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Challenges and Opportunities of using Artificial Intelligence in Management accounting

A Systematic Literature Review

School of Management
Master's thesis in Strategic business Development

Vaasa 2026

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School of Management
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Title of the Thesis: Challenges and Opportunities of using Artificial Intelligence in Management accounting : A Systematic Literature Review
Degree: Master of Science in Economics and Business Administration
Programme: Strategic business development
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Year: 2026 **Pages:** 53

ABSTRACT:
Work in management accounting has been in change for a couple of years, and the need to improve processes and reduce manual tasks comes from the employees working in these roles. In response to this, various new technologies have emerged, the most important of which is artificial intelligence. This study examines the opportunities and challenges associated with the use of artificial intelligence in decision-making within management accounting, as identified in existing research. It also reviews the current state of the literature to assess the extent and nature of research conducted on this topic. The aim is also to find out the research gap in this topic and analyse the overall adaptability of artificial intelligence-based tools to management accounting-related tasks, focusing on decision-making.

Artificial intelligence as a concept and the ethical and privacy issues related to it are the main focus of the theoretical part of this paper. We also present the connection between artificial intelligence and management accounting, and how it is already adapted to the various tasks. The research has been conducted as a systematic literature review. A total of 25 studies were selected that all focus on the topic of AI and its connection to management accounting. The data was collected using electronic databases. The selection criteria used were that they are business-related, and only the most recent studies were included due to the rapid development of AI-based tools. Other criteria used were that the data were peer-reviewed and written in English. Qualitative analysis was implemented when reviewing the material to answer the set research question.

The research was successful in bringing up the challenges and opportunities that the current research presents in the use of artificial intelligence in management accounting. It was found that when implemented correctly, artificial intelligence can create cost savings and have a positive impact on efficiency in the long run for companies, but also support in the decision-making processes. The main finding was also that artificial intelligence is at least still seen as a support for decision-making, not as a decision-maker. Human intelligence is still needed for final decisions due to their financial significance in management accounting roles. Challenges highlighted included high costs, especially in the initial phase of implementation, and the need for ongoing training. In addition, the so-called black box problem is a challenge, as some artificial intelligence programs make it difficult to determine the source of data. In the future, attention should be paid to training and the effective implementation of AI programmes in particular. We also identified research gaps, especially in terms of concrete case studies on how AI has been successfully used in practice in companies.

KEYWORDS: Artificial intelligence, Management accounting, AI ethics, AI challenges, AI opportunities

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TIIVISTELMÄ:
Johdon laskentatoimen työ on ollut muutoksessa parin vuoden ajan, ja tarve parantaa prosesseja ja vähentää manuaalisia tehtäviä tulee näissä rooleissa työskenteleviltä työntekijöiltä. Tähän vastauksena on syntynyt useita uusia teknologioita, joista tärkein on tekoäly. Tässä tutkimuksessa tarkastellaan tekoälyn käyttöön liittyviä mahdollisuuksia ja haasteita johdon laskentatoimen päätöksenteossa, kuten olemassa olevassa tutkimuksessa on tunnistettu. Siinä tarkastellaan myös nykyistä kirjallisuutta arvioidakseen aiheesta tehdyn tutkimuksen laajuutta ja luonnetta. Tavoitteena on myös selvittää tutkimusaukkoja tässä aiheessa ja analysoida tekoälyyn perustuvien työkalujen yleistä sopeutumiskykyä johdon laskentatoimeen liittyviin tehtäviin keskittyen päätöksentekoon.

Tekoäly käsitteenä ja siihen liittyvät eettiset ja yksityisyyteen liittyvät kysymykset ovat tämän artikkelin teoreettisen osan pääpaino. Esittelemme myös tekoälyn ja johdon laskentatoimen välisen yhteyden ja sen, miten sitä on jo sovellettu erilaisiin tehtäviin. Tutkimus on tehty systemaattisena kirjallisuuskatsauksena. Yhteensä 25 tutkimusta valittiin, jotka kaikki keskittyvät tekoälyn aiheeseen ja sen yhteyteen johdon laskentatoimeen. Aineisto kerättiin sähköisten tietokantojen avulla. Valintakriteerinä oli, että se liittyy liiketoimintaan, ja mukaan otettiin vain uusimmat tutkimukset tekoälypohjaisten työkalujen nopean kehityksen vuoksi. Muita kriteerejä olivat vertaisarviointi ja englanninkielisyys. Aineistoa tarkasteltaessa käytettiin laadullista analyysia asetetun tutkimuskysymyksen vastaamiseksi.

Tutkimus onnistui nostamaan esiin tekoälyn käyttöön johdon laskentatoimessa liittyvät haasteet ja mahdollisuudet, joita nykyinen tutkimus asettaa. Todettiin, että oikein toteutettuna tekoäly voi luoda kustannussäästöjä ja vaikuttaa myönteisesti yritysten tehokkuuteen pitkällä aikavälillä, mutta myös tukea päätöksentekoprosesseja. Tärkein havainto oli myös, että tekoälyä pidetään ainakin edelleen päätöksenteon tukena, ei päätöksentekijänä. Ihmisälyä tarvitaan edelleen lopullisissa päätöksissä sen taloudellisen merkityksen vuoksi johdon laskentatoimen rooleissa. Haasteina esiin nousivat korkeat kustannukset, erityisesti käyttöönoton alkuvaiheessa, ja jatkuvan koulutuksen tarve. Lisäksi niin sanottu musta laatikko -ongelma on haaste, sillä jotkut tekoälyohjelmat vaikeuttavat datan lähteen määrittämistä. Tulevaisuudessa tulisi kiinnittää huomiota erityisesti koulutukseen ja tekoälyohjelmien tehokkaaseen toteuttamiseen. Tunnistimme myös tutkimusaukkoja, erityisesti konkreettisten tapaustutkimusten osalta siitä, miten tekoälyä on käytetty menestyksekkäästi käytännössä yrityksissä.

AVAINSANAT: Artificial intelligence, Management accounting, AI ethics, AI challenges, AI opportunities

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Abbreviations

AI Artificial Intelligence

ML Machine Learning

DL Deep learning

1 Introduction

Artificial Intelligence has risen to an important topic in a couple of years. Artificial intelligence is changing both society and business, and that is why it is important to conduct research on the opportunities and challenges it reveals in different operations of business. Rautiainen et al. (2024) conducted research about the role of the management accountant in the banking industry, and they found that the role requires employees to become more fluid. Adding to that, they state that management accountants need to be more adaptive to keep up to development. However, they point out that in order to adopt this way of working, one must be prepared to meet various opportunities and challenges in the future.

First came the internet, then came AI, and it is growing to be the greatest invention ever (Gentsch, 2019, p. 3-4). Although AI in its current form has not existed for long, its development has been going on for a long time. The first works on AI can be found as early as 1943 (Gentsch, 2019, p. 18). The history of AI goes back to the machines that tried to win humans over in chess games. One example of that is IBM's Deep Blue, which is a program that was developed to play chess.

The work of management accountants is also in transition. In the field of business, digitalisation needs to be taken as an opportunity and the opportunities and challenges that AI gives need to be analysed (Parviainen et al. 2017, p.71). However, there is not much research that collects opportunities and challenges in the current literature. To have sufficient use of AI, it is important to figure out the possibilities it gives to accounting management. On the other hand, a good question to think about is whether AI is something that can be adapted to management accounting and to what extent.

The purpose of this thesis is to review the current literature and by that answering the following research question:

What are the challenges and opportunities in using artificial intelligence in decision-making in management accounting?

There are three main contributions in this study to existing literature. Firstly, by synthesising and structuring the existing research to offer a conceptual contribution on the challenges and opportunities of artificial intelligence in management accounting. Secondly, by identifying key implications for practitioners, for example, controllers, about the use of AI technologies to deliver a practical contribution. Lastly, this study contributes by highlighting areas where current literature remains limited and identifies research gaps for future research.

The structure of this thesis is organised as follows. It begins with a theoretical framework that introduces the central concepts of artificial intelligence and management accounting, providing the necessary background for understanding the study. The fifth chapter outlines the research methodology and describes the data used in the analysis. The sixth chapter presents and examines the findings of the study. Finally, the thesis concludes with a summary of the key results and offers suggestions for future research.

This study is conducted as a systematic literature review. It involves identifying, evaluating, and synthesising existing academic research related to the application of artificial intelligence in management accounting. This approach is selected due to the need to integrate insights from prior studies and build a comprehensive understanding of the topic. Although literature reviews are sometimes considered less common as a primary research method, a systematic approach enables a structured and rigorous analysis, leading to meaningful and reliable findings.

2 Defining artificial intelligence

Artificial Intelligence is a hard term to define in a simple way, because there are different methods, technologies, applications and research directions included under the umbrella of AI. And Artificial intelligence is only a small part when talking about digitalisation. Gentsch (2019, p.3-4) compares artificial intelligence (AI) to be a "new step on the path of the universe" after "the invention of life". The term is opened in the book by dividing it into two parts. The term "intelligence" is a human ability to understand and process things, but a precise definition for this has not been found even today. AI is a computer's attempt to produce this human kind of thinking and does things the same way as a human, such as producing critical thinking (Gentsch, 2019, p. 3-4). When overall thinking about machines, they typically do not understand what specific phenomenon they should focus on within the data given to them and what they should use when making decisions. But if they can be taught to recognise these phenomena, it can be called deep learning that is working similar way than human brain works.

To understand artificial intelligence better, we must define the meaning of intelligence. But the term itself is hard to define, since there can be multiple different explanations (Legg& Hutter, 2007). In the Cambridge Advanced Learner's Dictionary (2020), intelligence is defined as follows: "the ability to learn, understand and make judgments or have opinions that are based on reason". In AI research, it has been defined as "achieving complex goals in complex environments" (Legg & Hutter, 2007). In conclusion, intelligence can be seen in many ways, and all individuals can have different types of intelligence.

Even though, as we know, AI these days is based on artificial intelligence lays in the back in the 1940s with computer science (Haenlein & Kaplan, 2019). As a turning point of computer science to AI can be seen Alan Turing's 1950 published article "Computing Machinery and Intelligence" (Haenlein & Kaplan, 2019). This article describes how machines can be turned to intelligence ones and how this can be tested. Levels of AI are defined in Figure 1, and we will deep dive into those levels in later chapters.

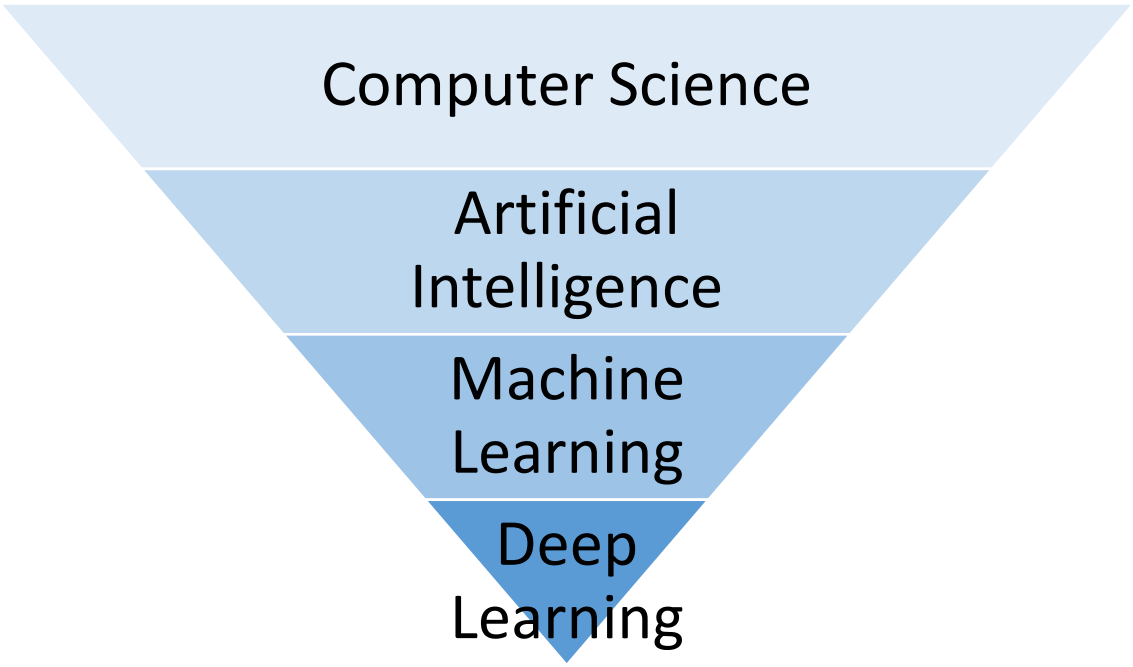

Figure 1 Levels of AI (Haenlein & Kaplan, 2019)

The 2018 DOD AI Strategy states that "AI refers to the ability of machines to perform tasks that normally require human intelligence-for example, recognising patterns, learning from experiences, drawing conclusions, making predictions, or taking action-whether digitally or as the smart software behind autonomous physical systems." (Nichols, J. M., p.156 (2024).

Russell & Norvig (2021) pointed out four different approaches to define the field of Artificial Intelligence:

1. Thinking humanly
2. Thinking rationally
3. Acting humanly
4. Acting rationally

Russell & Norvig (2021, p.19) prefer that intelligence is called rationality, since that better describes the process behind a human-like way to solve a problem.

Even though we might think of AI as a new concept, the first work in this topic was done already in 1943 by Warren McCulloch and Walter Pitts, who proposed a model of artificial neurons. (Russell & Norvig, 2021, p.35) And that is not the only example, as Russell & Norvig (2021, p.35) open up, there are many cases where early research can be connected to AI. We associate it with a new thing because AI, in its current form, has only been in use for a short time.

2.1 Levels of artificial intelligence

There are different ways of categorising AI, but one way to do it is to share based on how developed the AI program is. One way of clustering AI tools is to separate those that focus only on one task from those that can do multiple tasks. Figure 2 divides AI into two groups: narrow AI and general AI.

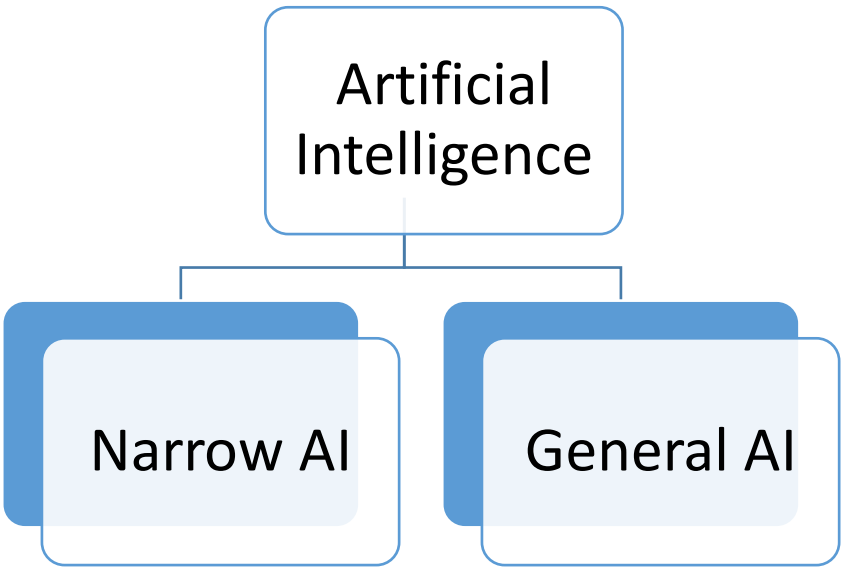

Figure 2 Categorising AI

Narrow AI can complete particular tasks, for example, computer software trained to play chess or robots that are organising items in warehouses (Damar et al. 2024). And therefore, it does not have the cognitive abilities of the human brain. In this form, AI has

been around for years; we just may not think of this as artificial intelligence. And because this has been around for the longest time, it naturally also is the most developed and researched one.

But the level of AI we are more interested in this study is the general AI models, because most of the management accounting tasks require this kind of more human-like intelligence. Then, general AI refers to an agent that can handle any task that requires intelligence. That is the goal that the research on AI is trying to achieve. As Damar et al. (2024) describe, this is the form of AI that made the biggest revolution a couple of years back, when AI could only perform simple tasks to be able to answer complex problems. Many big companies are developing their own AI platforms that are then adapted for use by other companies. Most known is probably ChatGPT, because of its availability to the public audience (Damar et al., 2024)

The next chapter looks at different key concepts presented in the research of AI. That opens up what kind of way AI can be seen in research.

2.1.1 Machine learning

One important application of AI is machine learning, which uses algorithms to learn different patterns from data and make decisions based on that (Syam & Kaul, 2021, p.2). Machine learning (ML) is an old method, the first ones developed already in the 1970s, but it became more relevant in the 2000s. It became more relevant when the data available grew in the 21st century, and new algorithms were needed to improve the usability of this data. One main purpose behind ML is to develop computational algorithms that can learn directly from data through repeating tasks. So, for example, a machine can be shown a picture and note which one has a car in it and which don't. By that, a machine learns the common characteristics of a car. It is important to understand that, as in human intelligence, there is an opportunity for mistakes with machines also, so that it can not be 100% sure to learn.

In machine learning, learning is based on the use of training data (training set). This data consists of examples, such as images, that are classified as “car” and “not a car”. Using these examples, the model learns to recognise different features that describe the object being learned.

In the next step, these features and their associated classifications (labels) are fed to a machine learning algorithm, such as a neural network or a support vector machine. The algorithm learns to associate certain combinations of features with the correct categories. This phase is called the training phase. Once the model has been trained, it can be used to analyse new, previously unseen observations. In this case, the new observation is first converted into features, after which the trained model predicts the appropriate category for it. This phase is called the prediction phase.

There are different types of machine learning algorithms. They can be divided into three categories, as pictured in Figure 3 below. These categories are supervised machine learning, unsupervised machine learning and reinforcement learning (Russell & Norvig, 2021)

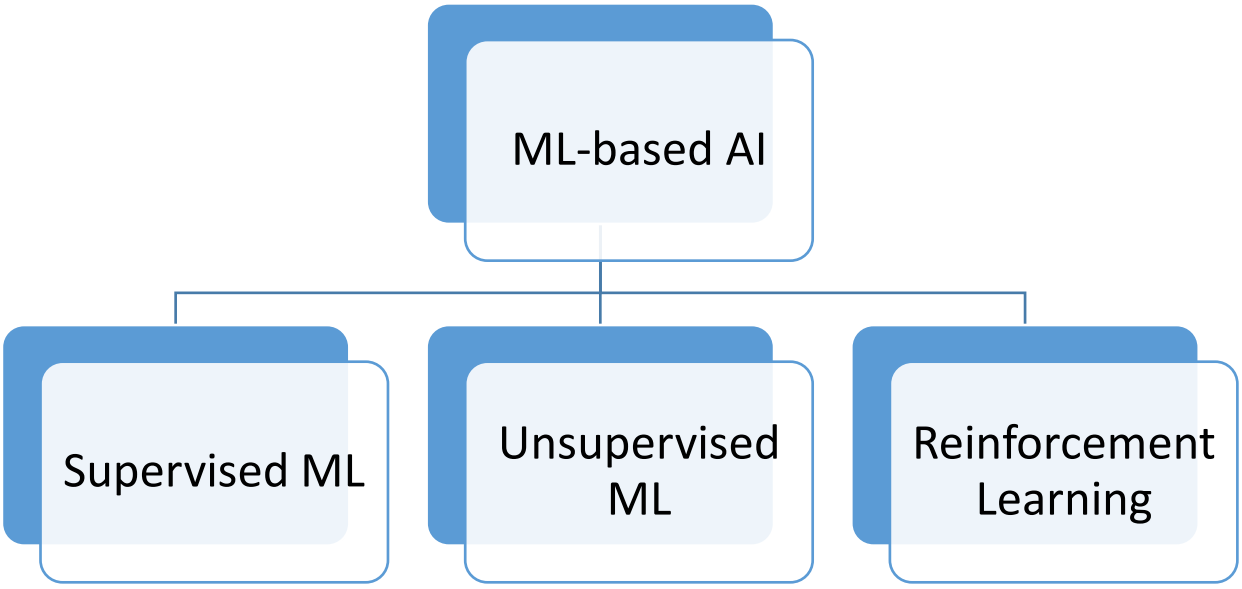

Figure 3 Types of machine learning algorithms (Russel & Norvig, 2021)

Supervised machine learning is based on finding a function that reads inputs, for example, emails and gives them an output, for example, a label indicating whether they are spam or not (Russel & Norvig, 2021). For a machine to learn things like this, it is crucial to have examples of the output in training, so the machine can learn what things in the inputs it needs to focus on. For example, different words or phrases in emails. According to Russel and Norvig (2021), supervised ML still needs a lot of human input to check the result of work, and it is a good tool to use for classification and regression tasks.

Russel and Norvig (2021) describe supervised machine learning as a good method for clustering, which means extracting chosen information from data and forming groups based on similarities in data. Reinforcement learning is the third main category of machine learning. The idea is based on the fact that machines learn from experience, and because of that, minimal human supervision or training data is needed. A good example of this type of machine learning is a robot that has joints and moving parts that allow it to learn to walk. At first, it fails and receives negative feedback, but gradually it learns to progress and receive positive rewards.

2.1.2 Deep learning

Traditional machine learning usually requires structured data, for example, numerical information in tabular form, for example, in a spreadsheet (Russel & Norvig, 2021, p. 801). An example of unstructured data is videos, the processing of which requires feature engineering methods. The goal of feature engineering is to design and implement data processing algorithms that can extract features that are suitable for the machine learning algorithm and task in question.

Deep learning, on the other hand, can also automatically learn from unstructured data (Damar et al., 2024). Deep learning is a modern approach to building machine learning-based systems. Its central idea is to utilise deep neural networks (DNNs), which can automatically learn the appropriate representation of raw data for the machine learning task in question (Damar et al., 2024).

As Damar et al. (2024) describe, this form of AI has enabled chat tools like ChatGPT to work since it requires a dialogue-based interaction. As they describe, these applications also develop the more people uses them since deep learning includes that it is learning all the time. This artificial intelligence can create very human-like behaviour, which also creates a great risk.

3 Privacy and Ethics of Artificial Intelligence

An important thing that arises when talking about AI is the ethics and privacy problems behind it. As Russell & Norvig (2021, p.1037) stated, despite the many advantages, new technologies also have disadvantages. An example of this is automatic weapons or drones used in war that cannot identify what target is. Another problem Russe & Norvig (2021, p. 1041) highlight is the privacy problems. There is a lot of personal data collected from us these days, and with that comes a problem that this data can be used in the wrong way.

3.1 Ethical use of AI

Russel & Norvig, P. (2021, p.1038) list the principles behind the ethical AI technology, and those are that AI: “ensures safety, ensures fairness, respects privacy, promotes collaboration, provides transparency and limits harmful uses of AI”. Many of these principles apply to all technical systems, not just AI technologies (Russel & Norvig, 2021, p.1038).

The European Commission have published “Ethics Guidelines for Trustworthy AI” that includes 7 points: “human agency and oversight, technical robustness and safety, privacy and data governance, transparency, diversity, non-discrimination and fairness, societal and environmental wellbeing and accountability” (Nichols, J. M., 2024, p.122). Nichols (2024, p 123-127) describes the ways to make AI more ethical. Those include:

1. Explainability
2. Data inputs
3. Testing
4. Lifecycle of systems

All of these are crucial when talking about ethical AI. Nichols (2024, p.123-127) describes the first one as AI systems to be able to explain how it works and what kinds of errors they can make.

Stahl (2021, pp. 41–42) highlights privacy and data protection as the most significant ethical concerns associated with artificial intelligence. The use of machine learning–based AI systems introduces various risks to data security, as these technologies may expose sensitive information to potential misuse or breaches. In addition, some AI applications are capable of identifying complex patterns in data that can unintentionally lead to the revelation of privacy-related vulnerabilities.

3.2 Ethics in management accounting

In management accounting, ethical and privacy issues also arise when using artificial intelligence. Often, the information used in work is confidential, for example, salary information of individuals, so when using artificial intelligence, it must be ensured that the information is not transferred to third parties (Kerr et al., 2025). The organisation must have control over the processing of the data of the artificial intelligence tool in use and ensure that the data is not leaked. Hacking into systems is a big risk when utilising artificial intelligence, as the systems are often new and therefore sensitive to all kinds of errors.

Another risk can be seen as the fact that artificial intelligence often uses algorithms in its decisions, in which it learns from historical data. If the data is incorrect, the artificial intelligence continues with these, which may lead to unfair and incorrect decisions. The use of artificial intelligence can also increase the lack of transparency, because in this case, decisions cannot necessarily be justified comprehensively enough (Abbas, 2026). Management may lose understanding of what the figures are based on, and the role of the controller becomes blurred.

4 Artificial Intelligence in Accounting Management

The work of management accounting has been affected by many technological breakthroughs throughout the years. The earliest artificial intelligence technologies were simple and have only in recent years evolved into technologies that contain complex algorithms and self-learning similar to the human brain (Kerr et al., 2025). Still, those technologies have been changing the way accounting professionals and controllers work.

Next, we will deep dive into ways that AI have affected the work of management accounting. The use of artificial intelligence is presented in Figure 4. Those are Decision making, reporting, accounting, budgeting and forecasting. The level of work efficiency has changed, made possible by, for example, voice assistants that allow you to type by speaking (Kerr et al. 2025). This makes reporting easier and faster in management accounting. In more advanced versions, artificial intelligence automatically creates notes, for example, from meetings, which reduces manual typing.

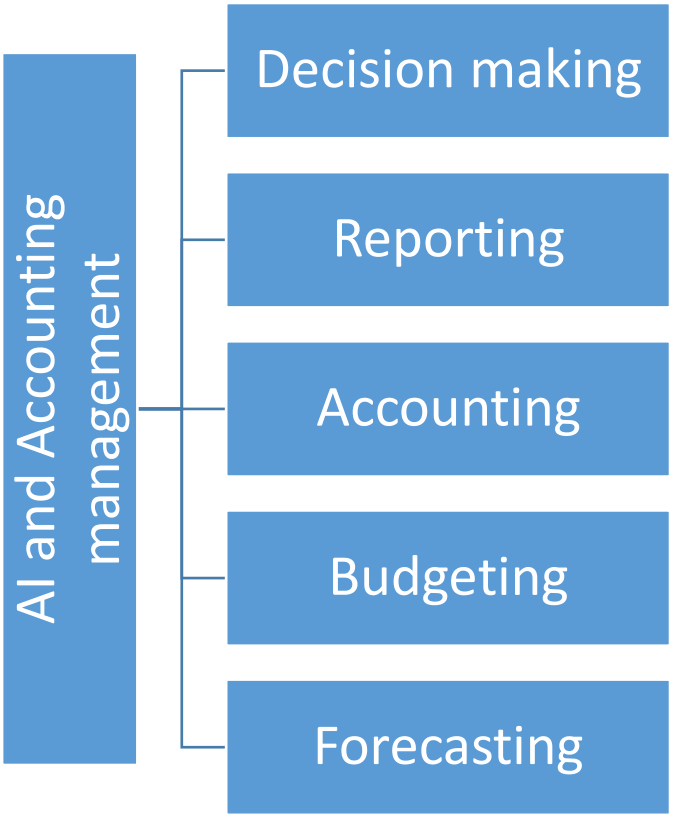

Figure 4 The usage of AI in accounting management (Abbas, 2026)

According to Kerr et al (2025), another tool that has increased efficiency is chatbots, especially large language model (LLM) technology. These allow management accountants to have a dialogue with a machine and discuss, for example, the available data. This dialogue is considered to provide effective answers to various questions that arise in the course of the work. The problem here is that artificial intelligence models learn little by little, and if it does not have all the data available, the answers may be incorrect (Kerr et all, 2025)

Various expert systems have been developed to support decision-making, which aim to simulate human decision-making. These often utilise the logic of if-then questions based on artificial intelligence. Although the general use of expert systems may have decreased, their potential for use in management accounting is quite large. Examples of uses of expert systems in management accounting that have already been developed or can be developed include budgeting and financial planning, inventory management and control,

cost calculations and variance analyses, financial reporting evaluation, customer credit analyses, and fraud detection (Kerr et al. 2025).

Abbas (2026) claims that AI in management accounting is “both an opportunity and a challenge” because “it promises the automation of straightforward, repetitive, routine and standardizable accounting tasks, thereby enhancing efficiency but concurrently presents a challenging transformation of the accounting industry, due to the intricacies of its technological structure and novelty in mainstream application”. Referring to that, there are both opportunities and challenges within this topic.

There are different perspectives in literature about using AI in management accounting; it can be seen as a possibility, but it also adds some new layers to processes (Abbas, 2026). The future role of controllers can be seen more as a business partner, when AI takes over the manual routine tasks (Abbas, 2026). However, it can be seen that the accountability in decision-making remains with humans for a long time.

When it comes to decision-making, when utilising AI, it is important to know who is responsible if mistakes occur. AI is currently seen as a support for decision-making in the controller's work, but if it were to be fully responsible for decision-making in the future, would the controller, management, or perhaps the system developer be responsible for the mistake (Abbas, 2026)? The main problem is that ethical ownership of the decision-making disappears.

Concerns about AI taking jobs away from humans have also grown. However, according to Kerr et. Al. (2025), there is little confirmed research on this. In some service industries, they say, there is a confirmed possibility of a reduction in the workforce due to AI.

5 Research Methodology

This chapter introduces the chosen research method and research question. It will give a closer look at a literature review as a research method, including a summary of the steps of a systematic literature review. And lastly gives insights into the data search process and selection criteria.

5.1 Research Question

The following section of this thesis focuses on the research component, where the research question is defined, and the chosen methodology is introduced. The purpose of this study is to gather and analyse existing knowledge regarding the potential opportunities and challenges associated with the use of artificial intelligence in decision-making within management accounting. In addition, the study aims to address a gap in the current literature, as the topic remains relatively underexplored and the adoption of AI in management accounting is still limited. Based on these objectives, the following research question is formulated:

1. What are the challenges and opportunities in using artificial intelligence in decision-making in management accounting?

5.2 Literature Review as A Research Method

As a research method, a literature review is generally a technical one that examines and observes already produced scientific facts. Literature review has been described as an approach that involves “research within research” (Salminen, 2011). In this case, previous studies and their results are brought together and used as the basis for new research.

Literature review use in this kind of research is also extensively justified by Baumeister and Leary (1997), who are the researchers who outlined five key goals used for a

literature review. The primary and most ambitious objective of a literature review is to contribute to theoretical development or even to propose a new theoretical framework based on the analysed material. A second objective involves the critical assessment of existing theories, where the review serves as a foundation for evaluating prior research and drawing informed conclusions. Third, literature reviews aim to provide a comprehensive and well-structured overview of existing studies, combining previous findings to enhance the overall understanding of the phenomenon. Another important objective is to identify research gaps and unresolved issues within the field, thereby offering direction for future studies. Although such reviews may sometimes generate more questions than definitive answers, they play a crucial role in advancing academic inquiry. Finally, a less common objective is to examine the historical evolution of a specific theory and trace its development over time.

Literature reviews serve as important tools for identifying and filling research gaps, as individual studies often leave certain questions open. A systematic review of several studies and their results enables the formation of a more comprehensive understanding. Because a considerable body of scientific research on the topic already exists, applying this method is well justified.

5.3 A systematic Literature review

A systematic literature review is characterised by its structured approach to screening and evaluating research findings. By systematically reviewing all included studies, the method enhances transparency and credibility. Salminen (2011, p. 9) describes a systematic literature review as a synthesis that summarises the most essential findings of prior research within a selected topic. This approach is an effective way to identify, organise, and consolidate relevant studies, while also potentially uncovering unexpected results and highlighting gaps in the existing literature. However, the validity of the review may be compromised if the selection of sources is inadequate. Therefore, it is essential to successfully implement four key steps:

1. Clearly defining and addressing a focused research question

2. Minimising potential search bias
3. Critically evaluating the quality of selected studies
4. Presenting the findings as objectively as possible.

When these steps are properly followed, the method provides a robust way to present and compare research outcomes and assess their consistency.

Systematic literature reviews are also closely associated with evidence-based decision-making. According to Salminen (2011), this method supports decision-making by drawing on existing scientific evidence. Its objective is to identify effective practices from prior studies, making it closely aligned with benchmarking approaches and best-practice frameworks. In the context of rapidly evolving phenomena such as artificial intelligence, systematic literature reviews offer a useful framework for integrating and comparing existing research. Baumeister and Leary (1997) note that synthesising multiple studies and examining their commonalities enables researchers to address broader questions than would be possible through individual studies alone.

Rather than focusing on collecting large volumes of data, the emphasis in a systematic literature review is on selecting the most relevant and critical information to answer the research question. This helps ensure that the findings remain focused and do not lead the analysis in misleading or irrelevant directions.

5.4 The stages of Literature Review

The research approach adopted in this study is a literature review, specifically a systematic literature review. To guide the process, the study follows the framework developed by Arlene Fink (2020), which outlines seven essential steps for conducting a structured literature review. These stages provide a systematic progression for the research process and are illustrated in the figure below, which presents an overview of Fink's model.

Figure 5 The steps of literature review (adapted from Fink, A, 2020, p.5)

Fink's seven-step model for systematic literature review starts with selecting a research question. This is a really important part because it gives a guideline for the whole research. The second step is to select an article database or a bibliographic database. Defining the search terms is the third step in the process. This is also crucial so that the relevant data can be found, so test searches are recommended to be done before defining the chosen terms.

Following Fink's (2020, p.5) model, the following steps are applying metrological screening criteria and after that conducting the actual review. The results of the review are synthesised and presented by descriptive review or meta-analysis.

5.5 Process

The process of literature review starts with getting familiar with potential sources that can be used when searching for data and choosing the most critical ones. When the important databases are chosen, the search for articles can be started. There was no intention to set a limit on the number of articles in this study, because the aim was to collect as broad a picture as possible for the chosen topic and answers to the research question.

The study began on the pages of the University of Vaasa library (Tritonia and Finna). There, a total of 108 databases and those were filtered based on business, e-journals and only those with English content were selected. This led to the final selection of 25 databases from which test searches for support were started.

In the next step, test searches were performed, and it was determined which of the databases would be most suitable for this study. After reviewing them and the data found from them, the following four databases were selected:
SCOPUS (Elsevier)
Academic Search Elite (EBSCO)
SAGE Journals Online - SAGE Premier
ABI Inform Complete (ProQuest)

The following search terms were used in the testing phase: Artificial intelligence, machine learning, AI, A. I, accounting management, challenge and opportunities.

For the final research search term used was:

("artificial intelligence" OR "machine learning" OR "AI" OR "data analytics" OR "predictive analytics")
AND
("management accounting" OR "management control" OR "controlling" OR "management control systems")
AND
("decision making" OR "decision-making" OR "managerial decision making" OR "decision support")

Selection criteria listed:

- Studies that are in English
- Peer-reviewed
- Full text available
- Published in 2021-2026
- E-article

When reviewing articles, those were chosen that include articles where AI is connected to management accounting or controlling and that have opportunities or challenges of using AI in these tasks. Excluded were the articles without a direct connection to the business context. This is the phase which makes this research an systematical literature review, since there was a clear system by which data was chosen and which was not.

5.6 The chosen data

Following a comprehensive screening process, a total of 25 articles were selected for inclusion in this study. According to Fink's (2020) framework, the next stages after article selection involve conducting the review and systematically analysing the chosen material. In this study, this entails examining the selected articles in detail and synthesising their findings. An overview of the included studies is presented in a table at the beginning of Chapter 6.

All of the articles were analysed and reviewed this year to determine if they fit to answer the research question of this study. All of the chosen articles are published in the years 2022-2026. That means that the data is particularly new, which was the aim of the research since the topic is new and changing on a quick schedule. This chosen data was screened throw carefully.

The analysis in this literature review is conducted using qualitative and descriptive approaches. Alternatively, a meta-analysis could also have been used to examine the data. But in this paper, it was left out because descriptive synthesis gives more of an overall picture of the chosen material. The aim is to highlight new research data, but also connect old data to this topic.

6 Findings and Analysis

This study seeks to identify the opportunities and challenges associated with the use of artificial intelligence in decision-making within management accounting. The 25 selected articles are summarised in the table below, which presents key information including the authors and year of publication, the title and source of each article, the main research theme, and the methodology applied. This chapter analyses the findings from these studies and aims to address the research question guiding this thesis.

This chapter is formed as follows: two different themes have been extracted from the articles: the opportunities and challenges they present for decision-making. First, we focus on the challenges and risks that the articles present for decision-making. Then we move on to the opportunities and new ways of working that artificial intelligence brings to management accounting.

Table 1 The chosen research data

Writer(s) and the year of publication	**The name of the article and the publication forum**	**Theme**	**Research method**
Shivam Gupta, Sachin Modgil, Samadrita Bhattacharyya, Indranil Bose. 2021.	Artificial intelligence for decision support systems in the field of operations research: review and future scope of research. Annals of Operations Research.	Integrating Artificial Intelligence and Decision Support Systems (DSS) into Operations Research (OR)	Systematic literature review.
Xhavit Islami, Enis Mulolli. 2024.	Human-Artificial Intelligence in Management Functions:	Symbiosis of artificial intelligence and human intelligence in	Systematic literature review.

	A Synergistic Symbiosis Relationship. Applied Artificial Intelligence.	management functions (planning, organizing, leading, controlling).	
Heba Saad Hassan Elawadly. 2025.	Comprehensive analysis of digitalization in management accounting: a bibliometric and coding analysis. Journal of Financial Reporting and Accounting.	The impact of digitalization on management accounting; analytics, big data and artificial intelligence in decision-making.	Bibliometric analysis and coding analysis.
Abbas, Khalid. 2026	Management accounting and artificial intelligence: A comprehensive literature review and recommendations for future research. The British Accounting Review.	Digitalization, artificial intelligence, machine learning and their impact on management accounting and the roles of accounting professionals.	Systematic literature review.
Almulla, Dawla; Abbas, Mohammed; Al-Alawi, Adel; Alkooheji, Lamya. 2024.	Process and Impact Evaluation of Artificial Intelligence in Managerial Accounting: A Systematic Literature Review. International Journal of Computing and Digital Systems	Assessing the processes and impacts of artificial intelligence in management accounting: technological acceptance, ethics, skills, and decision-making.	Systematic literature review.

Mahlendorf, Matthias D.; Martin, Melissa A.; Smith, David. 2023	Innovative Data – Use-cases in Management Accounting Research and Practice. European Accounting Review	Innovative data sources (such as natural language, videos, satellite data) in management accounting research and practice.	Conceptual article/editorial.
Roos, David; Schlegel, Dennis; Kraus, Patrick. 2025.	Adopting artificial intelligence in accounting: prerequisites and applications. Journal of Electronic Business & Digital Economics.	Prerequisites and application areas for the introduction of artificial intelligence in accounting (such as invoice processing, anomaly detection).	Multivocal literature review.
Souza, Gustavo Henrique Costa; Wanderley, Claudio de Araujo; Aguiar, Andson Bragade. 2025	The influence of artificial intelligence (AI) transparency on AI acceptance in managerial decision-making. Journal of Management Control.	The impact of AI transparency on decision-makers' willingness to accept AI recommendations in management decision-making.	Experimental research.
Stracke, Luisa; Burggräf, Peter; Sauer, Carl René; Schütz, Maximilian; Kaiser, Joshua. 2026.	From human to machine: high-impact tasks for AI in production management – an expert study to reshape decision-making. Production Engineering.	Prioritizing artificial intelligence applications in production management based on cost-benefit ratio.	Empirical research.
Hossain, S., Fernando, M., & Akter, S. 2025.	Digital Leadership: Towards a Dynamic Managerial Capability	Digital leadership, dynamic management capabilities (DMC),	Qualitative research.

	Perspective of Artificial Intelligence-Driven Leader Capabilities. Journal of Leadership & Organizational Studies.	artificial intelligence-based capabilities in the financial sector.	
Jones, S., & Free, C. 2026.	What accountants need to know about artificial intelligence and machine learning: a review and call for future research. Journal of Accounting Literature.	The impact of artificial intelligence and machine learning on auditing, financial reporting, and management accounting.	Literature review.
Kerr, D., Smith, K. T., Smith, L. M., & Xu, T. 2025.	A Review of AI and Its Impact on Management Accounting and Society. Journal of Risk and Financial Management.	The history of artificial intelligence, current applications (e.g. chatbots, expert systems) and impacts on management accounting.	Conceptual analysis and empirical comparison.
Rasheed, M. H., Khalid, J., & Rasheed, M. S. 2026.	Artificial intelligence in finance: unveiling foundations, themes, and future research agendas. Future Business Journal.	Applications of artificial intelligence in finance, technological and behavioral science themes, Fintech.	Bibliometric analysis and systematic literature review.
Singh, S. K., Kumar, S., Goyal, S., Arya, V., Attar, R. W., Gupta, B. B., Alhomoud, A., & Chui, K. T. 2025.	Leveraging AI and Machine Learning for Enhanced Data Analytics and Visualization in Database Management	Digital twins, artificial intelligence and machine learning in data analytics for smart cities.	Case study.

	With Digital Twins. Journal of Database Management		
Wan, C. K., & Chih, M. 2024.	Managerial decision-making: exploration strategies in dynamic environments. Management Decision.	Decision-making strategies for managers, machine learning algorithms (MAB) in dynamic environments.	Simulation modeling.
Banker, Rajiv D.; Cokins, Gary; Cvetkoska, Violeta. 2023.	Data Analytics to Support Planning, Controlling, and Decision Making in Management Accounting. Management Accounting Quarterly.	Utilizing data analytics in management accounting planning, control, and decision-making.	Conceptual analysis and practical examples (based on a case study)
Bayakhmetova, A.; Rudenko, L.; Krylova, L.; Suleimenova, B.; Niyazbekova, S.; Nurpeisova, A. 2025.	Artificial Intelligence in Financial Behavior: Bibliometric Ideas and New Opportunities. Journal of Risk and Financial Management.	The impact of artificial intelligence on economic behavior and decision-making from a bibliometric perspective.	Bibliometric analysis.
Dounia, Gaga; Chaimae, Kaizar; Yassine, Hilmi; Houda, Benarbi. 2025.	Artificial Intelligence and Big Data in Management Control of Moroccan Companies: Case of the Rabat-Sale-Kenitra Region. Proceedings on Engineering Sciences.	Integration of Artificial Intelligence and Big Data into management control systems and organizational performance in Moroccan companies.	Qualitative research.

Goh, Clarence; Seow, Poh-Sun; Pan, Gary. 2026.	Using Excel to Teach Simulation for Management Accounting. Management Accounting Quarterly.	Teaching data analytics skills and simulation models using Excel in management accounting.	Pedagogical development / training method.
Lou, Yuxiao; Maelah, Ruhanita. 2025.	A Systematic Literature Review of Management Accounting Systems (MAS) in The Industry Revolution 4.0. International Journal of Accounting and Economics Studies.	The evolution of management accounting systems in the Industry 4.0 environment (AI, Big Data, IoT).	Systematic literature review.
Lu, Xinying. 2025.	AI-driven management information system for cost accounting and budget optimization. International Journal of Information and Communication Technology.	Development of an artificial intelligence-based information system for cost accounting and budgeting optimization.	System development and empirical testing.
Mauludina, Muhammad Alam; Mulyani, Sri; Adrianto, Zaldy. 2023.	Critical Success Factors for Implementation of Self-Service Business Intelligence in Management Accounting. Academic Journal of Interdisciplinary Studies.	Critical success factors for implementing self-service BI in management accounting.	Systematic literature review.

Numbi, Matelier; Elongha, Gaston. 2025.	Leveraging AI in managerial decision-making: driving innovation and growth in business management. Issues in Information Systems.	Utilizing artificial intelligence in management decision-making, accounting, and strategic operations.	Case study.
Panait (Ion), Mihaela; Mușat (Ciobotă), Lidia; Cosor (Peneoașu), Margareta. 2025.	Considerations Regarding the Use of Artificial Intelligence in Financial Management and Accounting in State Pre-University Educational Institutions. Acta Universitatis Danubius (Oeconomica)	The use of artificial intelligence in financial management and accounting in public educational institutions.	Mixed method (qualitative and quantitative: surveys, interviews).
Shchyrba, Iryna; Savitskaya, Maryia; Fursa, Tetiana; Yeremian, Olena; Ostropolska, Yevheniia. 2024.	Management Accounting: The Latest Technologies, ChatGPT Capabilities. Financial and Credit Activity: Problems of Theory and Practice.	The impact of ChatGPT on management accounting efficiency, accuracy, and decision-making.	A two-part approach: mathematical modeling and empirical survey research.

The articles delve directly into decision-making, opportunities and challenges in the context of management accounting. Many of the articles also include concrete examples from business environments. Next, we will examine the answers provided by the articles in more detail.

6.1 Main findings

The main findings from the articles are summarised in Figure 6 below. Main findings are divided into two categories: challenges and opportunities, and besides them, the impact of AI on the management accounting role overall. The articles presented many challenges and opportunities related to the use of artificial intelligence. As a conclusion, the AI is changing the processes in the management accounting and the field of accounting overall. It is also modifying the way of work within management accounting professionals to be more of a business partner and strategic counsellor. However, there is still a gap in the research on how AI can smoothly be integrated into the actual day-to-day work, mainly because there are not many business cases of companies using AI on this kind of tasks.

Shchyrba et al. (2024) confirm in their research that AI and the potential of AI technologies are significant in the field of management accounting. But those technologies are efficient only when there is a clear strategy on how to implement them. As several studies (Abbas, 2026; Almulla et al., 2024; Islami& Mulolli, 2024) highlight the increasing efficiency when using AI, they mainly rely on conceptual analysis rather than empirical evidence. That makes the reliability of these claims lower.

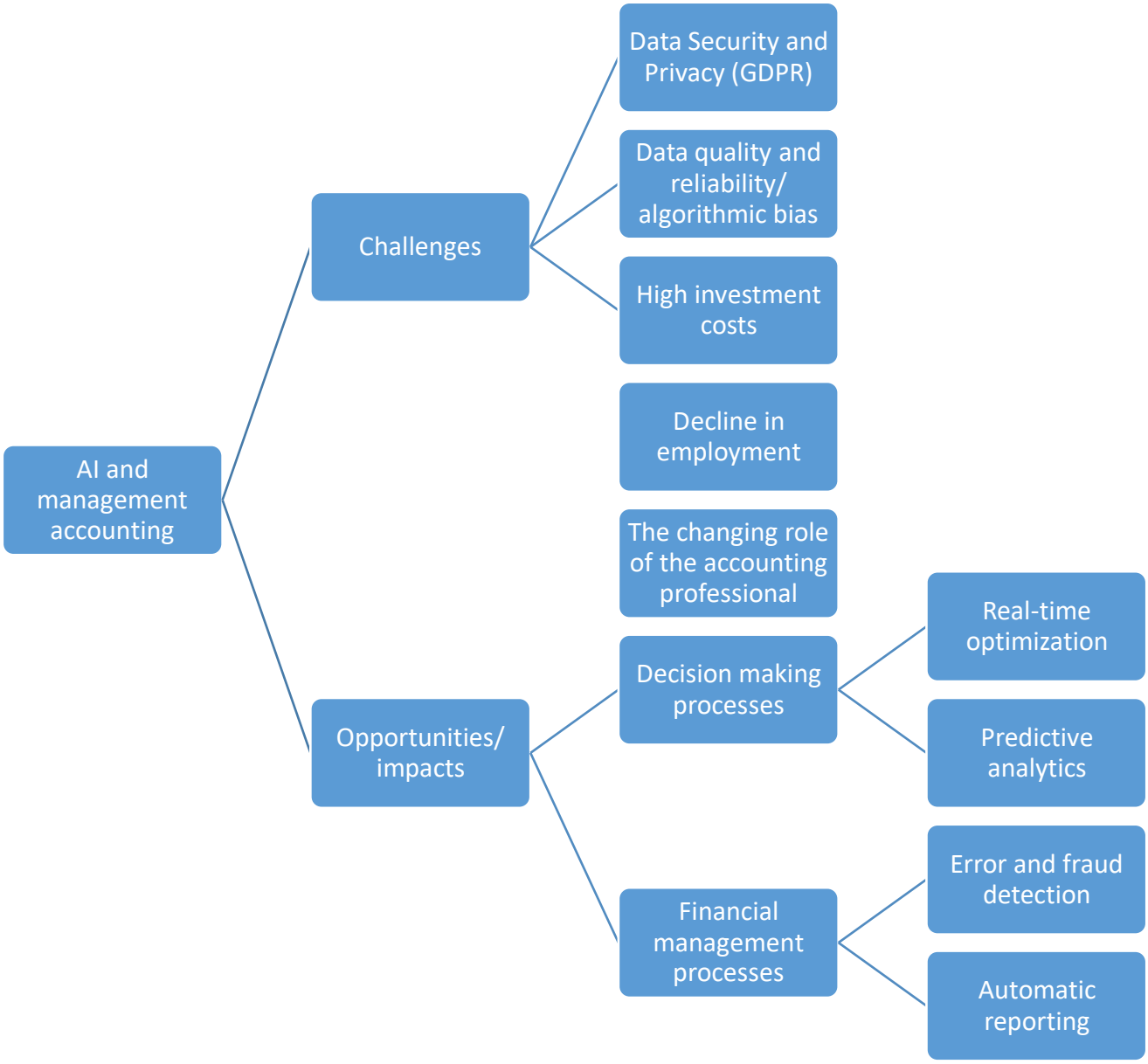

Figure 6 Main findings from data

In the next chapters, we will dive deep into these challenges and opportunities, focusing on the decision-making in management accounting as presented in the articles.

6.2 Challenges

6.2.1 The risk in ethics and data security

Most of the articles highlighted the challenge with data security and privacy related to decision-making. As Abbas (2026) describes, since the work includes handling sensitive data such as personal information of employees and the company's financial information, the risk of data leakage is high. An example of the data leakage is the 2022 Optus data breach as a cautionary example (Hossain et. al. 2025). There is also the possibility that artificial intelligence itself can be used as an attack tool, because the technologies are often new and vulnerabilities can be found more easily (Almulla et al. 2024).

The use of artificial intelligence also raises the possibility of its impact on the reliability of information, because if a cyberattack manages to alter or corrupt data, it can distort the analyses and predictions made by the artificial intelligence, leading to incorrect decisions (Dounia et. al. 2025).

As a solution to these challenges, encryption of data, anonymisation, advanced firewalls, and the creation of clear ethical guidelines are proposed (Hossain et. al. 2025). These could provide safer data usage in management accounting-related tasks.

6.2.2 The loss of data quality and reliability

The quality of AI systems depends on the data fed into them; poor-quality data can lead to poor strategic decisions. The problem arises from unreliable and fragmented data sources, which is a problem in decision-making if the source of the data cannot be verified (Abbas, 2026; Knauer et. al. 2020). Numbi & Elongha (2025) stated that “AI are only as good as the data that they are trained on”. So there is a big pressure on the data application and smoothly transition of data to the tools.

There is starting to be an realization on the problem of AI bias, which Numbi & Elongha (2025) point out in their article. There is caused an problem with algorithms occurs if the

historical data given to AI is distorted. In financial decision-making, this is a huge risk since it may lead to poor results. As a solution to these biases in the article, they recommend that companies do framework to detect bias and ensure fairness in audits. There already is an good principles of AI usage, so those must be used in companies. But besides that, there should be continuous monitoring of data distortions and review of decisions and data in companies.

As Souza et al. (2025) bring up data transparency as a big problem. Meaning that if you cannot find the path behind where the AI tool's given decision comes from, it brings down the reliability of the tool. This can also confuse the user if they start to believe blindly the answers that the tool is giving. As an answer to this problem, they recommend more transparent AI systems or as they are called, white-box models. This would raise the acceptance of AI generally in companies.

6.2.3 High investment costs

Shchyrba et al. (2024) present in their research that costs will go up initially as new AI programs are integrated and their deployment requires training. However, it can be seen that after some time, these technologies will turn into cost savings as efficiency improves. In general, their research believes that artificial intelligence will be an effective tool in the future, but cost increases are raising concerns in companies.

Before making investments in AI programs in management accounting, companies must understand the short and long-term costs (Shchyrba et al., 2024). Those costs are not limited to implementation, but the programs require continuous training and updating.

Lu (2025) did research about using an AI-driven management information system for cost accounting, and he confirms that many businesses do not have the capital to acquire the necessary solutions. In the article is also mentioned that because using these tools requires a lot of training, many companies still don't have the ability to join the game.

6.3 Opportunities

6.3.1 Improving the decision-making process

Artificial intelligence enables the move from the traditionally used intuition in decision-making to a more scientific and objective decision-making method (Dounia et. al. 2025). As Numbi & Elongha (2025) state, AI have given its mark on the decision-making in finance and business management, but still it is not recommended to follow blindly. As Dounia et. al. (2025) describe, companies can move forward to more fact-based decision-making that is based on a huge amount of data analysis. Abbas (2026) adds that with the help of AI, there is not humanly boundaries, such as tiredness, when doing an analysis of a huge amount of data.

Numbi & Elongha (2025) stated that “Next generation AI tools will be used in the financial sector to make more accurate predictions, better risk management, and more efficient capital allocation”. This is due to the fast and effective analysis of a huge amount of data.

AI makes decision-making more efficient, quick and more accurate. As Abbas (2026) defines, this makes companies more competitive advantage. Decision-making is supported by real-time support with AI technologies, which makes it more efficient than traditional ways (Yuxiao & Maelah, 2025). There is also a possibility of automating some of the decision-making processes, as Panait et. al. (2025) confirm that this releases more time from management accountants or controllers to more strategic jobs.

Today, there is some form of application of AI tools in decision-making at the business management operations, but these will move into more strategic decision-making in the future years (Numbi & Elongha, 2025). Examples of help that AI tools can provide include more insights into markets, customer behaviour and pricing. The big revolution in the use of AI is the possibility to make different scenarios of the data with screening of the potential risks (Numbi & Elongha, 2025). Examples given by Numbi & Elongha (2025) to

these kinds of programs are Salesforce's Einstein and IBM's Watson for Business. Those are kind of tools that helps companies to collect insights from data and make decisions for the future.

Souza et al. (2025) bring up the transparency view to decision-making when using AI tools. People using these tools need to have a clear view of how the decision-making process is built into the tool and be sceptical of the answers they receive. It has been researched that the transparency of the AI tool increases trust in the decisions that it makes. As Souza et al. (2025) confirm, transparency allows the data provided by the tool to be better examined, reviewed, and the model's outputs incorporated into broader decision-making processes.

It is also notable to think about what kind of decisions the AI tools can be used for. As Souza et al. (2025) describe, there are different preferences within companies for the decisions they need human experts in the area. Souza et al. (2025) divide decision-making into two categories: operational decision-making and strategic decision-making.

As mentioned, the decisions can be divided into two categories presented by Souza et al. (2025). In their article, operative decisions are usually decisions that focus on the short-term actions, for example, to intentionally reduce production of a product. These decisions have immediate and short-term options and are of little importance to the business. Whereas strategic decisions are large and have a major impact on the business. For example, changing from strategic to personnel reduction or changing production lines to more environmentally friendly ones, those decisions do not usually happen in an instant.

6.3.2 Move from history to future forecasting

One of the biggest changes related to AI usage has been stated to be moving from reporting the historical data to forecasting the future. Shchyrba et. al. (2024) describe this as revolutionary since before forecasting has been relying heavily on human

assumptions, but now it can be formulated from long-term data. AI tools, for example, predictive analytics, help to realise possibilities and trends in markets (Numbi & Elongha, 2025). Also, simulation models, for example, Monte Carlo simulation, help to visualise risks by presenting all possible final results as an example when making a decision (Goh et. al. 2026). As here referred, Monte Carlo simulation is a technique that asks what the outcome could be and how unlikely that outcome is.

In accounting, AI can help with forecasting incomes and costs and by that helping with budgeting and cost accounting.

6.3.3 Use of data

AI can process a huge amount of data that humans are not able to do. But besides that, as Mahlendorf et. al. (2023) describe, AI makes it possible to also use new innovative data and information sources, for example, pictures, videos and social media. Jones & Free (2026) add to that that machine learning can help find patterns and signals from that data that humans can easily ignore.

Shchyrba et al. (2024) confirm in their article by mathematical modelling that using an AI programme, in their example ChatGPT increase productivity, at least in the initial phase. However, the introduction of these technologies paints a very similar picture to other new technologies, where returns level off over time as the technologies become established.

6.4 Future role of management accounting professionals

AI gives an opportunity for accounting professionals to move from being a traditional data recorder to a strategic advisor who leverages artificial intelligence to interpret business strategy. As Almulla et. al. (2024) presented, when routine tasks are automatised, the accountants can focus more on guidance-giving and strategic roles.

This releases the time used for basic tasks such as accounting, coding invoices and reporting. On the other hand, that could be a problem because, as a result, employees' accounting skills, for example, may decrease. As Abbas (2026) confirms, the move to this kind of role creates so-called “deskilling” risk, which means that basic accounting skills will deteriorate if automation is relied on too much without understanding the underlying logic.

But as Numbi & Elongha (2025) confirm, AI is still seen as a support of decision-making, not a decision maker. As an example, they give the following AI too blindly the 2010 Flash Crash, where high-frequency trading algorithms were the reason for extreme market trading that was then followed by a rapid stock market drop. So there definitely needs to be a clear line between a human making a decision and AI giving a direction. This also leads back to the fact that AI is as good as the data it has, so until we can be sure that the data is 100%, there needs to be some human judgment.

Numbi & Elongha (2025) state that “AI is not about replacing human decision-makers but rather collaborating with them to provide data-driven insights, patterns, and predictions”. As Lu (2025) mentioned, when using AI tools, it is important to think about what is right and wrong. Meaning that technology should only be a way of checking the correct decisions, not making them.

As always, when introducing new technologies, good implementation and training are important. Shchyrba et al. (2024) highlight the importance of consultant training and the implementation of new AI technologies for management accountant professionals. This is crucial in the sense of getting the best potential of those tools.

It is proven that there still is human intelligence needed in certain levels of decision-making (Souza et al., 2025). But as Souza et al. (2025) explain, usually inside the AI tools,

there are coded the allocation of how much of the decision-making is done by the tool and how much is done by human.

When AI-based tools are taken into account in decision-making, it highlights the responsibility of the managers to be alert to the recommendations that the tools give, especially since there might be a huge financial risk behind these decisions (Souza et al., 2025)

6.4.1 Implementation of AI tools in management accounting

As presented in the theoretical part, there are different kinds of AI technology types. Now we are going to conclude what kind of applications those AI technologies have in management accounting, according to the literature review. Table 2 collects different types of AI technologies and how these are used based on the literature record in management accounting.

Table 2 Clustering the findings of different AI types used in management accounting

AI Technology type	**Management Accounting Application area**	**Source**
Machine Learning/ Deep Learning	Cost Accounting, Budgeting and Supply Chain management	(1-7)
Predictive Analytics/ Big Data Analytics	Budgeting, Forecasting and Risk Management	(2, 3, 5, 8. 9)
Generative AI / Large	Decision Support, Strategic analysis and Knowledge transfer	(2,3,10)

Language models (LLMs)		
Robotic process automation	Transaction processing, bookkeeping and auditing	(2,7, 8, 11, 12)
Artificial intelligence (general)	Strategic decision-making and performance measurement	(8,10)
Natural Language processing/ chatbots	Risk management and compliance	(5, 9, 11-13)
Explainable AI	Decision support systems	(2)
AI-powered agents	Revenue purchasing and cash disbursement cycles	(14-15)
Expert systems	Costing, Budgeting and Business combinations	(14)
Voice assistants	Operational efficiency and customer interface	(14, 15)

(1) Gupta, S., Modgil, S., Bhattacharyya, S., & Bose, I. (2022).
(2) Abbas, K. (2026).
(3) Jones, S., & Free, C. (2026).
(4) Bayakhmetova, A., Rudenko, L., Krylova, L., Suleimenova, B., Niyazbekova, S., & Nurpeisova, A. (2025).
(5) Dounia, G., Chaimae, K., Yassine, H., & Houda, B. (2025).
(6) Lu, X. (2025).
(7) Lou, Y., & Maelah, R. (2025).
(8) Elawadly, H. S. H. (2025).
(9) Shchyrba, I., Savitskaya, M., Fursa, T., Yeremian, O., & Ostropolska, Y. (2024
(10) Islami, X., & Mulolli, E. (2024).
(11) Numbi, & Elongha. (2025).
(12) Panait (Ion), M., Mușat (Ciobotă), L., & Cosor (Peneoașu), M. (2025).
(13) Bayakhmetova, A., Rudenko, L., Krylova, L., Suleimenova, B., Niyazbekova, S., &

Nurpeisova, A. (2025).
(14) Kerr, D., Smith, K. T., Smith, L. M., & Xu, T. (2025).
(15) Hossain, S., Fernando, M., et al. (2025).

As Abbas (2026) confirms, in support of decision making, can be seen especially generative AI and large language models and general artificial intelligence models, for example, Chat GPT and then explainable AI models. From these, most likely in broad use, there are already the general AI tools, such as chat kind of models.

In budgeting, Kerr et al. (2025) bring up expert systems, which are one of the examples of narrow AI. Those are the systems that make decisions using rules and a knowledge base like an expert. The system needs data and some rules to be inputted to them to work.

In cost controlling and bookkeeping, machine learning is highlighted. As previously explained, machine learning can do easier tasks that do not need human-like intelligence. This is also probably the most developed type of AI and therefore most broadly in use.

On the other hand, all the types of AI can possibly be modified to work in different tasks. This is only the current situation where these artificial intelligence types are used. It can be seen from the result that the oldest types of AI, or so-called narrow AI, are already in broad use, but general or more developed intelligences are not implemented in the work of management accountant professionals.

7 Conclusion and Recommendations

This master's thesis aimed to study the utilisation of artificial intelligence and the opportunities and challenges it brings to decision-making in management accounting. The theoretical part of this paper focused on the concept of artificial intelligence and introduced different levels of it, as well as the ethical and privacy risks related to the use of AI. The theoretical part also reviewed the adaptation of artificial intelligence to management accounting and various ways of use. The research method chosen for this paper was a systematic literature review. With the help of this method, three main themes were found in the literature, and those were used when structuring the main findings from the articles.

Challenges found were mostly related to data reliability and transparency when using AI in the decision-making process. Souza et al. (2025) bring up the transparency problems that bring up the data reliability risk in these AI-driven decision-making tools. This is a challenge that needs to be resolved before these tools can be trusted in the processes. The ethical use of data also needs to be taken into account. As Almulla et al. (2024) bring up, since these technologies are still quite new, it is possible that they can be hacked, and since the data used in management accounting is often confidential, this is a big risk and challenge.

Other challenges are related to high investment costs that are due to the implementation and training of these new technologies, as Shchyrba et al. (2024) noted. But it was also shown that in the long run, it can be seen that the costs will come down, as is normally the case when implementing new technologies and start to give more benefits for companies. It is also important to investigate in the future how these technologies can be implemented as efficiently as possible.

Despite all the problems, Lu (2025) sees the use of artificial intelligence tools as a positive development. AI can be seen helping in more accurate forecasting, reducing

costs and making financial decision-making more reliable. AI makes it possible to analyse a large amount of data and, with that, help with the decision-making process.

AI can also be seen as modifying the role of management accounting professionals. But despite the concern of the employees losing their jobs due to AI, it can be seen more as a possibility for these employees to move to more strategic business partner positions and to hand over easy manual tasks to artificial intelligence.

There were also some contradictions in the articles, mainly related to the nature of the work and cost implications. Many articles highlighted cost-effectiveness when moving to use AI tools (Lu, 2025; Ratmono et al., 2023). On the other hand, Abbas (2026) commented that because of the lack of empirical research, there is no long-term evidence of cost effects. The tools can actually just bring up the costs for companies and grow investments in the long run due to the constantly needed training.

There is also a tension between the articles on whether AI is going to strengthen the position of management accounting professionals or cause them to lose their jobs. Many researchers, like Dounia et al. (2025) and Zhang et al. (2023), noted in the literature review of Abbas (2026), see the AI tool as a possibility to move into a business partner role. But then Abbas (2026) brings up the contradiction that automation could lead to a widespread reduction in job descriptions.

There is still uncertainty in the research about where management accounting professionals' time will be spent on these artificial intelligence tools. That is, what role they will play in the future. Shcyrba et al. (2024) highlight that the tasks will move to predictive analytics and interpretation of complex scenarios. Elawadly (2025), on the other hand, brings up that the role might move into more of a monitoring of data algorithms. This would be a more analytical type of role and would conduct fewer accounting tasks than previously.

The strongest data could be seen in the systematic literature reviews like Abbas (2026), Jones& Free (2026) and Almulla et al. (2024). Those provide a great foundation, synthesising the study done before. Those were also published in high-level scientific publications. But these studies do not bring anything new to the topic, which is the reason why more empirical studies need to be done to get stronger research on the topic.

There were three main contributions in this study: synthesising and structuring the existing research to offer a conceptual contribution on the challenges and opportunities of artificial intelligence in management accounting, identifying key implications for practitioners and highlighting areas where current literature remains limited and gives research gaps for future research. It can be said that this research managed to answer these questions relatively well and create a picture of the use of artificial intelligence in decision-making in management accounting.

7.1 Limitations and future research recommendations

Limitations in this study are quite similar as in systematic literature review typically have. In the data screening phase, there might be some data that do not get picked up for the study, and on the other hand, some not useful data might be in the review. In general, this study was relatively successful in selecting targeted data that answered the research question. It can also be considered a good sign that research gaps were identified in the data, which is one of the purposes of the literature review.

As a gap in the research can be shown that long-term impacts of AI programmes in management accounting have not been researched yet, as Shchyrba et al. (2024) bring up. This is an issue since the AI tools have not been in use for a long time in companies yet, so we do not have long-term data from the usage. This also gives a risk for the companies starting to use these tools.

Stracke et al. (2026) recognise that there is still a gap in research to build a human managerial decision-making machine to support higher-level decisions. As they describe, the development work is still in its beginning. This can be a problem that cannot be solved, since there is also research that currently confirms that some types of decisions always require human intelligence.

As Souza et al. (2025) bring up the transparency problem in AI tools, there is a gap in the AI "black box" problem, as in how transparent the algorithms in the tools are and how this could be handled in the use of AI in decision-making.

There is also not a lot of empirical research on the use of artificial intelligence in decision-making in management accounting and in actual business environments. As Abbas (2026) confirms, there are a lot of conceptual studies on the topic, but the amount of empirical studies has remained low. When conducting this literature review, it can also be seen that in the data, there are not many studies in actual companies about this topic. There is a lot of literature reviews and conceptual-level research that can show that the topic is clear as a concept, but not yet tested. As noted before, it can be seen as a limitation that a large amount of data used in this literature review is based only on conceptual analysis, not empirical evidence.

As a recommendation for future research can be suggested to conduct a study within the companies looking for AI-based implementations of tools in decision making. It would be particularly interesting to look at controlling roles and how they have implemented AI tools in decision-making and daily tasks at work.

References

Abbas, K. (2026). Management accounting and artificial intelligence: A comprehensive literature review and recommendations for future research. *The British Account ing Review*, 58, 101551. https://doi.org/10.1016/j.bar.2025.101551

Almulla, D., Abbas, M., Al-Alawi, A., & Alkooheji, L. (2024). Process and impact evaluation of artificial intelligence in managerial accounting: A systematic literature review. *International Journal of Computing and Digital Systems*, 15(1), 1467–1482. http://dx.doi.org/10.12785/ijcds/1501104

Attar, R. W., & Gupta, B. B. (2025). Leveraging AI and machine learning for enhanced data analytics and visualization in database management with digital twins. *Journal of Database Management*, 36(1). https://doi.org/10.4018/JDM.388135

Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology*, 1(3), 311–320. https://doi.org/10.1037/1089-2680.1.3.311

Bayakhmetova, A., Rudenko, L., Krylova, L., Suleimenova, B., Niyazbekova, S., & Nurpei sova, A. (2025). Artificial intelligence in financial behavior: Bibliometric ideas and new opportunities. *Journal of Risk and Financial Management*, 18(3), 159. https://doi.org/10.3390/jrfm18030159

Cambridge University Press. (2020). *Cambridge Advanced Learner's Dictionary*. Re trieved April 1, 2026, from https://dictionary.cambridge.org/

Damar, M., Özen, A., Çakmak, Ü. E., Özoğuz, E., & Erenay, F. S. (2024). Super AI, Genera tive AI, Narrow AI and Chatbots: An Assessment of Artificial Intelligence Technol ogies for The Public Sector and Public Administration. *Journal of AI*, 8(1), 83-106. https://doi.org/10.61969/jai.1512906

Dounia, G., Chaimae, K., Yassine, H., & Houda, B. (2025). Artificial intelligence and big data in management control of Moroccan companies: Case of the Rabat-Sale-Ke nitra region. *Proceedings on Engineering Sciences*, 7(2), 925–938. https://doi.org/10.24874/PES07.02.020

Elawadly, H. S. H. (2025). Automation and artificial intelligence in accounting: A compre hensive bibliometric analysis and future trends. *Journal of Financial Reporting and Accounting*. https://doi.org/10.1108/JFRA-09-2024-0639

Fink, A. (2020). Conducting research: Literature reviews. From the internet to paper. *SAGE Publications, Inc*.

Gentsch. (2019). AI in marketing, sales and service. *Springer International Publishing*.

Gupta, S., Modgil, S., Bhattacharyya, S., & Bose, I. (2022). Artificial intelligence for decision making in the era of big data – evolution, challenges and research agenda. *Annals of Operations Research*, 308, 215–274. https://doi.org/10.1007/s10479-019-03431-8

Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5–14. https://doi.org/10.1177/0008125619864925

Hossain, S., Fernando, M., et al. (2025). Digital leadership towards a dynamic managerial capability perspective of artificial intelligence. *Journal of Leadership & Organizational Studies*, 32(2), 189–208.

Islami, X., & Mulolli, E. (2024). Human-Artificial Intelligence in Management Functions: A Synergistic Symbiosis Relationship. *Applied Artificial Intelligence*, 38(1), e2439615. https://doi.org/10.1080/08839514.2024.2439615

Jones, S., & Free, C. (2026). What accountants need to know about artificial intelligence and machine learning. *Journal of Accounting Literature*, 48(5), 133–158.

Kerr, D., Smith, K. T., Smith, L. M., & Xu, T. (2025). A review of AI and its impact on management accounting and society. *Journal of Risk and Financial Management*, 18(6), 340. https://doi.org/10.3390/jrfm18060340

Knauer, T., Nikiforow, N., & Wagener, S. (2020). Determinants of information system quality and data quality in management accounting. *Journal of Management Control*, 31(1), 97–121

Legg, S., & Hutter, M. (2007). A collection of definitions of intelligence. *Frontiers in Artificial Intelligence and Applications*, 157, 17. https://arxiv.org/abs/0706.3639

Lou, Y., & Maelah, R. (2025). A systematic literature review of management accounting systems (MAS) in the Industry Revolution 4.0. *International Journal of Accounting and Economics Studies*, 12(SI-1), 244–251. https://doi.org/10.14419/642zzb93

Lu, X. (2025). AI-driven management information system for cost accounting and budget optimisation. *International Journal of Information and Communication Technol ogy*, 26(44), 75–90. https://doi.org/10.1504/IJICT.2025.10074809

Mahlendorf, M. D., Martin, M. A., & Smith, D. (2023). Innovative data – use-cases in man agement accounting research and practice. *European Accounting Review*, 32(3), 547–576. https://doi.org/10.1080/09638180.2023.2213258

Mauludina, M. A., Mulyani, S. & Adrianto, Z. (2023). Critical success factors for imple mentation of self-service busi ness intelligence in management accounting. *Academic Journal of Interdisciplinary Studies*, 12(3).

Nichols, J. M. (2024). Artificial intelligence. Nova Science Publishers, Incorporated.

Numbi, & Elongha. (2025). Leveraging AI in managerial decision-making: driving innova tion and growth in business management. *Issues in Information Systems*, 26(2), 508–516.

Panait (Ion), M., Mușat (Ciobotă), L., & Cosor (Peneoașu), M. (2025). Considerations re garding the use of artificial intelligence in financial management and accounting in state pre-university educational institutions. *Acta Universitatis Danubius. Economica*, 21(1), 74–94.

Rasheed, M. H., Khalid, J., & Rasheed, M. S. (2026). Artificial intelligence in finance: Un veiling foundations, themes, and future research agendas. *Future business journal*, 12(1), 48. https://doi.org/10.1186/s43093-026-00759-z

Ratmono, D., & Zuhrohtun, Z. (2023). Digitalization in management accounting systems for urban SMEs in a developing country: A mediation model analysis. *Cogent eco nomics & finance*, 11(2), 1-22. https://doi.org/10.1080/23322039.2023.2269773

Roos, D., Schlegel, D., & Kraus, P. (2025). Adopting artificial intelligence in accounting. *Journal of Electronic Business & Digital Economics*, 4(2), 374–384. https://doi.org/10.1108/JEBDE-03-2025-0023

Russell, & Norvig, P. (2021). Artificial intelligence: A modern approach. *Pearson Educa tion*.

Salminen, A. (2011). Mikä kirjallisuuskatsaus? Johdatus kirjallisuuskatsauksen tyyppeihin ja hallintotieteellisiin sovelluksiin. The Publishers of University of Vaasa.

Shchyrba, I., Savitskaya, M., Fursa, T., Yeremian, O., & Ostropolska, Y. (2024). Management accounting: The latest technologies, ChatGPT capabilities. *Financial & Credit Activity: Problems of Theory & Practice*, 1(54), 160–172. https://doi.org/10.55643/fcaptp.1.54.2024.4307

Souza, G.H.C., de Araujo Wanderley, C. & Braga de Aguiar, A. The influence of artificial intelligence (AI) transparency on AI acceptance in managerial decision-making. *Journal of Management Control* (2025). https://doi.org/10.1007/s00187-025-00396-7

Stahl, B. C. (2021). Artificial intelligence for a better future. *SpringerBriefs in Research and Innovation Governance*. https://doi.org/10.1007/978-3-030-69978-9_4

Stracke, L., Burggräf, P., Sauer, C. R., Schütz, M., & Kaiser, J. (2026). From human to machine: High-impact tasks for AI in production management – an expert study to reshape decision-making. Production engineering (Berlin, Germany), 20(1), 30. https://doi.org/10.1007/s11740-025-01416-0

Zhang, C., Zhu, W., Dai, J., Wu, Y., & Chen, X. (2023). Ethical impact of artificial intelligence in managerial accounting. *International journal of accounting information systems*, 49, 100619. https://doi.org/10.1016/j.accinf.2023.100619