiar with technologies and specifically AI in this area of management of these institutions. The respondents have knowledge in the field of artificial intelligence or computer science and software project management experience. The expert sample should have sufficient knowledge in both fields of study to be able to get significant results from the study. The respondents' background and occupation are summarised in Table 1 below.

Table 1. An overview of the respondents

Respondent	Position	Background	Gender	Age (in years)	Years of experience (in years)	Duration of interview (in mins)
1	University lecturer (University Council member)	PHD in Finance	F	30-40	-10	35
2	University lecturer (Budget Monitoring Committee)	PHD in computer science	F	30-40	-10	30
3	University lecturer (Budget Monitoring Committee)	PHD in education science	F	30-40	-10	40
4	Innovation responsible service	Master degree in Innovation and Entrepreneurship	M	<30	-10	30
5	Information System responsible	Master degree in Information system management	M	<30	+10	25
6	Management control responsible	Master in Auditing and management Control	F	30-40	+10	30
7		engineering	M	30-40	-10	30

	Information System responsible	degree in Machine Learning and DATA science				
8	Administrative responsible (supplying supervisor)	Master degree in Economics	F	30-40	+10	30
9	Responsible at the Budget and Financial Affairs Division	Master degree in Control, accounting and audit (CCA)	F	>40	+10	45
10	Responsible at the Budget and Accounting Department	Master degree in Control, accounting and audit (CCA)	F	30-40	+10	45
11	Management control responsible	Master degree in Management control	M	>40	+10	35
12	Administrative responsible	Bachelor in Economics	M	>40	+10	30

Source: Author

4.3. Data collection:

Qualitative data can be collected in various ways. But this research opted for semi-structured interviews.

This is similar to a guided conversation with the aim to get certain specific objectives. Hence, this exploratory research decided to disclose the objectives to the interviewees.

This straightforward approach enables the data to be gathered more efficiently and in a more precise manner, especially because most of the interviewees are having sensitive occupations and have only limited time to spare for extended and lengthy interviews.

These face-to-face interviews took place mostly through oral interactions. The average duration of the interviews was 45 minutes per interviewee. In consultation with the interviewees, voice recording was generally opted for.

The data were collected on the basis of an interview guide consisting of themes corresponding to the TAM in the case of AI financial management of universities model and the literature on educational sustainability. The data collected from the semi-structured interviews was based on an interview guide (Table 2):

Table 2. Principal Themes and Illustrative Questions Addressed to Interviewees

	Initial question: Have you used any Artificial Intelligence tools in your financial management activities? If yes, could you share with us your experience? How frequently do you engage with these tools?	
	Themes	Selected questions for participants
Perception of AI in Financial Management	Perceived Usefulness of AI	In your opinion, what are the significant advantages of using AI in the financial management processes of your university?
	Impact on Resource Allocation	How do you perceive AI's ability to assist in the optimal allocation of financial resources? Can you share experiences that illustrate this?
	Long-Term Benefits	Do you believe the introduction of AI in financial management can lead to long-term advantages for the university, such as improved financial health or sustainability? Why or why not?
Perceived Ease of Use (PEOU)	Ease of Use	How user-friendly do you find the current AI tools implemented for financial management?
	Integration with Existing Systems	How seamlessly do AI tools integrate with current financial systems within your university?
	Time Taken to Learn	How long did it take you to feel comfortable using AI tools? Do you believe that sufficient training exists to assist new users in mastering these tools?
Relationship to Sustainability	Sustainability Impact:	In what ways do you believe the adoption of AI in financial management can affect the sustainability of educational operations within your university?
	Concerns and Challenges	What challenges have you faced that may hinder the effective use of AI in financial management?
Acceptance and Future Development	Acceptance and Attitudes	How has your attitude towards using AI in financial management evolved since you started using these tools? Have any particular experiences shaped your views?
	Recommendations for Improvement	What suggestions do you have for enhancing the acceptance and utilization of AI tools among university staff?

Source: Author

To give consistency to the content of the interview guide, pre-testing and validation sessions were organised with an engineer who had led the implementation of digitisation within various public universities, as well as an AI consultant from the private sector. The goal is to refine the interview guide's content, aligning it with the realities of the Moroccan universities to enhance the effectiveness and practicality of the findings.

4.4 Data Processing:

During the interviews, a body of information was collected, restructured, and subjected to a thematic analysis, which was previously chosen as the content analysis method. This is a method commonly used in social science and management research (Blanchet & Gotman, 1992). This approach is focused on the key themes that appear when conducting interviews. This methodology was informed by the use of NVivo 15 software to code, analyse, and process data from the 12 conducted interviews.

5. Results and Interpretation

5.1. Descriptive Analysis of the Sample

This descriptive analysis of the structure of the sample reveals certain characteristics of the interviewers in terms of their profession, accumulated experience, level of education, etc. (Table 4). More than 100% of the interviewees had higher education qualifications and were occupying positions in public universities. Consequently, this constitutes a cohort of highly qualified elites capable of giving their experiences and expressing more about the impact of AI financial management tools on the educational landscape for the public sector.

Table 3. Characteristics of the Survey Population

Sample Characteristics	Gender		Age		Professional activity								Years of Experience	
	M	F	<30	30-40	>40	University lecturer	Innovation responsible service	Management control responsible	Information System responsible	Responsible at the Budget and Financial Affairs Division	Administrative responsible	Responsible at the Budget and Accounting Department	- 10	+ 10
Absolute Frequencies	5	7	2	7	3	3	1	2	2	1	2	1	5	7
Percentage %	42	58	17	58	25	25	8	17	17	8	17	8	42	58

Source : Author

5.2. Interviewees' Overall Perception of the Different Approaches to AI financial management in Moroccan Universities :

The cloud of words spontaneously reflects the interviewees' overall perception of AI financial management in Moroccan universities. The size of the keywords in this semantic cloud is proportional to their relevance in the content of the semi-structured interviews (Figure 1).



Figure 1. Keyword Clouds Generated by the Encoding of Interviews

Source : NVIVO 15

5.3. Perceived Usefulness (PU) in financial management:

Among all the predetermined variables of the Perceived Usefulness of AI ,we find that efficiency was the one expressed by all the interviewees. Also, transparency was mentioned by 9 respondents and only 3 responsables mentioned the enhanced decision making. Our sample expressed the link between the PU variable in practice at Moroccan universities. For instance Interviewee 3 mentioned that “ [...]AI could...automated data ensure efficiency in Financial management through the cloud analyze of several funding sources, this could give more academic improvement for students and lecturers...however, Biases in the data can lead to skewed outcomes and perpetuate existing inequalities” . In the same vein respondent 7 added : “[...]AI for me is the time saver... AI algorithms can sometimes be "black boxes," making it difficult to understand how they arrive at their conclusions. Ensuring the explainability and transparency of AI-driven financial decisions is essential for accountability and building trust for more transparency ”.Moreover interviewee 2 expressed the following “[...] AI has begun to reshape how I approach financial decision-making within the budget committee...it also assists sometimes as comparative tool to quickly compare our university's financial performance against similar institutions, identifying areas for improvement and best practices to emulate”.

The users in this case appreciated the use of AI tools in financial management decisions and their perceptions were positive about how these tools could improve efficiency and enhance decision-making. This analysis goes on the same line with scholars who stated that Users are likely to view AI tools favorably if they result in significant time savings and automation of repetitive tasks, such as budgeting and financial reporting. Research shows that organizations adopting AI can streamline financial processes, thereby enhancing productivity (Santosa & Surgawati, 2024). Saidakhror (2024) also confirmed the aforementioned statements by reporting that AI has a pivotal role in enhancing operational efficiency by the automated financial processes.

5.4. Perceived Ease of Use (PEOU)

Also, respondents using IA tools for financial management have expressed their satisfaction by using them as mentioned by Interviewee 9 who stated : “ I am satisfied with the digitalised and AI revolution that assist universities in aligning financial strategies with broader academic goals and improving resource allocation.”

The next table illustrates some verbatims that were highly expressed by respondents in terms of the time and effort and the ease of use of AI financial management tools.

Table 4. Some Verbatim Statements with Strong Extracts from Perceived Ease of Use

Perceived Ease of Use (PEOU)	Indicators	Verbatim
	Ease of Use	Interviewee 10: “ [...] In my opinion and on the basis of colleagues experiences creating, forecasting or even tracking a task related to our service was taking from us effort and time...using cloud now in doing these tasks through automated logging is minimizing the completion time...it satisfies completely my expectations” Interviewee 11: “ [...] the tools are easy to use when you get used to them...in management control I am used to automated tools assisting my reporting, but AI is giving a great on time data” Interviewee 12: “[...] at beginning it is a little bit difficult to get used to it, specially when you don’t have the adequate infrastructure”
	Integration with Existing Systems	Interviewee 8 : “[...] well I’ve approached it with a mix of cautious optimism and pragmatic concern, I was afraid of data privacy, cybersecurity attacks...balancing the potential benefits of AI with the challenges of implementation and the need to maintain stability and control...its integration increase productivity by focusing on strategic tasks” Interviewee 5: “[...] its integration with actual systems was extremely important because it minimizes human error in financial processes...but the main concern in integrating it was related to the legal aspect” Interviewee 1: “[...] it was an urgent call to the public university to have the necessary legacy to adopt AI on all the aspects and specifically the financial management...old system was too long in my opinion and AI integration will assist also in fraud detection and prevention unlike the traditional system”
	Time Taken to Learn/training	Interviewee 12: “[...]Effective training is crucial for the successful integration of any new technology, especially something as impactful as AI-powered financial management tools” Interviewee 9 “[...]adequate training is essential for staff to confidently and competently use AI tools, maximizing their benefits...Periodic refresher training sessions will reinforce learning and introduce new features or updates” Interviewee 4: “[...] according to my experience more sophisticated AI tools may necessitate a longer training period... Training might be delivered in phases, aligned with the implementation schedule of different AI tool modules”

Source: Author

Hence, in the same vein with the interviews outcomes shorter completion times suggest better ease of use. User-

friendliness is a critical aspect of inventory management systems, as it enhances interactivity and simplifies the overall user experience. Razzaq & Zaibidi (2023) emphasized that effective inventory management software must prioritize user-friendly interfaces to facilitate easier navigation and comprehensive understanding, ultimately leading to improved decision-making and operational efficiency.

AI can automate the generation of financial reports, freeing up staff time for analysis and decision-making. This also reduces the risk of human error in reporting. Cairney & Sinclair (2006) mentioned how useful support cost allocation systems are perceived by financial managers.

Moreover, we can add to the foretasted the followings :

- **Strengthened Internal Controls:** AI can assist in fraud detection and prevention by identifying anomalies and suspicious activities. Rasheed et al., (2021) discussed how AI is transforming financial practices, from credit disbursement to risk management.
- **Refresher Training:** Periodic refresher training sessions will reinforce learning and introduce new features or updates. Sharma et al. (2022) mentioned that while financial institutions are actively recruiting data scientists to implement AI/ML, the governance of these technologies requires more attention. This underscores the importance of continuous training and support.

5.5 Impact on Sustainability in Education:

For this aspect we are going to refer to interviewees' statements and compare them with academics. The next lines are highlighting these features:

Interviewee answers:

I1 : “ [...] I see significant potential for AI to enhance various aspects of our institution. While acknowledging the associated challenges and ethical considerations, I believe AI can positively impact student outcomes, resource sustainability, and overall institutional effectiveness.”

I10: “ [...] the potential of AI to enhance our institution is significant, impacting student outcomes, resource sustainability, and overall effectiveness. However, a realistic approach must consider both benefits and challenges within our financial framework...AI can improve our data analysis capabilities, providing valuable insights into financial trends, risks, and opportunities. This data-driven decision-making can lead to better financial planning and investment strategies, contributing to long-term institutional sustainability.”

I11: “ data-driven decision-making can lead to better financial planning and investment strategies, contributing to long-term institutional sustainability...it assists also in resource allocation...as it emphasizes the importance of managing change effectively”

Hence, we can extract from the statements of the interviewees the followings:

- **Institutional Effectiveness:** AI can improve our data analysis capabilities, providing valuable insights into financial trends, risks, and opportunities. This data-driven decision-making can lead to better financial planning and investment strategies, contributing to long-term institutional sustainability. Indeed, technology is changing how institutions operate, particularly relevant to the financial model. AI can also support predictive modeling, allowing us to anticipate financial challenges and make proactive adjustments.
- **Student Outcomes:** AI-driven personalized learning platforms can adapt to individual student needs, potentially improving learning outcomes and completion rates. Imagine AI tutors providing targeted support or systems flagging at-risk students early, allowing for proactive intervention. These improvements can lead to better student success, which, while not directly impacting the financial department, reflects positively on the institution as a whole.
- **Resource Sustainability:** This is where the focus of this study lies. AI can automate time-consuming tasks within the financial department, such as invoice processing, budget analysis, and financial reporting. This increased efficiency can free up staff for more strategic work, potentially reducing overtime costs and maximizing existing resources. Yang (2024) discusses how AI can support better financial decision-making. Additionally, AI can analyze spending patterns and optimize resource allocation across departments, potentially reducing operational costs and improving budget management.

It has been noted that sustainable practices in financial management can be bolstered by AI, improving resource allocation based on predictive analytics (Hidayat et al., 2024).

5.6 Acceptance and attitudes :

I2 : “ [...] my initial focus was on the technical feasibility and implementation of AI tools in financial processes. Early on, I was excited by the potential of automating tasks like data entry and report generation. Seeing these tools in action, witnessing the increased speed and accuracy of data processing, and observing the reduction in human error firsthand solidified my belief in AI's potential”

I3: “[...] I recognized the potential benefits of AI, but also the risks associated with relying on complex

algorithms for critical financial decisions...AI usage and ethical considerations remain paramount, I am now actively seeking new ways to leverage AI to achieve our institution's financial objectives...AI implementation in finance and the importance of careful planning to avoid costly experiments.”

Seeing these tools in action, witnessing the increased speed and accuracy of data processing, and observing the reduction in human error firsthand solidified the belief in AI's potential. However, challenges like data integration, system compatibility, and ensuring data security required ongoing attention. The main focus shifted towards building robust and secure systems capable of handling large datasets and complex financial models. As AI technology evolved, it is seen as the beginning of exploring more advanced applications, such as predictive analytics and machine learning algorithms for risk assessment. The ability to analyze complex financial data and identify potential risks in real-time was a game-changer. Buchanan (2019) highlights several applications of AI in finance, including improvements to customer service through predictive behavior analysis. This continuous learning and adaptation to new technologies remain central to the engineering approach.

From the eye of the financial responsible, “the initial attitude was cautious. I recognized the potential benefits of AI, but also the risks associated with relying on complex algorithms for critical financial decisions”. Talamo et al.(2021) pointed responsible AI implementation in finance and the importance of careful planning to avoid costly experiments. Early experiences with AI demonstrated its ability to improve efficiency and reduce costs in areas like invoice processing and budget analysis. This led to a growing appreciation for AI's practical applications. Ramachandran (2024) emphasizes the paradigm shift AI represents in finance and accounting. However, I remained focused on ensuring human oversight and maintaining control over financial processes. A key turning point was the successful implementation of an AI-powered fraud detection system. Witnessing its ability to identify complex fraud patterns and reduce financial losses significantly increased my confidence in AI's capabilities. Rasheed et al., (2021) discussed how AI is transforming financial services, including improvements to risk management. “Now, I see AI as a valuable strategic tool for enhancing financial decision-making, managing risk, and improving overall financial performance. While ensuring responsible AI usage and ethical considerations remain paramount, I am now actively seeking new ways to leverage AI to achieve our institution's financial objectives” Financial responsible.

I5: “ [...]From my perspective, successful integration of AI tools within a university setting hinges on several key factors. First, we need to address the anxieties surrounding AI. Many staff members may worry about job security or feel overwhelmed by new technologies. Clear communication about AI's role, emphasizing its potential to augment, not replace, their expertise is crucial. Think of AI as a powerful assistant that can handle tedious tasks, freeing up staff to focus on higher-level responsibilities”

I8: “ [...] successful technology adoption often relies on effective training and support. Furthermore, fostering a culture of experimentation and collaboration is essential. Encourage staff to explore different AI applications and share their experiences. Creating a supportive environment where people feel comfortable trying new things, even if they make mistakes, can accelerate AI adoption.”

“From my perspective, successful integration of AI tools within a university setting hinges on several key factors. First, we need to address the anxieties surrounding AI. Many staff members may worry about job security or feel overwhelmed by new technologies. Clear communication about AI's role, emphasizing its potential to augment, not replace, their expertise is crucial. Think of AI as a powerful assistant that can handle tedious tasks, freeing up staff to focus on higher-level responsibilities”.

Wang(2021) supports this, suggesting showcasing AI's success in handling complex tasks can build trust. We also need to provide comprehensive training and support. Not everyone is tech-savvy, and even those who are might need guidance on using specific AI tools. Tailored training programs, ongoing support, and easily accessible resources can make a significant difference. Similar to the findings in the work of Schoonenboom (2014) , successful technology adoption often relies on effective training and support. Furthermore, fostering a culture of experimentation and collaboration is essential. Encourage staff to explore different AI applications and share their experiences. Creating a supportive environment where people feel comfortable trying new things, even if they make mistakes, can accelerate AI adoption. Highlighting the positive impact of AI on other institutions, like in the article of Chaudhry et al. (2012) , can also inspire and motivate staff. Finally, transparency in how AI is used and its impact on university operations is paramount. This open approach can build trust and demonstrate the value of AI in achieving institutional goals.”

Discussion:

The findings of this study illuminate the critical role that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) play in shaping the acceptance of Artificial Intelligence (AI) technologies in the financial management practices at Moroccan universities. Aligning with the Technology Acceptance Model (TAM), which emphasizes the significance of these constructs, the data suggests that without a strong perception of usefulness, financial

managers are less inclined to integrate AI tools into their workflows (Thathsarani & Jian-guo, 2022). For instance, many participants recognized that AI enhanced operational efficiency by automating routine tasks and providing precise financial forecasting, which underscores the positive correlation between PU and the willingness to adopt AI-based financial solutions. Conversely, the dimension of PEOU emerged as equally influential, as users expressed that intuitive interfaces and robust training programs significantly mitigated resistance to change and fostered a supportive environment for AI adoption (Ölçen et al., 2024). The insights gathered highlight the necessity of institutional support, such as leadership endorsement and ongoing training, to enhance the perceived ease of use of AI tools (Ölçen et al., 2024). Furthermore, challenges such as concerns over data privacy and the fear of algorithmic bias were identified, impacting both PU and PEOU. Addressing these concerns is vital to not only improve acceptance but also to leverage AI technologies for sustainable financial practices within higher education (Amara et al., 2024). These findings resonate with prior research indicating that the indirect effects of perceived ease of use on attitudes towards adoption are significant, as they ultimately contribute to users' overall satisfaction and continued engagement with AI systems (Amara et al., 2024). As such, the study advocates for targeted strategies to enhance user engagement, prepare the institution for digital transformation, and ultimately improve service delivery and sustainability in higher education institutions.

Conclusion

The integration of Artificial Intelligence (AI) in financial management within Moroccan universities represents an evolving landscape that necessitates careful examination from the perspectives of both professors and administrators. This study has provided critical insights into how Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) serve as significant predictors of AI acceptance in this context, aligning with the foundational principles of the Technology Acceptance Model (TAM). The findings indicate that when financial managers perceive AI tools as useful—enhancing efficiency, supporting strategic decision-making, and fostering greater transparency—there is a marked increase in their willingness to adopt these technologies.

Furthermore, the ease of use of AI tools plays a vital role in shaping users' attitudes and behavioral intentions. Participants expressed that user-friendly interfaces, complementary training programs, and seamless integration with existing systems significantly alleviate barriers to adoption. These factors collectively contribute to a supportive environment that encourages the successful implementation of AI-driven financial management practices. However, challenges, such as concerns regarding data privacy and algorithmic bias, must also be addressed to ensure a holistic approach towards AI integration.

The implications of this study extend beyond individual perceptions, signifying the potential for AI to enhance the sustainability of educational institutions. Adopting AI technologies can lead to improved financial health, better resource allocation, and increased institutional responsiveness to emerging challenges. Consequently, this research underscores the importance of institutional strategies that prioritize comprehensive training, adequate support systems, and an ethical approach to AI implementation.

Our research could open new studies' directions that could include examining the long-term impacts of AI adoption on the financial health of Moroccan universities and students' general educational performance. Other researchers can also explore the effectiveness of different types of training programs in spreading user acceptance of AI technologies for financial administrators and faculty members, as well as following through on the ethical issues surrounding data privacy and algorithmic bias in AI systems within the academic setting. Such studies would provide additional information about the integration process and its broader implications for the field of education.

In conclusion, for Moroccan universities to fully harness the capabilities of AI in financial management, a concerted effort towards enhancing both perceived usefulness and perceived ease of use is essential. By fostering an environment conducive to technology acceptance, institutions can not only modernize their financial practices but also position themselves for sustained success in an increasingly digital educational landscape. Future research could explore longitudinal impacts of AI adoption on university financial health and student outcomes, further enriching our understanding of the transformative potential of AI in higher education finance.

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