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# Accounting digitization and outsourcing for small and medium-sized enterprises – The current situation

**Master's Thesis**

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# Introduction

## Context and background

Since the dawn of ancient civilizations, the practice of accounting has played a crucial role in the advancement and progress of numerous societies.[1] Constant efforts to improve accounting systems have resulted in several developments in the field. The introduction of double-entry bookkeeping was a pivotal event in the history of accounting. The publication "Summa de Arithmetica" by Luca Pacioli in 1494, which described the double-entry bookkeeping method, established the fundamental concepts upon which modern accounting systems continue to rely.[2]

Following the nineteenth century, accounting began to evolve into an organized profession that continues to play an essential part in society. The accounting profession, which may appear monotonous and repetitious, has significantly shaped the modern economy. Understanding the structure of their organizations was facilitated by the use of historical financial data, comparison, and attention to detail by both government and private entities, which significantly contributed to their growth. Despite the fact that more than five hundred years have passed since the introduction of double-entry bookkeeping, accounting as a scientific discipline is still evolving and transforming. Since 1494, the development of information technology has prompted one of the most significant changes and adaptations in accounting. There has been a transition from manual labor, which was closely associated with the profession, to a more dynamic and active position in businesses.

Accounting digitization refers to the transition from manual, paper-based accounting processes to computerized and automated systems.[3] It incorporates a vast array of digital tools and software that facilitate financial management, improves data precision, and enhances the capacity for decision-making. Following the introduction of cloud-based accounting software solutions, the ability to provide accounting services in real-time from anywhere in the world created an outsourcing opportunity.[4] The result could help small and medium-sized businesses (SMEs) obtain access to highly qualified

[1] See Robson, K. (1992), pp. 685-686.
[2] See Mariotti, S. (2013).
[3] See Bachisse, M. (2017), pp. 115-116.
[4] See Krell, E. (2018), pp. 2.

accountants at a reduced cost. On the other hand, outsourcing, one of the most crucial business processes, carries potential hazards.[5] However, in spite of the potential benefits, some small and medium-sized enterprises face obstacles in implementing digital accounting systems, such as limited resources, lack of technical expertise, and opposition to adapt.[6]

In addition to digitization, outsourcing has grown as a different way for SMEs to manage their accounting operations more effectively. Accounting outsourcing describes the practice of contracting external service providers to manage various accounting responsibilities, which can aid small and medium-sized enterprises (SMEs) in achieving operational efficiency and cost savings.[7] Additionally, outsourcing offers access to sophisticated technology and specialized expertise that may not be available in-house, thus improving the quality of accounting services provided.[8]

Cost, quality, and control all play a role in the decision of SMEs to outsource their accounting operations.[9] Considering the potential advantages of both digitization and outsourcing, there is a need for a better comprehension of the current situation and the elements that influence the implementation of these strategies by small and medium-sized enterprises (SMEs). This thesis seeks to examine the current state of accounting digitization and outsourcing in small and medium-sized enterprises (SMEs), the obstacles and possibilities that they face, and the repercussions for business performance.

## Research questions and objectives

The goal of this master's thesis is to investigate the digitalization process that has taken place in accounting and to determine whether it has led to an increase in the outsourcing of accounting and bookkeeping business processes for small and medium-sized enterprises (SMEs). In addition, this master's thesis will discuss the potential hazards and benefits associated with digitalization and outsourcing, as well as provide additional information on the current market for cloud-based accounting software and discuss its

[5] See Shareef, A. M./Kumar, V./Kumar, U. (2009), pp. 546-548.
[6] See Lutfi, A./Saleh, N. A./Malak, A. A.-K./Ahmad, F. A./Malek, H. A./Almaiah, M. A./Alrawad, M./Alsyouf, A./Saad, M./Ibrahim, N. (2022), pp. 16-18.
[7] See Rogosic, A. (2019), pp. 44-45.
[8] See Carey, P./Subramaniam, N./Ching, K./ Wee, C. (2006), pp. 25-27.
[9] See Dorasamy, M./Marimuthu, M./Jayabalan, J./Rama, M./Kaliannan, M. (2010), pp.48-52.

advantages and disadvantages. Ultimately, the master's thesis will attempt to decipher the future of the accounting profession and determine whether outsourcing is the correct course for businesses. This will be accomplished by addressing the following research questions:

- Research Question 1: What are the primary drivers and motivations for SME adoption of accounting digitization and outsourcing?
- Research Question 2: What obstacles and difficulties do small and medium-sized businesses confront when implementing accounting digitization and outsourcing?
- Research Question 3: How do accounting digitization and outsourcing practices affect the general performance of small and medium-sized enterprises (SMEs)?
- Research Question 4: What factors influence the decision-making process of small and medium-sized enterprises (SMEs) when deciding whether to outsource accounting functions or implement digital accounting systems?
- Research Question 5: How can emerging technologies such as artificial intelligence, machine learning, and blockchain further automate accounting processes in SMBs?

With the goal of providing meaningful answers to these research questions, the study will define the following objectives:

- Objective 1: Examine the theoretical foundations of accounting digitization and outsourcing, involving their evolution, advantages, and disadvantages.

This objective will offer a firm understanding of the theoretical aspects of accounting digitization and outsourcing, enabling an in-depth investigation of the factors that drive or inhibit the implementation of these practices by SMEs.

- Objective 2: Conduct a comprehensive review of the current accounting software and tools, as well as the SME outsourcing strategies.

This objective will allow for an assessment of the most widely used and successful accounting tools and outsourcing strategies, providing an extensive review of the industry's current state.

- Objective 3: Analyze the case studies of successful digital transformation/digitization and outsourcing in SMEs.

By examining the experiences of small and medium-sized enterprises (SMEs) that succeeded in implementing these practices, the study will gain valuable insights into the variables which contributed to their success as well as the challenges that they confronted and circumvented.

- Objective 4: Develop and conduct a questionnaire to capture primary data from SMEs regarding their experiences with digital accounting and outsourcing.

This objective will ensure the accumulation of empirical data that can be used to support or refute the theoretical findings, as well as provide an in-depth comprehension of the current situation of SMEs in terms of accounting digitization and outsourcing.

- Objective 5: Evaluate the opportunity for further accounting automation through the use of new technologies and provide ideas on how SMEs may incorporate these technologies into their existing accounting systems.

This objective will investigate the future potential of accounting automation and provide SMBs interested in implementing new technologies to improve their accounting processes with actionable guidance.

By addressing these research questions and objectives, the purpose of this study is to offer a thorough understanding of the current state of accounting digitization and outsourcing practices among SMEs. SME proprietors and executives, as well as accounting professionals and policymakers, will find the results insightful as they navigate the swiftly evolving landscape of accounting technology and practices.

## Scope and limitations

This master's thesis analyses the present state of accounting digitization and outsourcing in small and medium-sized businesses (SMEs). It seeks to investigate the motivating factors, advantages, and difficulties associated with these practices, as well as to assess the opportunity for further automation through emergent technologies. The scope of the investigation includes the following areas:

- Theoretical foundations: This entails a thorough literature review on accounting digitization and outsourcing, with an emphasis on their evolution, benefits, and disadvantages as well.
- Accounting software and tools: The study will evaluate the many different accounting software and tools accessible on the market, providing details on the most popular and effective solutions for small and medium-sized enterprises (SMEs).
- Case studies: The research will encompass a review of case studies highlighting successful digital transformation and outsourcing practices in SMBs, which will provide a better understanding of the variables that lead to their success and the obstacles they encounter.
- Primary data collection: Through survey methods, the research will collect primary data from SMEs addressing their experiences with accounting digitization and outsourcing. This will provide a thorough comprehension of current events and the factors that influence the adoption of such practices.
- Additional automation potential: Applying novel technologies such as artificial intelligence, machine learning, and blockchain and investigating opportunities to advance the automation of accounting processes.

Regardless of the thorough approach adopted in this master thesis, the following limitations must be recognized:

- Time constraints: This master's thesis is required to be completed within a stipulated period of time, which might restrict the scope and depth of the investigation. Consequently, certain fields of interest may not be investigated as thoroughly as intended.
- Rapidly evolving landscape: Accounting technology and practices are in a constant state of evolution, with new ideas and advances arising frequently. This study reflects the state of affairs at the time of the study's completion, and its findings might become less relevant as the environment transforms.
- Geographic limitations: The research will concentrate primarily on small and medium-sized companies located in the United States. As a result, the findings

may not be applicable to all SMEs operating in various economic, cultural, or legislative environments.

- Industry-specific limitations: Certain industry-specific factors may affect the widespread implementation of accounting digitization and outsourcing practices, despite the fact that the research seeks to provide insights relevant to SMEs in a variety of industries. Consequently, the results may not be applicable to all industries.
- Limited access to primary data: Obtaining primary data via survey forms is dependent on the engagement of SMEs in the study. As a result, the sample size and response rate may be smaller than anticipated, which may compromise the representativeness of the discoveries.

Regardless of such constraints, the purpose of this master's thesis is to shed light on the current state of accounting digitization and outsourcing practices among SMEs. By analyzing the motivating factors, advantages, and obstacles associated with these practices, the study aims to contribute to the current reservoir of knowledge and provide practical advice for SME executives and owners, accounting professionals, and legislators.

## Thesis Structure

This master's thesis consists of eight chapters, each of which serves a different role in addressing the research questions and objectives. The dissertation is structured to provide an in-depth overview of the present state of accounting digitization and outsourcing practices in small and medium-sized enterprises (SMEs). The order of the chapters is as follows:

Chapter 1: Introduction

This chapter presents an overview of the study's context and background, emphasizing the significance of SME accounting digitization and outsourcing. It describes the research questions and objectives, specifies the study's scope and limitations, and presents the thesis's structure.

Chapter 2: Accounting Digitization

This chapter explores the theoretical underpinnings of accounting digitization, which includes the evolution of accounting technology and the benefits and challenges of digitization. It investigates the effects of digital transformation on SMEs, with an emphasis on adoption obstacles and opportunities, as well as case studies of successful digital transformation.

Chapter 3: Accounting Outsourcing

This chapter examines the theoretical foundations of accounting outsourcing, addressing the emergence of outsourcing practices as well as the advantages and disadvantages of each. It delivers an overview of the industry, outlines outsourcing strategies for small and medium-sized enterprises, identifies factors influencing the decision to outsource, and presents case studies of successful outsourcing in SMEs.

Chapter 4: Research Method

This chapter describes the research methodology, which includes the selection of the research design, data collection methods, data analysis techniques, and ethical considerations. It offers a justification for the selected methods and addresses their prospective limitations.

Chapter 5: Questionnaire Analysis

This chapter provides an examination of the questionnaire-collected primary data. It discusses the characteristics of the sample and response rate, the motivations for accounting outsourcing, the most frequently outsourced services, the level of satisfaction with outsourcing and digitization, and the impact of these practices on company performance.

Chapter 6: Additional Automation Potential

This chapter examines opportunities for further automation of accounting processes by means of emergent technologies such as artificial intelligence, machine learning, and blockchain. It evaluates the way they interact with existing accounting systems, analyzes potential benefits and barriers, and offers suggestions for SMBs seeking ways to incorporate these technologies.

Chapter 7: Conclusions and Suggestions

This chapter summarizes the research findings and discusses their practical and theoretical implications for SME operations. It suggests possible paths for further investigation and action for policymakers and industry stakeholders.

Chapter 8: Summary of Key Findings

This concluding chapter presents an overview of the study's key findings, emphasizing the most significant findings and accomplishments in the field of SMEs' accounting digitization and outsourcing.

By following this layout, the dissertation will present an exhaustive and insightful examination of accounting digitization and outsourcing practices in SME areas of accounting. It will contribute to the current corpus of knowledge and inspire future research and practice in this swiftly evolving field by providing valuable conclusions and suggestions to SME executives and owners, accounting professionals, and legislators.

# Accounting digitization

## The theoretical background of accounting digitization

The theoretical foundations of accounting digitization are deeply embedded in the wider picture of digital transformation, a development that is profoundly transforming many industries, including accounting.[10] Accounting digitization is the process of transforming traditional, manual accounting procedures into digital formats that utilize technology to automate, consolidate, and improve accounting procedures.[11] The emergence of digital technologies has led to a fundamental transformation in the manner in which accounting is performed. The manual and paper-based traditional accounting model was substituted with a digital model that involves automation, real-time reporting, and data analyses.[12] This change has been assisted by the rise of sophisticated accounting software and tools which allow the digitization of a variety of accounting procedures, including financial reporting, bookkeeping, and auditing.[13]

A number of theoretical frameworks can be linked to accounting digitization's theoretical foundations. In particular, the Technology Acceptance Model (TAM) is frequently utilized to comprehend the widespread acceptance of digital technologies in accounting. Based on the Technology Acceptance Model (TAM), the adoption of technology is dictated by its perceived utility and simplicity of use.[14] In the realm of accounting digitization, perceived usefulness may refer to the capacity of digital technologies to enhance the speed and precision of accounting procedures, whereas perceived ease of use may refer to the ease of use of the accounting software or tool.[15] The Diffusion of Innovations theory, which describes the reasons behind and at what rate new ideas and technologies proliferate, is an additional relevant theoretical framework. In line with this theory, the acceptance of innovative technology (digital accounting technologies in this instance) is affected by variables such as its relative benefit, interoperability with current systems, level of complexity, feasibility for testing,

[10] See Bharadwaj, A./Pavlou, P./El Sawy, O./Venkatraman, N. (2013), pp. 474.
[11] See Smith, S. (2018), pp. 241-243.
[12] See Healy, P./Palepu, K. (2001), pp. 433-434.
[13] See Warren, J. D./Moffitt, K. C./Byrnes, P. (2015), pp. 398-400.
[14] See Davis, F. (1989), pp. 320-323.
[15] See Venkatesh, V./Davis, F. (2000), pp. 198-200.

and observability.[16] This theory can shed light on the elements which impact the implementation of digital technologies in the accounting industry.

The Resource-Based View (RBV) is an alternate theoretical perspective that can be used to investigate the digitization of accounting. As stated by RBV, businesses can obtain a competitive advantage by capitalizing on their distinctive resources and competencies. These assets and abilities may include digital expertise, technological infrastructure, and digital culture in the wake of accounting digitization.[17] Accounting digitization's theoretical foundation is a multivariate model that draws on concepts and theories from the disciplines of information systems, innovation, and strategic management. The digitization of accounting is not only a technological transition but also a strategic and cultural one with significant consequences for the methods and perception of accounting.

Accounting is additionally impacted by the Industry 4.0 theory, which refers to the digitalization within the integration of all value-adding business divisions and the entire value chain. Information and communication technology (ICT) and automation technology are fully incorporated in the "factory of the future," with every aspect of the subsystem, such as R&D, sales partners, vendors, original equipment manufacturers (OEMs), and customers interconnected and unified. Industry 4.0 is encouraging the creation of new simulation modeling frameworks, such as the Digital Twin concept, which entails the construction of a digital replica of a physical system for analysis and simulation purposes. The idea is being implemented by both large corporations and small and medium-sized enterprises (SMEs), although the problems they confront and the approaches and tools they use to address them differ by the size of the organization.[18]

The introduction of digital technologies has significantly altered the context of the accounting profession. This shift has been defined by the modification of workplaces and operations, which has consequently created an abundance of new opportunities in the profession.[19] Such opportunities necessitate an examination of traditional skill sets and a dedication to continuous education and adaptation.[20] Despite the fact that the accounting profession is continuously subject to evolution, nowadays, it is witnessing

[16] See Rogers, E. M (1983), pp. 238-240.
[17] See Barney, J. (1991), pp. 101-103.
[18] See Rodic, B. (2017), pp. 194.
[19] See Leitner-Hanetseder, S./Lehner, O. M./Eisl, C./Forstenlechner, C. (2021), pp. 540-541
[20] See Kureljusic, M./Karger, E. (2023), pp. 2-3.

more fast and profound developments than at any time before. Digital transformation and legislative forces are the primary drivers of such shifts.[21] The speed and magnitude of these shifts emphasize the necessity for professionals in this field to remain current with the newest tendencies and technologies.

Robotic Process Automation is one of the most significant technological developments impacting the accounting profession. RPA has the capacity to automate routine accounting processes, thereby increasing productivity and decreasing the risk of human error.[22] In addition, advances in technology such as blockchain, and big data are anticipated to have a significant effect on the future of the field of accounting. The aforementioned innovations are altering not only the manner in which accounting duties are carried out but also the strategic function of accountants within corporations.[23]

Out of the numerous digital innovations, artificial intelligence (AI) is believed to have a major effect on accounting. Lehner et al. (2022) state that artificial intelligence's ability to recognize patterns in large volumes of accounting records may assist firms' decision-making processes while offering helpful insights to stakeholders performing financial analyses.[24] The implementation of AI in accounting is a subject that has been a topic of substantial academic study. That said, the most recent developments in AI technology have considerably increased its academic presence and relevance, indicating a bright future for AI in accounting. This wider shift toward the adoption of digital technologies into every aspect of business operations includes the digitization of accounting. As a result, the theoretical background of accounting digitization requires comprehending not only the particular technologies and procedures involved in digitizing accounting practices but additionally wider digital transformation trends and their ramifications for the accounting field.[25]

In conclusion, the theoretical foundation of accounting digitization is an extensive and multivariate construct that relies upon numerous theories and concepts from the disciplines of information systems, innovation, and strategic management. This context is essential for comprehending the present state and future trajectory of the accounting profession.

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[21] See Hajkowicz, S./Reeson, A./Rudd, L./Bratanova, A./Hodgers, L./Mason, C./Boughen, N. (2016), pp. 58-59.
[22] See Cooper, L./Holderness, K./Sorensen, T./Wood, D. A. (2019), pp. 1-3.
[23] See Bonyuet, D. (2020), pp. 32-33.
[24] See Lehner, O. M./Ittonen, K./Silvola, H./Strom, E./Wuhrleitner, A. (2022), pp. 115.
[25] See Bharadwaj, A./Pavlou, P./El Sawy, O./Venkatraman, N. (2013), pp. 473.

*The development of accounting technology*

The evolution of accounting technology has been characterized by major turning points that have transformed the accounting landscape.[26] The demand for more efficient, precise, and timely financial information, which has become ever more essential in the modern rapid and complex business environment, has driven this evolution. James Ritty's development of the mechanical cash register in 1879 marks the beginning of accounting technology in the late nineteenth century. This piece of equipment was created to keep track of sales transactions to avoid cash fraud; it represents the initial step toward automated accounting.[27]

The twentieth century experienced significant accounting developments in technology. In the 1960s, the arrival of the electronic calculator transformed accounting by automating calculations, decreasing errors, and increasing productivity.[28] The introduction of mainframe computers in the 1970s made possible the analysis of massive amounts of data, which was unachievable with traditional methods. During this time, the first financial accounting software was developed, which automated the process of documenting, categorizing, and summarizing financial transactions. Accounting was profoundly affected by the increase in the number of desktop computers and the introduction of the Internet in the 1980s and 1990s. Accountants are now reliant on software applications such as Microsoft Excel to carry out complex calculations, data analysis, and financial modeling with simplicity. Internet-enabled real-time interaction and data exchange, making financial information readily accessible to users worldwide.[29]

The introduction of advanced technologies, including cloud computing, artificial intelligence (AI), and the Internet of Things (IoT) at the start of the 21st century, has additionally altered the accounting profession.[30] Cloud-based accounting software, such as QuickBooks Online and Xero, offers adaptable and scalable products that enable businesses to keep track of their finances from any location. These programs additionally promote team member collaboration, streamline procedures, and integrate with other business applications, thereby augmenting productivity and decision-making.

[26] See Covaleski, M. A./Dirsmith, M. W./Heian, J. B./Samuel, S. (1998), pp. 293-294.
[27] See Ohio History Central (2022).
[28] See Anandarajan, A./Srinivasan, C. A./Anandarajan, M. (2004), pp. 14-16.
[29] See Pepe, A.A. (2011).
[30] See Dhapte, A. (2019).

Accounting progressively employs AI and machine learning for tasks including data entry, processing of invoices, and even auditing and tax preparation.[31] Furthermore, not only do these advances automate monotonous duties, but they additionally gain knowledge from the data they process, allowing them to offer observations and projections that can influence strategic decision-making.

The Internet of Things, on the other hand, enables insight into company operations in real-time, allowing organizations to track and oversee assets, monitor costs, and increase efficiency.[32] In particular, IoT devices can monitor inventory levels and restock supplies automatically when they run low, streamlining inventory management and reducing costs.

In conclusion, the development of accounting technology has been an ongoing process of constant innovation and modification, fueled by the demand for more efficient, accurate, and expeditious financial data. As the digital era progresses, it is anticipated that technologies such as AI, machine learning, and IoT will keep changing the accounting surroundings, creating fresh chances for efficiency, accuracy, and strategic decision-making. The incorporation of Enterprise Resource Planning (ERP) systems at the end of the 20th century was a major turning point in the development of accounting technology.[33] ERP systems incorporate multiple business processes, including accounting, into a single system, thereby improving data accuracy, reducing redundancies, and supporting real-time reporting.

The introduction of cloud computing in the twenty-first century has had a major effect on accounting technology.[34] The advantages of cloud-based accounting systems include lower expenses, scalability, and accessibility. As businesses are able to utilize their financial data through the internet, these systems eradicate the need for them to purchase costly software and hardware. In addition, cloud-based systems are readily scalable to satisfy the fluctuating requirements of businesses. Utilizing Artificial Intelligence (AI) and Machine Learning (ML) in accounting is an emerging trend that has the potential to completely transform the accounting industry.[35] AI and ML can automate everyday tasks like data entry and invoice processing, lowering accountants' workload and eliminating errors. In addition, these innovations can analyze vast

[31] See Chandi, N. (2017).
[32] See Joshi, N. (2022).
[33] See Goldston, J. L. (2020), pp. 35-36.
[34] See Dhapte, A. (2019).
[35] See Hasan, A. R. (2022), pp. 443-444.

quantities of financial data and provide insightful information that may assist with strategic decision-making.

The Internet of Things (IoT) is yet another technology that has the capacity to completely change the accounting profession.[36] IoT devices can capture real-time data from a variety of sources, such as inventory and point-of-sale systems, and transmit this data to accounting systems. Real-time data may supply organizations with current financial information, allowing them to draw rapid and well-informed decisions.

In summary, the evolution of accounting technology has been an experience of constant innovation and adaptation, driven by the demand for more efficient, accurate, and expeditious financial data. As the digital era progresses, it is anticipated that technologies such as AI, ML, and IoT will keep evolving accounting surroundings, creating fresh possibilities for efficiency, precision, and strategic decision-making.

*The advantages and difficulties of digitization*

The process of digitizing accounting has resulted in an entirely new phase of financial management, especially for small and medium-sized businesses (SMEs).[37] The shift to digital platforms and tools has brought about an abundance of advantages and drawbacks that are profoundly transforming the accounting environment. The boost in efficacy provided by accounting digitization is one of its most prominent benefits. Traditional accounting procedures usually require labor-intensive data entry and an abundance of documentation. With the introduction of digital tools, such procedures can be automated, substantially decreasing the possibility of human error and releasing precious time that may be allocated to more strategic tasks.[38] This automation not only streamlines activities but also increases productivity, an asset that is particularly valuable for small and medium-sized enterprises (SMEs) with limited financial resources.[39]

Furthermore, digital accounting systems offer real-time access to financial data, which is crucial for allowing organizations to make quick decisions based on accurate

[36] See Karamanska, A. (2021), pp. 24-25.
[37] See Bagale, G. S./Venkata, R. V./Deepmala, S./Dilip, K. S./Durga, V. K. G./Ravi, K. B./Ravi, K. G./Roy, S./Subramaniyaswamy, V./Sudhakar, S. (2021), pp. 2-3.
[38] See Raghupathi, W./Raghupathi, V. (2014), pp. 3-5.
[39] See Egbu, C. O./Subashini, H./Suresh, R. H. (2005), pp. 14-17.

information.[40] This instantaneous access to information can result in improvements in financial management and strategic planning, which leads to enhanced business performance and expansion.[41] A different noteworthy benefit of digital accounting solutions is their affordability. The majority of these products are subscription-based, which makes them accessible to SMBs. In addition, they eradicate a requirement for physical storage space, decreasing expenses further.[42] This cost-efficiency includes the long-term advantages of enhanced financial management and decision-making in addition to instantaneous cost reductions.

Additionally, digitization improves the precision and reliability of financial information.[43] Built-in checks and balances in digital accounting software aid in avoiding mistakes and fraud.[44] In addition, they allow the monitoring of activities and the preservation of accurate records, which is essential for audit and legal compliance. This enhanced precision and dependability may boost stakeholders' faith and trust, such as investors, customers, and regulators. Regardless of these substantial benefits, the shift to digital accounting does not come without obstacles. Some small and medium-sized enterprises' absence of digital literacy is one of their most significant obstacles.[45] Some businesses might not have the technical expertise necessary for the successful implementation of digital accounting platforms. The following could render the transition process difficult and contribute to personnel resistance. SMBs might want to make investments in training and support to further develop their digital literacy and encourage the implementation of digital accounting systems in order to surmount this obstacle.

Data security is a further critical obstacle. Despite the fact that digital systems can improve the security of financial data, they additionally open businesses to cyber-attacks.[46] Thus, SMBs must invest in complex and expensive safety measures to safeguard their financial data.[47] This demands a delicate equilibrium between maximizing the potential advantages of digitization and mitigating the potential hazards associated with it. Additionally, the accelerated rate of technological change may make it hard for small and medium-sized enterprises (SMEs) to maintain their position. The

[40] See Trigo, A./Fernando, B./Raquel, P. E. (2016), pp. 119-120.
[41] See Raghupathi, W./Raghupathi, V. (2014), pp. 7-8.
[42] See Guo, Y./Chen, L. (2016), pp. 1-2.
[43] See Burritt, R./Katherine, C. (2016), pp. 29-30.
[44] See Roszkowska, P. (2021), pp. 174-177.
[45] See Neumeyer, X./Susana, S. C./Michael, H. (2020), pp. 1611-1612.
[46] See Lois, P./George, D./Alkiviadis, K. (2020) pp. 205-206.
[47] See Ključnikov, A./Ladislav, M./David, S. (2019) pp. 2090.

field of digital accounting is continuously changing, with new tools and features coming out on a regular basis. Hence, organizations must be ready to continuously update their processes and procedures in order to remain competitive. This necessitates dedication to continuous education and adjustment, in addition to the ability to react to shifting conditions. As a result, while the digitization of accounting provides many advantages for SMEs, it additionally poses certain barriers.[48] When choosing to migrate to digital accounting systems, it is essential for businesses to examine all of these variables thoroughly. Performing so, they are able to capitalize on the benefits of digitization while effectively addressing the corresponding difficulties, which eventually contribute to the company's financial performance and company growth. Furthermore, to these obstacles, implementing digital accounting systems necessitates substantial expenditures in technology infrastructure. This encompasses not just the software itself but additionally the hardware, network infrastructure, and regular upkeep necessary for supporting the system. For small and medium-sized businesses with scarce funds, this may be an enormous financial burden.

Additionally, the transition to digital accounting may have consequences for the company's culture and structure.[49] The transition to digital processes may necessitate modifications to assignments and duties, workflows, and methods of communication. This can cause pushback among employees, especially those used to traditional practices of work. Successfully navigating this transformation is an essential component of the transition to digital accounting. Further, the advantages of digitization might not be obvious. Moving from manual to digital accounting can be challenging and lengthy, and it might require some time for the advantages to manifest. This may cause it hard for small and medium-sized enterprises to argue for investments in digitization, especially in the short term. Regardless of these obstacles, the prospective advantages of digital accounting for SMBs are substantial.[50] By utilizing digital technologies, SMBs may boost their financial management capacity, optimize their decision-making, and ultimately fuel their company's success. In order to achieve these rewards, SMEs have to be willing to spend money on the required technology, competencies, and modifications to their organizations, as well as successfully handle the associated risks.

In summary, while the digitization of accounting provides many advantages for SMEs, it also poses certain obstacles. When choosing to migrate to digital accounting systems,

[48] See Cardinali, S./Pagano, A./Carlon, E. (2023), pp. 239-240.
[49] See André, H./Bohnsack, R./Marz, D./Cláu (2021), pp. 1166-1167.
[50] See Farhana, H./Rosli, M. H./Hanissah, H. (2021), pp. 15-16.

it is essential for businesses to take these considerations into account thoroughly. By doing so, they are able to capitalize on the benefits of digitization while effectively addressing its accompanying obstacles, eventually contributing to their financial performance and company prosperity.

## Accounting software and tools

Industry 4.0, commonly referred to as the Fourth Industrial Revolution, has introduced major obstacles and possibilities to numerous industries, including accountancy.[51] This revolution is defined by a growing digitization of the entire supply chain, allowing participants, objects, and systems to exchange data in real-time. In the field of accounting, this has resulted in the development and widespread adoption of software and instruments intended to expedite and improve accounting procedures. The need to enhance control and facilitate real-time performance measurement is one of the motivating factors behind the widespread implementation of these digital accounting technologies.[52] This is especially important for small and medium-sized businesses (SMEs), which frequently encounter resource limitations and must maximize efficacy. Accounting software and tools can automate routine tasks, minimize errors, and offer helpful insights into financial performance, saving up time for strategic decision-making. However, there are obstacles to the adoption of these advancements. Opposition to Industry 4.0 technologies from both employees and middle management can substantially impede their implementation. This opposition may originate from ignorance or fear of change. To help ensure the successful adoption of these technologies, it is essential for SMBs to invest in education and change management initiatives. There is an extensive range of accounting software and instruments accessible on the market, each with its own benefits and characteristics. Two broad categories exist for these tools: general accounting software and specialized accounting software.[53] General accounting software, such as QuickBooks, Xero, and Sage, provides an extensive list of functions that address the majority of accounting requirements, including invoicing, expense monitoring, payroll, and financial reporting. On the other

[51] See Burritt, R./Katherine, C. (2016), pp. 24.
[52] See Aslanertik/Banu, E./Bengü, Y. (2019), pp. 556-557.
[53] See Oladipupo, M./Ogundeji, M. G. (2014), pp. 25-26.

hand, specialized accounting tools concentrate on particular accounting areas, such as tax preparation, budgeting and forecasting, and asset management.

The selection of accounting software or instrument is contingent upon the SME's particular requirements and circumstances. Considerations encompass the business's scale, the complexity of its financial operations, its operating industry, and its budget. Also essential are the software's usability, scalability, and compatibility with other systems. Accounting software and tools are vital to the digitization of accounting for small and medium-sized enterprises. Although the adoption of these technologies brings difficulties, the advantages that they provide in terms of improved control, real-time performance measurement, and efficiency gains make them indispensable components of contemporary accounting practices. Continuing from the previous section, let's examine some of the most popular and extensively used accounting software and tools on the market today.

QuickBooks Online is an all-encompassing accounting software that automates a variety of accounting duties, including invoicing, expense tracking, and time tracking. It also offers online payment methods and reminders for overdue payments, making it a suitable option for SMBs seeking an all-in-one accounting solution.[54] Docyt is a different accounting software that uses artificial intelligence to automate financial workflows and facilitate bookkeeping. It offers real-time visibility into the overall financial health of a company, making it a valuable tool for small and medium-sized enterprises (SMEs) that need to closely monitor their financial performance.

NetSuite is a more comprehensive solution that offers ERP, financials, commerce, inventory management, HR, supply chain management, and CRM capabilities. Its extensive feature set makes it a suitable option for rapidly expanding enterprises in all industries. Sage Intacct is cloud-based financial management and accounting software designed for small to medium-sized accounting firms. It offers financial reporting and operational insights, making it a valuable tool for businesses that must make decisions based on data. Striven is a cloud-based enterprise resource planning (ERP) solution that is suitable for a variety of industries and types of organizations. It provides accounting, inventory management, human resources, and customer relationship management features, among others.

[54] See Software Advice (2023).

These are only some of the numerous accounting software and instruments accessible on the market today. The selection of software will depend on the SME's particular requirements and constraints. Prior to reaching a decision, businesses should conduct an extensive investigation and evaluate elements such as usability, scalability, integration capabilities, and cost.

## Effects of digital transformation/digitization on small and medium-sized enterprises (SMEs)

Small- and medium-sized enterprises (SMEs) are profoundly affected by the digital transformation and digitization of accounting practices. This change symbolizes an important shift in how businesses work, compete, and provide value to customers. In the context of Industry 4.0, the digital shift has significant effects on SMBs, especially those in the accounting industry.[55] The shift to digital technologies offers opportunities for SMBs to increase their efficacy, competitiveness, and market penetration. Nonetheless, the transition poses obstacles, such as the requirement for substantial investments in technology, education, and change management, as well as possible risks to data security and privacy.[56] The incorporation of digital technologies into accounting procedures can result in greater efficiency and precision, decreased expenses, and enhanced decision-making abilities. However, the process of adoption can be packed with difficulties, especially for SMEs. The expensive nature of technology, a lack of technical expertise, employee opposition to change, and worries regarding data security and privacy can be among these obstacles. Various case studies demonstrate that many SMBs have successfully navigated digital transformation despite these obstacles.

For example, Priyono et al. (2020) share multiple case studies of SMBs that successfully underwent digital transformation throughout the COVID-19 pandemic.[57] The researchers discovered three main strategies applied by these SMEs: accelerated transition toward more digitalized firms, digitalizing sales for the survival of the firms, and identifying digital partners to penetrate the market. These strategies emphasize the significance of agility, flexibility, and collaboration for the successful digital transformation of small and medium-sized enterprises (SMEs). In the case of

[55] See Aslanertik/Banu, E./Bengü, Y. (2019), pp. 558-561.
[56] See Horváth/Dóra/Roland, S. Z. (2019), pp. 121-122.
[57] See Priyono, A./Abdul, M./Vera, N. A. O. (2020), pp. 111-112.

"FashionCo," an organization with an extensive record of embracing digital technology, the COVID-19 pandemic acted as an accelerator that quickened its intended digital transformation. Employees within the organization were imbued with a sense of urgency to become experts in digital technology through the implementation of digital visioning and strategy, as well as the encouragement of digitalization in different departments. This case illustrates how a proactive approach to digital transformation, paired with a culture of education and an organized implementation process, can result in positive outcomes.

On the other hand, some small and medium-sized enterprises, such as "ShellfishCraftCo" and "ContemporaryBatikCo," were compelled to digitize their sales function due to the pandemic's impact on their finances. Despite their lack of digital maturity, these businesses were able to attract revenue thanks to online marketing and streamlined sales processes. This demonstrates the opportunity for digital technologies to provide a financial lifeline to struggling small and medium-sized enterprises. Despite lacking digital literacy, some SMEs, such as "FurnitureCo" and "HandicraftCo," were able to utilize their social capital to survive the pandemic. These businesses collaborated with partners who possessed exceptional digital expertise, relied on adaptable resources, and carried out customized orders from industrial clients. This demonstrates that even small and medium-sized enterprises with limited digital capabilities can benefit from digital transformation by capitalizing on their assets and creating strategic partnerships.

The digital transformation and digitization of accounting practices have significant implications for SMBs. While the shift presents a number of obstacles, it also presents opportunities for SME activities, competitiveness, and market penetration. SME digital transformation success necessitates a proactive approach, a culture of education, adaptability, and strategic partnerships. Priyono et al. (2020) clarify the three digital transformation strategies that SMEs can pursue: accelerating their transition to a more digitalized firm, digitalizing sales for firm survival, and identifying digital partners to reach the market. The selection of strategy is influenced by a number of variables, such as the organization's extant digital capabilities, learning culture, history of digital technology adoption, and capacity to collaborate with supporting parties. The first route, accelerating the transition toward a more digitalized firm, is appropriate for companies that are "ready to jump" and get digitalized. These companies have already implemented digital capabilities, including online channels, websites, and online stores, and have worked with other parties to create a digital business model. This approach necessitates

the establishment of a digital technology basis, along with digital visioning and strategy, a culture of learning, and a certain level of digital technology literacy.

The second path, digitalizing sales for the survival of the business, is the most favored among SME owners. This group digitalizes its sales operations in an effort to generate revenue in more inventive ways. They anticipate that the decision to implement digital transformation in the sales function will save them from the verge of insolvency by generating revenue by improving the customer experience. Finding digital partners to penetrate the market is the third option for businesses that lack digital literacy. These companies tackle their weaknesses by engaging themselves in digital technology ecosystems where they can collaborate with numerous dedicated partners. Finding digital partners can address problems caused by a lack of digital literacy, but this is regarded as a short-term solution because businesses must reconcile their short-term decisions with their long-term objectives.

In summary, the digital transformation and digitization of accounting practices have substantial effects on SMBs. While the shift presents a number of obstacles, it also provides possibilities for SME operations, competitiveness, and market penetration. SME digital transformation success necessitates a proactive approach, a culture of education, adaptability, and strategic partnerships.

*Adoption obstacles and opportunities for SMEs*

Small and medium-sized enterprises' (SMEs') introduction of digital accounting practices offers both opportunities and challenges. The digital transformation of accounting processes can result in increased productivity, enhanced precision, and the ability to make more informed business decisions.[58] Yet, the adoption procedure is not without obstacles, such as the implementation cost, the need for education, and data security concerns. The digitization of accounting processes can result in substantial improvements in productivity for small and medium-sized enterprises.[59] Accounting systems that are automated can reduce the amount of time spent on routine duties, freeing up resources for more strategic efforts. In addition, digital accounting tools can increase the accuracy of financial records by decreasing the likelihood of human error.

[58] See Cardinali, S./Pagano, A./Carlon, E. (2023), pp. 253.
[59] See Bagale, G. S./Venkata, R. V./Deepmala, S./Dilip, K. S./Durga, V. K. G./Ravi, K. B./Ravi, K. G./Roy, S./Subramaniyaswamy, V./Sudhakar, S. (2021), pp. 12-13.

These benefits are especially essential for small and medium-sized enterprises (SMEs), which frequently operate with limited resources and cannot afford the costs associated with accounting mistakes or inefficiencies.

The adoption of digital accounting practices is not, however, without obstacles. The expense of implementing new systems is one of the major obstacles faced by SMBs.[60] It involves the expense of the software itself as well as the cost of instructing employees to use the new system. These costs can be burdensome for many SMBs, especially when the benefits of digitization are not immediately apparent. The requirement for training is an additional significant obstacle. Digital literacy is required for the effective implementation of digital accounting procedures. Still, many small and medium-sized enterprises (SMEs) may lack the necessary skills in-house, necessitating investment in training or the employment of new staff with the required skills. This can be a substantial barrier to the adoption process, especially for small enterprises with limited resources.

Data security is an additional significant concern for small and medium-sized enterprises contemplating the adoption of digital accounting practices.[61] Due to the digitization of accounting data, this information is prone to cyberattacks. SMBs may lack the knowledge necessary to properly safeguard their systems, thereby increasing the likelihood of data breaches. This can be a major barrier to the adoption of digital accounting practices. Despite these obstacles, there are significant opportunities for SMBs that can navigate the adoption process effectively. The digitization of accounting procedures can provide small and medium-sized enterprises (SMEs) with access to real-time financial data, allowing them to make more informed business decisions.[62] Moreover, digital accounting systems can facilitate regulatory compliance by automating the production of financial reports.

Small and medium-sized enterprises' (SMEs) implementation of Industry 4.0 brings both opportunities and challenges.[63] The possibilities are fueled by the potential for increased innovation capacity, productivity, and shortened time-to-market, which may offer a decisive competitive advantage. Industry 4.0 technologies can also result in substantial changes to existing business models, enabling new methods to create value and greater consumer engagement. However, implementing these technologies does not

[60] See André, H./Bohnsack, R./Marz, D./Cláu (2021), pp. 1176.
[61] See Ključnikov, A./Ladislav, M./David, S. (2019) pp. 2082-2084.
[62] See Burritt, R./Katherine, C. (2016), pp. 24-37.
[63] See Aslanertik/Banu, E./Bengü, Y. (2019), pp. 549-551.

come without obstacles. One of the biggest barriers to the adoption of Industry 4.0 in SMEs is the dearth of competent labor and the need to retrain employees to adapt to new situations. This may result in conflict within business organizations. The lack of financial resources is an additional major challenge. Low levels of standardization, a lack of comprehension of integration, and data security concerns might further hinder the adoption of Industry 4.0.

Concerns about the secure handling of private information and data are anticipated to increase in the coming years.[64] The development of manufacturing systems also has a significant impact on the risk of fragility, thereby increasing ecosystem uncertainty. The requirement for technological integration is a further impediment, as the synchronization of diverse languages, technologies, and methods can present formidable obstacles. The challenge of collaboration across organizational entities may have a substantial impact on the close interaction required by Industry 4.0 initiatives.[65] Numerous businesses are still working on business cases and feasibility studies that clearly support the need to invest in the data and systems architecture necessary for the implementation of Industry 4.0 applications. This further delays the adoption of Industry 4.0.

Despite these obstacles, SMEs have an opportunity to use their operational capabilities to compete with multinational corporations. However, their relative absence of financial resources and expertise, as well as capacity constraints, can be a significant hindrance and limit their development prospects. The widespread implementation of Industry 4.0 offers significant opportunities for SMBs, but it is not without obstacles. Through strategic planning, investment in personnel training, and the development of comprehensive data security measures, these obstacles must be resolved. Nonetheless, with proper planning and assistance, SMEs can effectively implement digital accounting practices and enjoy the benefits of increased efficiency and enhanced decision-making.

[64] See Aslanertik/Banu, E./Bengü, Y. (2019), pp. 551-553.
[65] See Rodic, B. (2017), pp. 194.

*Case study of successful digital transformation/digitization in SMEs*

This section will provide an analysis of the case study "Invoice Automation: Increasing Office Efficiency at Satherm GmbH Using Artificial Intelligence," written by Martin Danner, Bjorn Maurer, Svea Schuh, Tobias Greff, and Dirk Werth. 2022 saw the publication of the case study in the book "Digitalization Cases Vol. 2 - Mastering Digital Transformation for Global Business" by Management for Professionals. The under-review case study focuses on Satherm GmbH, a German SME specializing in the production of industrial plant components.[66] The company was confronted with the difficulty of administering its arduous and manual invoice processing. This case study's primary objective was to investigate the potential of artificial intelligence (AI) in automating this process, thereby increasing efficiency and reducing costs. This investigation is especially significant in the broader context of AI and automation, particularly in the context of SMEs.

The case study sought to address the time-consuming nature of manual invoice processing, the high costs associated with it, and the possibility of human error. The purpose of this case study was to demonstrate how AI could effectively address these issues and enhance productivity. In order to accomplish this, the case study utilized a combination of artificial intelligence (AI) and robotic process automation (RPA) to automate invoice processing at Satherm GmbH. The utilized AI technology was based on state-of-the-art technology consisting of seven established neural networks, a form of deep learning model introduced in 2017 that provides significant benefits in natural language processing. The case study also incorporated transfer learning; a concept that permits the application of knowledge gained in one area to a related but distinct area. This theoretical framework laid the groundwork for the practical application of artificial intelligence to automate invoice processing.

The data for this case study was obtained from the invoice processing system of Satherm GmbH. This information was then used to train AI to recognize and extract relevant information from invoices. The AI technology was able to classify and archive the invoices, extract the necessary information, and compare this information with the ERP system's existing data. The RPA software automaton was utilized to retrieve and make invoice documents accessible to AI.

[66] See Urbach, N./Röglinger, M./Rose, A. A. (2021), pp. 45.

The results of the case study were very encouraging. The use of AI for accounting automation resulted in potential savings of up to 90 percent, resulting in lower personnel costs and fewer hours spent on repetitive tasks. The cost per invoice to execute decreased from € 5.77 to € 1.93. In addition, the processing time per invoice was reduced from 15 days to 2–3 hours as a result of an overall automation rate of 70%. These findings demonstrate the potential for AI and automation to increase SME productivity and decrease expenses. Nonetheless, the case study emphasizes the significance of involving all relevant stakeholders in the digitization process and executing an extensive pilot phase to develop trust in the application. This is essential for the successful implementation and adoption of the automation process within the organization.

In conclusion, the case study demonstrated that the implementation of AI in German SMBs could considerably boost efficiency and potential. The use of almost ready-to-use AI solutions to automate time-consuming, manual tasks has significant positive effects on multiple levels of the organization if digitization measures are planned, and pain points are properly addressed. The case study recommends that Satherm GmbH continue to develop the use case and make it feasible for the system to interpret foreign invoices in order to achieve a higher rate of automation and thus continue to increase efficiency. It also recommends routine system reviews to ensure that the system functions as intended and that no errors have seeped in. The case study suggests that an initial AI application can be the impetus for the discovery of opportunities and the catalyst for a company's digitization and efficiency. This case study is instructive for other SMBs seeking to improve their processes and operations through AI and automation.

# Accounting outsourcing

As a business strategy, outsourcing has grown into a significant trend in the current business environment.[67] This practice has increased significantly, especially in the field of accountancy. The origins of outsourcing can be traced back to the 1990s when the fundamental principle of using external expertise to perform traditional in-house business functions emerged. These business functions include information technology, payroll, production, and, of course, accountancy. The concept of outsourcing has profound ties to the changing economic environment and market conditions, demonstrating to be a robust and flexible strategy in the face of dynamic business environments.

Numerous perspectives influence the theoretical underpinnings of outsourcing. This strategy is founded on four core theories: Transaction Cost Economics (TCE), Resource-Based View (RBV), Industry View (IV), and Relation View (RV).[68] Each of these theories offers a unique perspective and assists businesses in making informed decisions regarding when, where, and how to outsource. The TCE, for example, concentrates on the cost of transactions within and between firms, whereas the RBV emphasizes a firm's unique capabilities and resources.[69] In contrast, the IV and RV emphasize the significance of industry competition and relational assets, respectively, in business strategy. Each theory sheds light on various facets of outsourcing and contributes to an in-depth comprehension of its consequences and advantages.

When it comes to the advantages of outsourcing, cost savings are the most prominent benefit.[70] By outsourcing non-essential business functions, businesses save on infrastructure and software expenses.[71] Additionally, they may mitigate the financial burden of employee recruitment, training, and benefits. Additionally, outsourcing can result in significant personnel cost reductions, as firms can utilize the expertise of professionals without incurring the expense of full-time employment. This adaptable strategy enables businesses to pay only for the services they need when they need them, resulting in a flexible and efficient operation that can rapidly adapt to changing market conditions and business requirements.

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[67] See Kakabadse, A./Kakabadse, N. (2005), pp. 184-185.
[68] See Donada, C. (2002), pp. 173-174.
[69] See Hafeez, A./Andersen, O. (2014), pp. 20-23.
[70] See Sobol/Marion, G./Uday, A. (1995), pp. 270-271.
[71] See Javalgi, R. G./ Dixit, A./ Scherer, R. F. (2009), pp. 158-159.

Along with cost savings, outsourcing offers companies access to a larger talent pool with specialized skills.[72] This benefit is especially pertinent in fields where specialized knowledge is essential, such as IT and accountancy. Businesses can remain ahead of the curve in a competitive market by leveraging the expertise and skills of industry professionals through outsourcing. This supply of talent is scalable, so businesses can simply alter the level of talent they tap into depending on their actual needs and opportunities, maximizing their return on investment.

In addition, outsourcing enables companies to enhance their processes, resulting in increased productivity and profitability.[73] By delegating non-core duties to external service providers, businesses can focus on their core competencies, which directly support revenue generation and strategic growth. This change in prioritization can lead to increased workplace efficiency and efficacy, thereby boosting the business's overall performance.

Despite these benefits, outsourcing additionally presents some obstacles that businesses must carefully overcome. The decreased level of control over business operations is among the most significant concerns.[74] When companies outsource tasks, they must rely on external providers to supply the anticipated level of service, which may have an impact on quality. Another concern is security, especially when dealing with private company information. Additionally, outsourcing may cause communication difficulties due to language barriers or time zone differences. Lastly, locating a service provider who can satisfy the business's specific requirements and standards can be an enormous challenge requiring careful preparation and strategic decision-making.[75]

As an instance of professional outsourcing, accounting outsourcing includes services such as payroll and data entry that rely on standard procedures.[76] These processes are applicable to any business, making their outsourcing relatively simple. This strategy allows businesses to gain access to highly experienced professionals and sophisticated accounting tools without having to invest significantly in-house. The advantages of outsourcing accounting duties involve cost savings, access to specialized skills and innovative technology, scalability, and the ability to concentrate on core business activities. However, organizations must also be aware of potential obstacles, such as

[72] See Lewin, A. Y./Massini, S./Peeters, C. (2009), pp. 906-907.
[73] See Jiang, B./Frazier, G. V./Prat, E. L. (2006), pp. 1296-1297.
[74] See Quinn, J. B. (1999), pp. 11.
[75] See Brown, D./Wilson, S. (2005), pp. 44-45.
[76] See Raiborn, C. A./Butler, J. B./Marc, F. M. (2009), pp. 349-350.

reduced control, quality issues, security threats, and the difficulty of locating a trustworthy service provider.

In summary, outsourcing, especially in the field of accounting, can provide businesses with multiple advantages. By comprehending the theoretical perspectives underlying this practice and carefully weighing its benefits and drawbacks, businesses may reach informed decisions regarding the outsourcing of specific tasks. Consequently, they can accomplish cost savings, gain access to specialized skills, optimize processes, and concentrate on their primary business activities. However, it is crucial to keep in mind that outsourcing is not a one-size-fits-all solution, and the effective implementation of this strategy depends on meticulous planning, the selection of the most qualified service provider, and the management of potential obstacles.

## Theoretical foundations of accounting outsourcing

Accounting outsourcing's theoretical foundations can be linked to the evolution of business practices and the growing complexity of financial operations.[77] As organizations developed and diversified, the need for financial operations management expertise became clear. This resulted in the emergence of accounting as a distinct discipline of study. As businesses developed and became more complicated over time, the demand for greater expertise in certain areas of accounting also increased. Here, the concept of outsourcing becomes relevant. In broad terms, outsourcing refers to the practice of employing outside parties to perform in-house duties or functions.[78] In the context of accounting, outsourcing refers to the employment of third-party accounting firms or professionals to perform specific accounting tasks. This practice has been influenced by a number of factors, such as the need for specialized knowledge, the wish to reduce expenses, and the need to concentrate on essential business activities.

Accounting outsourcing has developed over time in response to technological advances and shifting business environments. As an example, the introduction of information technology has rendered it simpler for businesses to delegate their accounting duties to external providers, even if they are located in different countries.[79] This has resulted in

[77] See Nielsen, L. B./Mitchell, F./ Nørreklit, H. (2015), pp. 64-66.
[78] See Barthelemy, J. (2003), pp. 87-88.
[79] See Burns, J./Baldvinsdottir, G. (2007), pp. 119-121.

the expansion of business process outsourcing (BPO) firms specializing in accounting services.[80] In recent years, the shift toward digitization and automation has had an even greater impact on the accounting outsourcing industry. Advanced software and tools have made it feasible to automate many routine aspects of accounting, thereby making outsourcing these tasks more cost-effective.

As a result, the theoretical foundations of accounting outsourcing are based on a variety of economic and management theories and have been influenced by technological advances and shifting business environments. While outsourcing offers a number of benefits, businesses have to carefully assess the potential downsides and implement the appropriate safety measures.

*The emergence of outsourcing practices*

An influential business strategy, outsourcing, can be traced back to the Industrial Revolution.[81] Its development can be linked back to numerous economic and industrial transitions, with every phase reflecting the business priorities of the time. In the 20th century, the typical business model was a large, integrated corporation that retained ownership and direct control over its assets. Utilizing their distinctive advantages, businesses sought to acquire a competitive advantage and expand their markets and profits.

Diversification was the unifying theme of the 1950s and 1960s, with organizations expanding their operations to diversify their corporate bases and capitalize on economies of scale. Diversification was anticipated to protect profits despite the necessary expansion of management levels. In the 1970s and 1980s, it became evident that this model was insufficient for global competition. Diversification resulted in unwieldy management structures that impeded agility, a crucial trait in a global market that is constantly evolving. This situation inspired a shift in strategy among large companies, who began concentrating on their primary business and evaluating which processes could be outsourced.

[80] See Mehta, A./Armenakis, A./Mehta, N./Irani, F. (2006), pp. 291-293.
[81] See Lonsdale, C./Cox, A. (2000), pp. 445-446.

Before 1989, outsourcing was not officially recognized as a business strategy.[82] Prior to this era, the majority of companies were not wholly self-sufficient; they outsourced those functions for which they lacked internal expertise. For instance, publishers outsource composition, printing, and fulfillment services frequently. Utilizing external suppliers for these essential but supplementary services represents the initial stage in outsourcing's evolution. In the 1990s, the strategy continued to evolve. As organizations began to prioritize cost-cutting measures, they began to outsource company-essential functions that were not directly related to their primary business. These services included, among others, accounting, human resources, data processing, distribution of internal correspondence, security, and facility maintenance.

The emphasis has shifted to the formation of strategic partnerships.[83] Until just recently, it was obvious that no organization would outsource its essential competencies — the functions that provide a company with a strategic advantage and distinguish it from competitors. The 1990s, however, represented a shift in this viewpoint. Some fundamental functions began to be viewed as viable and occasionally preferable to outsource. Certain companies, for instance, have begun outsourcing their customer service functions, which are unquestionably vital and consumer-facing. This transformation was prompted by a broader shift in business philosophy. The moment when one realized that it was not necessary to possess the essential technology to access the required information in order to achieve superior results, the focus shifted from ownership to the development of strategic partnerships.

Outsourcing is the strategic use of external resources to execute tasks traditionally performed by internal personnel and resources.[84] It entails outsourcing significant functions to efficient and specialized service providers, who eventually turn into valued business partners. Although organizations have always employed contractors for specific categories of work or to balance their workload, outsourcing entails a substantial reorganization of certain business activities. This reorganization typically entails the transfer of personnel from the host company to the service provider, a typically lesser organization with the necessary core competencies.

[82] See Mullin, R. (1996), pp. 29.
[83] See Mehta, A./Mehta, N. (2017), pp. 172-174.
[84] See Elmuti, D. (2003), pp. 33-34.

The decision to outsource is influenced by a number of factors.[85] Reducing and controlling operating costs, increasing company focus, gaining access to world-class capabilities, liberating internal resources for other purposes, managing laborious or out-of-control functions, and sharing risks with a partner company are among the primary reasons. Historically, cost reduction and reductions in staff were the most common motivations for outsourcing. In today's world, the objectives are frequently more strategic and centered on performing core value-adding activities in-house, where a business can utilize its core competencies most effectively.

Several essential stages comprise the outsourcing procedure. During the Program Initiation, thoughts and views regarding the purpose and scope of the program are documented to serve as the premise for a contract proposal.[86] The next stage, Service Implementation, entails defining the transition project, transferring personnel, defining the Service Level Agreement (SLA), defining service reporting, and implementing and transferring the service.[87] During the transition phase, it is crucial to preserve continuity and quality of service. The Final Agreement phase entails revising the proposed contract based on negotiations and concluding the agreement. The procedure concludes with the Program Closure, which entails archiving for future use all the information generated during the course of the program.

Global in scope, outsourcing has a significant impact on the economics of numerous nations. In North America, nearshoring, a subset of outsourcing in which services are outsourced to neighboring nations, has become widespread.[88] Countries such as the Czech Republic, Poland, and Hungary have emerged as leading nearshore destinations for Western European businesses. These nations provide a variety of services, from software development to call center services, because of their close proximity, time zone alignment, and cultural affinity with the United States.

In summary, outsourcing has shifted from a reactive to a proactive business strategy, fueled by the desire to obtain a competitive advantage. It has evolved from a supplement to internal resources to a strategic instrument for global business expansion and effectiveness. It will continue to influence the global business landscape in ways we cannot even begin to fathom as time passes.

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[85] See Goo, J./Kishore, R./Nam, K./Song, Y./Raghav, H. (2007), pp. 2109-2110.
[86] See Gold, T. (2004), pp. 50.
[87] See Goo, J. (2010), pp. 186-189.
[88] See Lacity, M. C./Willcocks, L. P./Rottman, J. (2008), pp. 25.

*The advantages and drawbacks of outsourcing*

Outsourcing accounting services entails transferring an organization's accounting processes to specialized firms.[89] This strategy enables businesses to focus on their most profitable activities, lower the costs associated with maintaining an internal accounting structure, and adapt to frequent legislative changes. In the business world, notably in accounting, outsourcing has established itself as a potent instrument that is especially advantageous to small and medium-sized enterprises (SMEs). It is not bereft of potential drawbacks, despite its advantageous nature. Understanding these factors is crucial for SMBs, as it influences their accounting function outsourcing decision-making processes.

The utilization of specialized expertise that outsourcing affords is a major advantage.[90] Keeping an in-house accounting department with specialized knowledge can be exceedingly costly for SMBs, given the ongoing requirement for staff training and the rapid evolution of accounting practices.[91] On the other hand, outsourcing firms have a comprehensive and extensive pool of experience, enabling them to manage a variety of accounting tasks ranging from routine bookkeeping to complex regulatory compliance. They are up to date on the most recent accounting standards and supplied with sophisticated accounting software, the acquisition and maintenance of which could be costly for small and medium-sized enterprises. When properly controlled and supported by superior methodologies, accounting outsourcing can boost labor productivity and the efficiency of customer information systems, lower risks during the modernization of existing systems, and help with the introduction of new systems.

Cost-effectiveness is another significant advantage of outsourcing.[92] Being relieved of the need to employ, train, and maintain an internal accounting team decreases labor costs substantially. In addition, outsourcing's flexibility allows businesses to only pay for the services they require when they require them, resulting in a more efficient allocation of resources.

Additionally, outsourcing enables businesses to concentrate on their primary competencies.[93] Instead of scattering their resources and administering specific

[89] See Goo, J./Kishore, R./Nam, K./Song, Y./Raghav, H. (2007), pp. 2110-2111.
[90] See Lewin, A. Y./Massini, S./Peeters, C. (2009), pp. 902-904.
[91] See Smith, J. A./Morris, J./Ezzamel, M. (2005), pp. 426-427.
[92] See Wang, E. J./Chen, Y. C./Wang, S. W./Su, T. S. (2010), pp. 501-502.
[93] See Lankford, W. M./Parsa, F. (1999), pp. 313-314.

responsibilities such as accounting, SMEs can concentrate on areas that directly contribute to the expansion and satisfaction of their customers. Business executives gain valuable time through outsourcing, allowing them to make more strategic, proactive decisions. Nevertheless, alongside these benefits, there are notable disadvantages. The risk associated with data security is an important concern for many organizations. Frequently, outsourcing accounting duties requires sharing sensitive financial information with third parties. If these companies lack comprehensive security measures, their data may be vulnerable to breaches, which could result in financial and reputational harm.

Lack of managerial control is an important issue.[94] By outsourcing, SMBs cede direct control of their accounting duties to an external party. According to the specifics of the contract, this may result in less flexibility in adapting accounting processes to changing business requirements. The possibility of quality issues is another disadvantage.[95] There is always a risk of subpar work, particularly if the outsourcing firm lacks an in-depth comprehension of the client's industry or specific requirements or if it has too many clients. Lastly, although cost reductions are a benefit of outsourcing, concealed costs can emerge. These may take the form of contractual issues, transition costs, or management time spent collaborating with the service provider.

In conclusion, SMEs face a complex decision-making process when deciding to outsource accounting duties. The potential advantages of cost savings, access to expertise, and a concentration on core competencies must be measured against the potential disadvantages of data security risks, loss of control, quality issues, and concealed costs. It is essential for SMEs to comprehensively evaluate prospective service providers and consider all of these factors in their outsourcing strategy. The following parts of this chapter will provide an in-depth understanding of the industry overview, trends, and strategies associated with accounting outsourcing, enabling SMEs to reach informed decisions.

[94] See Munjal, S./Requejo, I./Kundu, S. K. (2019), pp. 487-488.
[95] See Chou, D. C./Chou, A. Y. (2011), pp. 354-355.

## Industry overview and developments

In recent decades, the accounting outsourcing industry has experienced substantial expansion, driven by the growing digitization of the accounting field and the rising trend of small and medium-sized businesses (SMEs) outsourcing their accounting functions.[96] This section offers an overview of these developments, relying on recent academic research to paint a complete picture of the industry's current state.

The rise of software organizations has resulted in a rise in outsourcing relationships, especially in the area of technical competence.[97] Nguyen Duc and Abrahamsson (2020) examined outsourcing relationships in software firms and discovered conflicting results. Due to the experimental character of early product development, outsourcing was viewed as a viable option. However, startups often struggle with unpredictability and managing partner commitments. This emphasizes the need for entrepreneurs to carefully think through their outsourcing strategies and implement robust mechanisms to effectively manage these relationships.

Competition has also shifted in the Information Technology Outsourcing (ITO) and Business Process Outsourcing (BPO) industries.[98] According to a theoretical analysis by Gambal, Asatiani, and Kotlarsky (2022), competition is shifting from being driven by cost savings to being fueled by strategic benefits that service providers can offer their clients. Innovation is one of the anticipated benefits of outsourcing engagements. This change in the nature of competition highlights the need for service providers to continuously innovate and offer strategic benefits beyond cost reductions in order to remain competitive in the industry.

As a result of outsourcing-related privacy concerns, cryptographic primitives for processing outsourced network functions have been developed.[99] Melis, Asghar, De Cristofaro, and Kaafar (2016) investigated the application of these primitives, proposing multiple instantiations utilizing partial homomorphic encryption and public-key encryption with keyword search. In a few milliseconds, their research demonstrated that network functions could be discreetly processed by an unsecured cloud provider. In the context of growing concerns about data privacy and security in the digital age, this

[96] See Dorasamy, M./Marimuthu, M./Jayabalan, J./Rama, M./Kaliannan, M. (2010), pp.40-44.
[97] See Nguyen-Duc, A./Sundbø, I./Nascimento, E./Conte, T./Iftekhar, A./Abrahamsson, P. (2020), pp. 6.
[98] See Gambal, M.-J./Asatiani, A./Kotlarsky, J. (2022), pp. 2-4.
[99] See Melis, L./Hassan, J. A./De Cristofaro, E./Kaafar, M. A. (2016), pp. 39-40.

advancement is particularly significant. It implies that with the proper technological solutions, network functions can be outsourced while maintaining privacy.

In the discipline of Bayesian optimization, privacy-preserving techniques have also been developed.[100] Kharkovskii, Dai, and Low (2020) introduced the private-outsourced-Gaussian process-upper confidence bound (PO-GP-UCB) algorithm, which enables privacy-protected Bayesian optimization in the outsourced context with a verifiable performance guarantee. This algorithm reflects a significant advancement in the field of Bayesian optimization, as it provides a solution that protects privacy while maintaining performance. It also highlights the potential of machine learning techniques to improve the efficacy and efficiency of outsourcing operations.

Finally, Arshad, Ahmad, and Maynard (2022) identified a number of managerial and legal factors that influence organizational decisions regarding IT security outsourcing.[101] They discovered that the research on IT security outsourcing was underdeveloped and did not address the most pressing problems confronting industry practice. This finding indicates the need for additional research in this area in order to better comprehend the factors that influence outsourcing decisions and establish more effective strategies for IT security outsourcing.

In summary, these developments demonstrate the dynamic nature of the accounting outsourcing industry, with an emphasis on innovation, privacy, and strategic advantages. As the industry continues to evolve, it will be crucial for SMBs to remain apprised of these changes while evaluating the optimal way to leverage outsourcing for their accounting functions. The swiftly transforming nature of the accounting outsourcing industry requires one to stay updated on the most recent research and trends. As the industry keeps evolving, it will be essential for SMBs to remain apprised of these changes and consider how best to leverage outsourcing for their accounting functions. This will allow them to maximize the advantages of outsourcing while reducing the associated risks and difficulties.

These advances have important implications for small and medium-sized businesses. The shift in competition dynamics in the ITO and BPO industries, for instance, suggests that small and medium-sized enterprises (SMEs) contemplating outsourcing should look beyond cost reductions. They must evaluate the strategic advantages that service

[100] See Kharkovskii, D./Zhongxiang, D./Bryan, K. H. L. (2020), pp. 5231-5232.
[101] See Arshad, A./Ahmad, A./Maynard, S. (2022), pp. 3-5.

providers may offer, such as innovation and access to specialized knowledge. The innovations in privacy-preserving techniques for outsourcing network functions and Bayesian optimization also have significant implications for small and medium-sized enterprises. They suggest that with the proper technological solutions, SMBs can outsource additional operations without sacrificing privacy and security. This could create new opportunities for small and medium-sized enterprises (SMEs) to leverage outsourcing to improve their operational efficiency and competitiveness. However, the finding by Arshad, Ahmad, and Maynard (2022) that IT security outsourcing research is infantile and does not address the critical issues confronting industry practice suggests that SMEs should exercise caution when outsourcing IT security. They must ensure that they have a comprehensive understanding of the potential hazards and obstacles, as well as robust strategies for overcoming these.

In conclusion, the industry of accounting outsourcing is enduring significant transformations due to technological advancements and shifting market dynamics. SMEs must remain apprised of these changes and alter their outsourcing strategies accordingly in order to maximize the potential advantages and minimize the potential risks.

## Outsourcing strategies for small and medium-sized enterprises

The fast growth of information and communication technology (ICT) has accelerated the evolution of outsourcing strategies for small and medium-sized businesses (SMEs) over the years. The choice to outsource is frequently influenced by cost, efficiency, and the capacity to concentrate on fundamental business functions. This section examines the strategies that small and medium-sized enterprises (SMEs) can employ when outsourcing their accounting functions.

One of the most important strategies for small and medium-sized enterprises is to utilize ICT tools to support their operations. According to Sasvari (2013), the use of ICT tools, such as accounting software, can substantially improve the efficacy of business operations.[102] Integration of ICT tools into business operations has been shown to improve the survival of small and medium-sized enterprises (SMEs), particularly during

[102] See Sasvari, P. (2013), pp. 143-146.

difficult economic times. These instruments provide a platform for SMBs to optimize their operations, reduce expenses, and enhance their market competitiveness.

However, the incorporation of ICT tools necessitates a strategic approach, particularly for small and medium-sized enterprises (SMEs) that may lack the resources to invest in sophisticated ICT infrastructure. In such circumstances, outsourcing becomes an option. Outsourcing the ICT delivery systems to specialized service providers can assist SMEs in overcoming the obstacles posed by the initial capital expenditure required to establish their own ICT systems. As suggested by Nuamah-Gyambrah et al. (2016), SMEs can hire ICT consultants to administer their ICT delivery systems, enabling them to concentrate on their core business functions.[103] This strategy not only reduces the financial burden on small and medium-sized enterprises but also guarantees they have access to specialist ICT services that can improve their operational efficiency.

Another strategy for small and medium-sized businesses is to delegate their network functions to the cloud. According to Wang et al. (2016), outsourcing network functions can reduce costs and simplify administration for SMEs.[104] The cloud model enables businesses to delegate computing resources at a reasonable cost without incurring the expense in advance. This strategy allows small and medium-sized enterprises to scale their operations according to their requirements, thereby enhancing their adaptability to market changes.

However, cloud outsourcing presents its own set of issues, especially in terms of security. The cloud service provider will have access to the company's traffic and regulations, which poses data confidentiality concerns. SMBs may minimize these risks by implementing secure service function chaining, which encrypts each packet header and employs an identifier for in-cloud rule matching. This strategy guarantees the cloud provider can accurately perform its functions with minimal header information leakage, thereby protecting the confidentiality of the organization's data.

In addition, Alavizadeh et al. (2020) propose a framework that facilitates enhanced collaboration between enterprises and cloud service providers.[105] This framework enables the enterprise's security specialists to achieve a higher level of situational awareness in the cloud, enabling improved decision-making and the implementation of more appropriate threat responses to protect outsourced resources. By increasing their

[103] See Nuamah-Gyambrah,K./Agyeiwaa, F./Otu, M. O. (2016), pp. 4-7.
[104] See Wang, H./Xin, L./Yu, Z./Ye, Y./Hongkun, Y./Chen, Q. (2016), pp. 1-4.
[105] See Alavizadeh, H./Alavizadeh, H./Jang-Jaccard, J. (2020), pp. 2-3.

cybersecurity situational awareness, SMEs can track the efficacy of the cloud's security offerings and make intelligent outsourcing decisions.

Asghar et al. (2013) suggest the implementation of Role-Based Access Controls (RBAC) models in outsourced environments. This method permits large organizations to administer complex user management while maintaining data privacy.[106] RBAC models regulate data access according to the responsibilities of the user, ensuring that only authorized parties have access to sensitive information. However, when deploying RBAC models in outsourced environments, care must be taken to prevent the disclosure of sensitive data's private information.

The conclusion is that strategies for outsourcing accounting functions in SMEs require careful consideration of a variety of factors, including cost, efficacy, security, and the capacity to concentrate on core business functions. SMBs can increase their operational efficiency and market competitiveness by utilizing ICT tools and implementing secure outsourcing practices. A comprehensive awareness of the company's requirements, resources, and strategic goals should inform the outsourcing decision. It should also consider the potential hazards and difficulties associated with outsourcing, such as data security and privacy issues. With the proper strategies and safeguards in place, outsourcing can provide SMBs with a potent instrument for growth and success in the digital age.

## Elements affecting the decision to outsource

Multiple factors, broadly classified as internal and external, influence the decision to outsource accounting operations. These factors have an enormous effect on the overall performance and competitiveness of small and medium-sized enterprises (SMEs) and play an essential part in determining their strategic direction.

Internal factors are essential to the organization and are manageable to some extent. These include managerial considerations, financial concerns, and operational requirements. Frequently, managerial factors center around the strategic orientation of the organization. If a company's strategic focus is on product development or market expansion, for example, management might choose to outsource accounting functions in

[106] See Asghar, M. R./Ion, M./Russello, G./Crispo, B. (2013), pp. 4-7.

order to open up resources and maintain a concentration on primary business activities. Arshad, Ahmad, and Maynard (2022) emphasize the role of managerial factors in the decision to outsource IT security, which can be extended to accounting outsourcing.[107]

Financial considerations are an additional internal factor of significance. By eradicating the need for recruiting and educating accounting staff, purchasing accounting software, and maintaining an in-house accounting department, outsourcing can help SMBs reduce their operational expenses. This is especially advantageous for small and medium-sized enterprises that operate on limited budgets and must allocate their resources strategically. In addition, outsourcing can provide SMBs with access to lower-cost, high-quality accounting services, thereby enhancing their financial performance and competitiveness.

The operational requirements also play a significant role in the outsourcing decision. SMEs may lack the necessary knowledge or resources to effectively administer their accounting functions. By outsourcing these responsibilities, they can gain access to experienced professionals and cutting-edge technologies, thereby enhancing their operational efficacy and financial reporting precision. On the contrary, external factors are those that are beyond the organization's control. They consist of legal considerations, market dynamics, technological advances, and industry trends. Similarly, Rajaeian, Cater-Steel, and Lane (2016) stress the significance of examining both internal and external factors in IT outsourcing decisions, which is also applicable to the accounting outsourcing context.[108]

Legal considerations can substantially impact outsourcing decisions. Regulatory requirements, tax laws, and accounting standards are examples. Small- and medium-sized enterprises (SMEs) have to guarantee that their accounting practices align with these regulations, and outsourcing may supply them with access to accounting professionals who possess expertise in these areas. This can reduce the risk of non-compliance and the repercussions associated with it, which can be especially detrimental to SMBs.

Additionally, market dynamics, such as competition and customer expectations, may affect the outsourcing decision.[109] In a highly competitive market, small and medium-sized enterprises (SMEs) must differentiate themselves and provide superior client

[107] See Arshad, A./Ahmad, A./Maynard, S. (2022), pp. 3-5.
[108] See Rajaeian, M. M./Cater-Steel, A./Lane, M. (2016), pp. 4-6.
[109] See Bagat, P./Byramjee, F./Taiani, V. (2010), pp. 306-307

value. By outsourcing their accounting functions, they are able to concentrate on their primary business operations and improve their value proposition.

Technological advances also play a significant role in the outsourcing decision.[110] With the emergence of cloud computing, artificial intelligence, and machine learning, accounting is growing more complex, and specialized skills and knowledge are required. Outsourcing offers access to these sophisticated technologies and the expertise required to leverage them effectively for the benefit of SMEs. This can increase their operational efficiency, accuracy of financial reporting, and decision-making insights. The choice to outsource can also be influenced by trends in the industry, such as the increasing digitization of business processes and the growing emphasis on sustainability. In order to stay competitive, SMBs must keep up with these trends, and outsourcing could supply them with the necessary resources and expertise. In conclusion, outsourcing accounting functions is a strategic decision that is affected by a variety of internal and external factors. By comprehending these factors, small and medium-sized enterprises (SMEs) can make well-informed decisions that align with their strategic goals and boost their competitiveness while contributing to their long-term success.

Along with these factors, it is essential to consider the hazards and difficulties that may be associated with outsourcing. These might involve the risk of losing control over accounting functions, the possibility of service quality issues, and the risk of service provider dependence. To lessen these risks, it is essential for SMEs to evaluate prospective service providers thoroughly, establish explicit contractual agreements, and maintain effective communication and collaboration with the service provider. In addition, the decision to outsource should be consistent with the SME's overall strategic objectives. For instance, a small to medium-sized enterprise that aspires to become an innovation leader may benefit from outsourcing its accounting functions to a service provider that employs cutting-edge technologies and practices.[111] Alternatively, if a small to medium-sized enterprise (SME) seeks to provide personalized service to its customers, it may prefer to keep its accounting functions in-house to maintain close customer relationships.

It is important to note that the decision to outsource is not a one-time event but rather a dynamic process that calls for ongoing evaluation and modification. As the business

[110] See Bartel, A. P./Lach, S./Sicherman, N. (2005), pp. 14-15.
[111] See Asatiani, A./Penttinen, E. (2016), pp. 67-70.

environment and the SME's requirements evolve, the outsourcing decision may need to be reassessed and modified. Therefore, it is essential for SME outsourcing strategies to maintain flexibility and adaptability.

In conclusion, the decision to outsource accounting functions is complex and multidimensional, requiring consideration of numerous internal and external factors. By identifying these factors and aligning the decision to outsource with their strategic objectives, SMEs can use outsourcing as a strategic tool to increase their competitiveness and attain their company goals.

## Case study of accounting outsourcing in SMEs

The 2019 case study, "Impact of accounting process characteristics on accounting outsourcing - Comparison of users and non-users of cloud-based accounting information systems," written by Aleksandre Asatiani, Uday Apte, Esko Penttinen, Mikko Ronkko, and Timo Saarinen, offers a comprehensive review of the dynamics that influence the outsourcing of accounting processes.[112] Small- and medium-sized enterprises (SMEs) are increasingly adopting cloud-based Accounting Information Systems (AIS). The authors examine in detail the characteristics of accounting processes that are more likely to be delegated and how the use of cloud-based AIS influences these decisions. This case study analysis provides a multitude of perspectives on the intricate interplay among process characteristics, the application of cutting-edge technology, and outsourcing decisions, thereby enhancing the understanding of contemporary business practices.

This study is especially relevant in the current business climate, where the utilization of cloud-based Accounting Information Systems (AIS) by Small and Medium-sized Enterprises (SMEs) is on the rise. The main goal of the study is to identify the characteristics of accounting processes that increase or decrease their likelihood of being outsourced. In addition, the study seeks to contrast the outsourcing decisions of companies that use cloud-based AIS with those that do not, presenting an in-depth analysis of the impact of technology on outsourcing choices. This study addresses the problem of identifying accounting process characteristics that influence the decision to outsource these processes. In addition, the study seeks to compare the outsourcing

[112] See Asatiani, A./Apte, U./Penttinen, E./Rönkkö, M./Saarinen, T. (2019) pp. 1-2.

decisions of companies utilizing cloud-based AIS to those of companies that do not. Understanding the intricate interplay between process characteristics, the use of cloud-based AIS, and outsourcing decisions is the greatest obstacle. This study's primary theoretical foundation is the Transaction Cost Economics (TCE) theory, which contends that firms will choose to outsource processes when the cost of conducting them in-house exceeds the cost of outsourcing. Nevertheless, the study recognizes that the traditional TCE theory may not adequately explain the current outsourcing trends, given the market and technological landscape's evolution.

This study's data was gathered through a survey of Finnish small and medium-sized enterprises. The survey asked about the characteristics of different accounting processes and whether they were outsourced. The data was then analyzed using logistic regression with mixed effects. To comprehend the relationship between different procedure characteristics and the decision to outsource, logistic regression with mixed effects was applied to the data during the analysis. Separate analyses were conducted for all businesses, non-cloud users, and cloud users.

According to the findings of the study, procedures requiring more specialized assets are more likely to be outsourced. This contradicts the TCE theory's predictions but affirms the study's hypothesis. Contrary to the original hypothesis, the study also discovered a positive correlation between uncertainty regarding process completion and a choice to outsource. In addition, a positive relationship existed between information intensity and outsourcing, whereas a negative relationship existed between the need for consumer contact and outsourcing. The results imply that the traditional TCE theory may not adequately explain current outsourcing trends. The positive relationship between asset specificity and outsourcing, for instance, contradicts the TCE theory but can be explained by the need for specialized knowledge that may not be available in-house. Similarly, the positive correlation between process uncertainty and outsourcing suggests that companies may outsource to reduce risk. The study indicates that accounting process characteristics substantially impact outsourcing decisions. However, the use of cloud-based AIS seems to clarify these decisions only partially. Furthermore, the study reveals that the traditional TCE theory may need to be reconsidered in light of contemporary business practices and technologies.

The study suggests, based on its findings, that companies consider the unique characteristics of their accounting processes when making outsourcing decisions. In addition to considering the potential benefits of outsourcing more frequent and time-

sensitive tasks, companies utilizing cloud-based AIS should also consider the advantages of outsourcing more frequent and time-sensitive tasks. However, they should be aware that cloud-based AIS may not mitigate the impact of other process characteristics, such as unpredictability and information density. This study contributes to the existing body of knowledge in the field and identifies potential areas for future research by offering a comprehensive understanding of the factors that influence the outsourcing of accounting processes.

# Research method

The 'Research Method' chapter outlines the basic framework that guides the investigation of accounting digitization and outsourcing in the context of small and medium-sized enterprises (SMEs). This structured approach, which incorporates the research's methodology, data acquisition techniques, data analysis techniques, and ethical considerations, provides the necessary framework to maintain the integrity and credibility of findings. The mixed-methods research approach, which incorporates the benefits of qualitative and quantitative methods, is central to the investigation. A thorough comprehension of the topic requires capturing not only the statistics but also the emotions, perspectives, and nuanced narratives behind them. By employing this multifaceted strategy, a more comprehensive investigation was assured.

The selected research method, like a compass guiding an explorer, guides the data collection voyage. This phase, commonly regarded as the essence of any research project, is executed meticulously to ensure its quality, as it has a direct impact on the results of the study. This thesis creates an objective map of the experiences and perspectives of SME proprietors on accounting digitization, outsourcing, and the potential for automation by surveying them using a standardized questionnaire. The gathered data functions as the raw material from which the findings are fashioned, shedding light on the research questions that undergird this thesis. Using the chosen data analysis techniques, this unprocessed material is transformed into coherent, meaningful information. I investigate the patterns, trends, and themes that the data reveals through the lens of mixed-methods interpretation. In terms of data analysis, descriptive statistics are used, a form of quantitative analysis that enables to summarize, consolidate, and present the data in a clear and understandable manner. The potency of descriptive statistics provides a foundation for understanding key aspects of the dataset, paving the way for the discovery of fundamental trends and insights that drive the accounting digitization and outsourcing behaviors of small and medium-sized enterprises (SMEs).

Ethical considerations are the foundation of the research, providing a solid foundation in principles that safeguard the rights and dignity of the respondents. The observance of ethical standards is not merely a deference to protocol; it is a pillar that strengthens the validity of the research. The adherence to ethical principles guarantees that this thesis will safeguard the respondents' identities, maintain their anonymity, and use their

responses primarily for the purposes of this study. In simple terms, the research methodology for the thesis is comparable to a well-built ship setting sail on an exploratory expedition. The research strategy is the map, and data collection is the ship. Data analysis techniques navigate the data landscape, and ethical considerations are the compass that maintains moral direction. Each component plays a distinct yet interdependent role in advancing the research, ensuring that this thesis can navigate the complex terrain of accounting digitization and outsourcing in SME accounting with confidence and discipline. This methodological framework lays the groundwork for an academically sound, practically relevant investigation, enhancing the understanding of the topic while preserving academic values.

## Research approach

To offer a comprehensive analysis of accounting digitization and outsourcing practices among small- and medium-sized enterprises (SMEs), the study's strategy is grounded in a mixed-methods framework that includes both quantitative and qualitative dimensions. The overarching objective of this methodological design is to capitalize on the benefits of both methodologies while compensating for their individual shortcomings.

On the one hand, the quantitative approach is essential to research because it allows to generate numerical data that can be analyzed statistically. This methodology is essential to the objectivity of the research. It enables to characterize the current situation, quantify the extent of various phenomena among the studied SMEs, and search for patterns and correlations between variables. Specifically, in this thesis, a survey-based methodology is used to implement the quantitative approach. By surveying a substantial number of SMEs, this thesis can extrapolate the findings and draw broader conclusions. Despite the fact that quantitative research provides empirical reliability and generalization, it often overlooks the subtle experiences and intricate realities that exist behind the numbers. Here, the qualitative approach becomes relevant. The research is governed by the pragmatist paradigm, which asserts that the research queries should determine the research methodology. In accordance with this paradigm, the thesis acknowledges that both quantitative and qualitative research methods have a position in the investigation. By employing a mixed-methods approach, the thesis believes it can best answer the research questions, providing both breadth and depth of knowledge concerning accounting digitization and outsourcing in SMEs.

## Data collection

The process of data collection is crucial to securing the validity and dependability of the findings. Using Google Forms to design and disseminate the survey, the thesis has employed a methodical approach to collect information from a carefully selected sample group. Due to its usability, versatility, and efficient data administration capabilities, Google Forms is an ideal instrument for conducting online surveys. The online nature of the platform allowed the dissemination of the survey to a geographically diverse group of respondents, which was particularly important given the target population: proprietors or C-level executives of small and medium-sized enterprises (SMEs) throughout the United States. In addition, the use of Google Forms made it easy for respondents to answer the survey at their leisure, which likely increased the response rate.

The primary source of data was a small accountancy firm in the United States that consented to disseminate the survey to their clients. This partnership provided invaluable access to the target audience, allowing them to directly examine the practices, perceptions, and challenges of SME accounting digitization and outsourcing. Sixty questionnaires were sent out in order to collect a substantial dataset for analysis. This number was selected based on feasibility, resource availability, and the requirement for a sufficiently large sample size to facilitate statistical analysis. It was essential that the respondents were decision-makers within their organizations, such as business proprietors or members of the C-suite. This ensured that the opinions obtained on the company's accounting practices and strategies were informed.

The location was also a crucial aspect of the data collection procedure. Given the unique economic, regulatory, and technological context of the United States, the thesis focused solely on small and medium-sized businesses. The US-centric approach enabled to examine the research problem within a particular socioeconomic context, thereby contributing to a deeper comprehension of the issue at hand. The survey was designed to encompass the main elements of the research objectives, with queries organized into five sections: Company Information, Accounting Digitization, Accounting Outsourcing, Client Satisfaction, and Automation Potential.

Company Information served as a preliminary section to collect baseline information about respondents' enterprises. This included the respondent's company name, industry

or sector, and position within the company. This section was intended to frame the responses within the operational environment of the company and the respondent's decision-making capacity. The purpose of the second and third sections, Accounting Digitization and Accounting Outsourcing, was to collect data on the extent of digitization and outsourcing in the SME's accounting practices. The survey inquired about their preferred software or digital tools, their reasons for digitization and outsourcing, as well as the obstacles they encountered during these transitions. Using a multiple-choice format for these sections assured the accumulation of standardized responses, which aided in the quantitative analysis that followed.

The purpose of the Client Satisfaction section was to collect information regarding customer satisfaction with their outsourced accounting services. It was determined, however, that data for this section was unavailable for the investigation. This limitation will be taken into account during data analysis. The final section, Automation Potential, measured respondents' awareness of emerging technologies such as Artificial Intelligence and Machine Learning, as well as their readiness to adopt these technologies, perceptions of their benefits, and willingness to shift to a more technologically advanced provider. This section's information is essential to comprehend whether SMEs are prepared to adopt future technological advances in accounting. The complete survey is to be found in the appendix.

## Data analysis techniques

In the "Research Method" section of this research, the section titled "Data Analysis Techniques" describes how the thesis will manage, analyze, and interpret the survey data acquired. For the investigation on "Accounting Digitization and Outsourcing for Small and Medium-Sized Enterprises – The Current Situation," the thesis selected descriptive statistics. By extracting key metrics that describe the data set, this strategy provides the means to comprehend and present the data in a meaningful manner. The key benefit of descriptive statistics is their interpretability and simplicity. It enables to present intricate quantitative data in a manner that is easily understood, making the information more accessible to a wide audience. This method also functions as a basis for more complex statistical analyses, should they be required in future research.

For queries like "What accounting software or digital tools are you currently using?" and "Which accounting services do you outsource?" (multiple-choice questions) Frequency distribution is an effective method. It allows us to comprehend the prevalence of various software and services among the surveyed SMBs. Moreover, by comparing the frequency distributions of various groups, the thesis is able to detect trends or disparities that may not be immediately apparent from the raw data. Analyzing responses to the query regarding awareness and receptivity to emerging technologies in accounting can provide a snapshot of the current assessment and potential future trajectory of advanced technologies in the SME accounting industry.

In summary, the selected technique of descriptive statistical analysis provides an effective and intuitive method for interpreting the survey data. The simplicity, adaptability, and ease of interpretation associated with descriptive statistics allow us to effectively study trends, synthesize data in meaningful ways, and convey the findings to the intended audience.

## Ethical implications

The "Ethical Implications" section of the "Research Method" chapter describes how the thesis manages and resolves ethical issues that arise throughout the span of the research on "Accounting Digitization and Outsourcing for Small and Medium-Sized Enterprises – the Current Situation." Ethical considerations are necessary to ensure the honesty, openness, and decency of the research. The acquisition and treatment of survey data from small and medium-sized businesses (SMEs) is the primary ethical concern in the study. This information through Google Forms was gathered exclusively from clients of a small U.S. bookkeeping company who are proprietors and C-level administrators. It is essential to protect the privacy and confidentiality of these respondents and to use their information solely for the objectives of this study.

As described in the introduction to the questionnaires, the collected data serves two purposes: to provide feedback for service enhancement to the bookkeeping company and to contribute to this academic research paper. To ensure transparency and the respondent's perception of how their information would be used, they were apprised of these purposes in advance. In addition, the respondents were assured that their

information would be treated with stringent confidentiality. Individual responses are not traceable in academic research and are only accessible to the accounting firm. The academic research consists of an analysis of aggregated data. This practice reduces the risk of data misuse and protects the anonymity of the respondents in accordance with ethical standards for research.

Finally, it is important to note that there was no deception involved in the research. The respondents were informed of the objectives of the study and the nature of the survey, and their participation was voluntary. This openness upholds the informed consent principle, a cornerstone of ethical research. This study sets an enormous value on ethical considerations, guaranteeing the privacy and confidentiality of respondents, secure data storage and management, and openness throughout the research process. These factors uphold the validity of the research and preserve the confidence and esteem of the survey respondents.

# Questionnaire analysis

## Characteristics of the sample and response rate

This chapter's primary purpose is to describe the characteristics of the sample and response rate for the questionnaire administered as part of this master's thesis. A well-structured questionnaire was developed and distributed to a select group of small and medium-sized businesses (SMEs) in the United States in order to collect vital data regarding their perspectives on accounting digitization, accounting outsourcing, and the potential for automation.

This effort is aimed at gathering empirical evidence to support the theoretical examination of the topics in the antecedent chapters. As the digitization of accounting practices becomes more pervasive in the business environment, it is crucial to comprehend its effects on SMEs. This study seeks to examine the ramifications of outsourcing, another trend that has a significant impact on accounting functions. Lastly, the future possibilities of automation with emergent technologies such as artificial intelligence (AI), machine learning, and blockchain are also of considerable interest.

For this survey, the questionnaire was distributed to a population of 60 clients, all of whom are business proprietors of SMBs operating in various industries. Ten of these consumers have responded to the survey thus far, representing an initial response rate of approximately 16.70%. This response rate may appear low at first inspection, but it is typical for survey research, especially when dealing with busy professionals such as business owners and executives.

Respondents to the survey represent a variety of industries, including retail, e-commerce, insurance, medical, real estate, and apparel. This diverse industry representation enriches the data set, allowing for sector-spanning insights that are comprehensive. Moreover, the respondents, who are primarily business proprietors or top-level executives, provide valuable insight because they are the decision-makers directly engaged in implementing and supervising the digitization and outsourcing strategies within their respective companies.

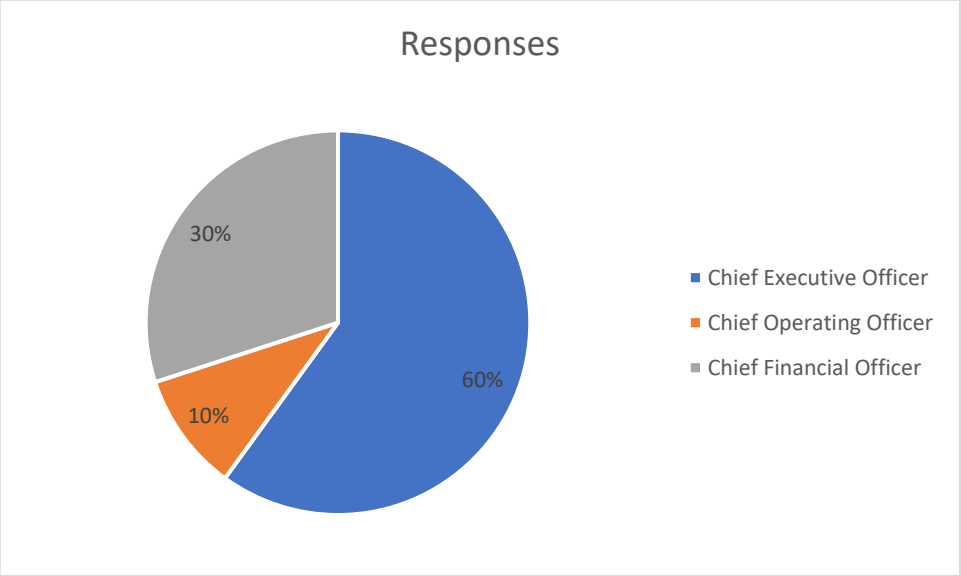


*Figure 1 - Company role distribution across the respondent population*

Each respondent's distinctive encounter with the digitization of accounting functions, outsourcing practices, and perspectives on prospective automation technologies are crucial components of this study's data. This data provides a thorough comprehension of the current state of accounting digitization and outsourcing among SMEs.

As the thesis progresses through the chapter, it will address the specifics of the respondents' perspectives on accounting digitization and outsourcing, as well as their willingness to adopt emergent technologies. This process will include a comprehensive assessment of their levels of satisfaction, their experiences with their accounting service providers, and their desires for additional services or support.

In fundamentals, this chapter constitutes the core of the empirical investigation, where the previously discussed theories and concepts are grounded in actual experiences. As the research progresses through the analysis, the comprehension of how SMEs navigate the world of accounting digitization and outsourcing will grow, paving the way for deeper conclusions and suggestions.

In the following sections, the thesis will systematically address each of the themes that emerged from the questionnaire responses. Accounting Digitization Practices, Accounting Functions Outsourcing, and Perceptions of Emerging Technologies. The collected data will serve as a lighthouse, illuminating the path that SMEs are currently traversing and those that they could potentially follow in their pursuit of operational excellence.

## Accounting Digitization Practices

Analyzing the accounting digitization practices of the small and medium-sized businesses (SMEs) that participated in the survey reveals several noteworthy trends and insights. First, the respondents' adoption of digital accounting practices is fairly widespread. QuickBooks emerged as the uncontested favorite accounting software, indicating its dominance in the SME market. The consistency of tool usage across industries and revenue ranges suggests that QuickBooks effectively meets the diverse needs and requirements of these businesses. However, it may also indicate a lack of investigation or awareness of alternative market-available instruments.

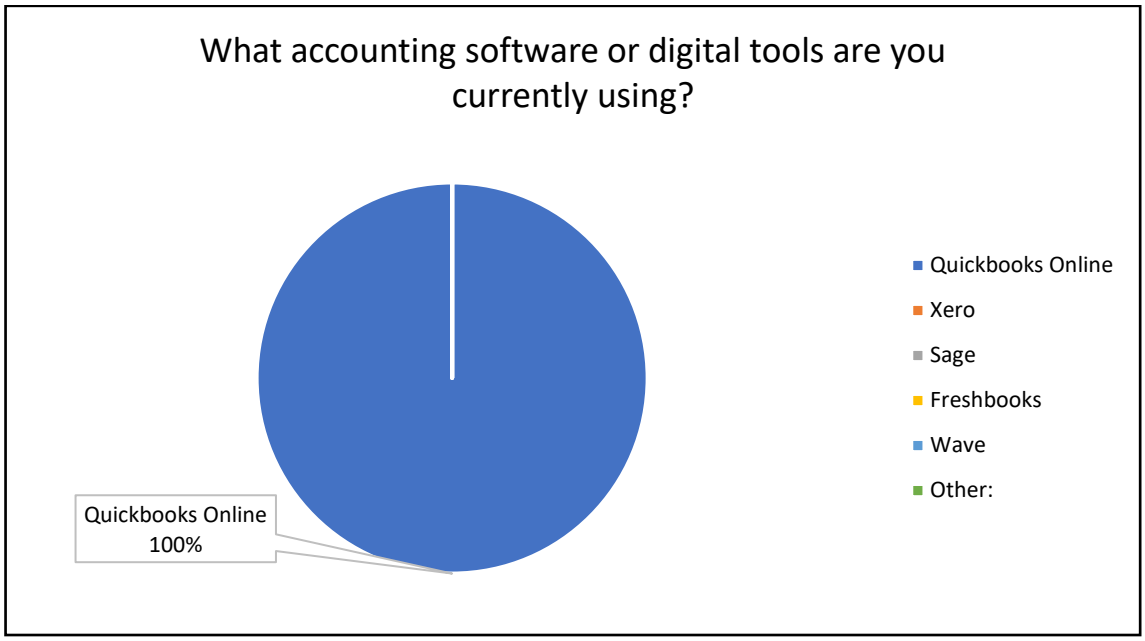


*Figure 2 - What accounting software or digital tools are you currently using?*

Several critical factors emerged in relation to the impetus for their accounting practices to be digitized. 'Increased efficiency' and 'Easier access to data' were the most frequently cited reasons. This demonstrates that SMBs are leveraging digital tools to optimize their accounting processes and make decisions based on evidence. 'Improved accuracy' also emerged as a significant motivator, indicating the perceived value of reducing accounting errors.

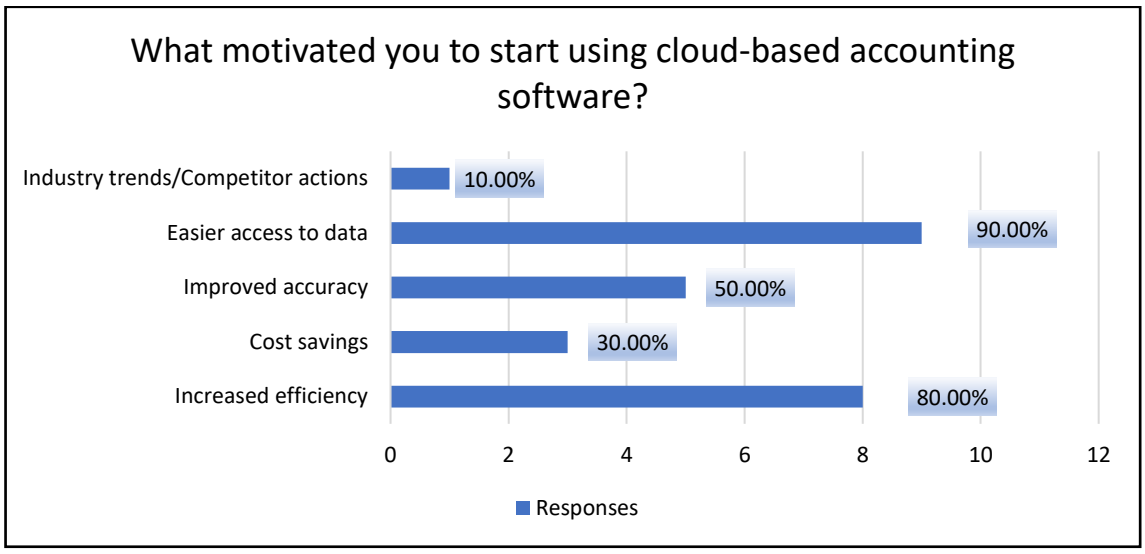


*Figure 3 - What motivated you to start using cloud-based accounting software?*

Despite the advantages, a number of SMBs encountered obstacles during the digitization process. The most prevalent obstacle, 'Finding the correct software,' may be attributable to a lack of technical competence within these businesses or a lack of clear guidance on selecting the most appropriate accounting software for their particular requirements. This may indicate an area where accounting firms and software vendors could provide additional support.

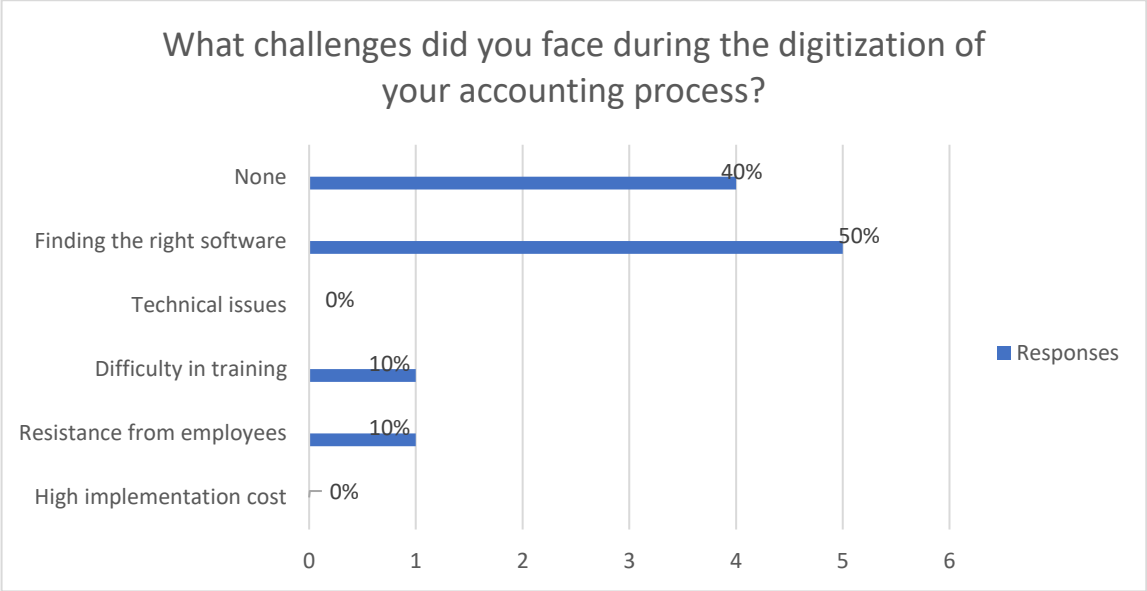


*Figure 4 - What challenges did you face during the digitization of your accounting process?*

The extent of accounting digitization differs among respondents, but the majority of businesses rated themselves between 3 and 5 (out of 5). This suggests that, despite the fact that some SMBs have adopted digital accounting extensively, there is still space for development and further digitalization. This variation may be due to distinctions in resources, industry-specific requirements, or the relative scale and complexity of the business.

## Outsourcing of Accounting Functions

By analyzing the survey results, the thesis can gain insight into the motivations, benefits, and difficulties associated with this practice.

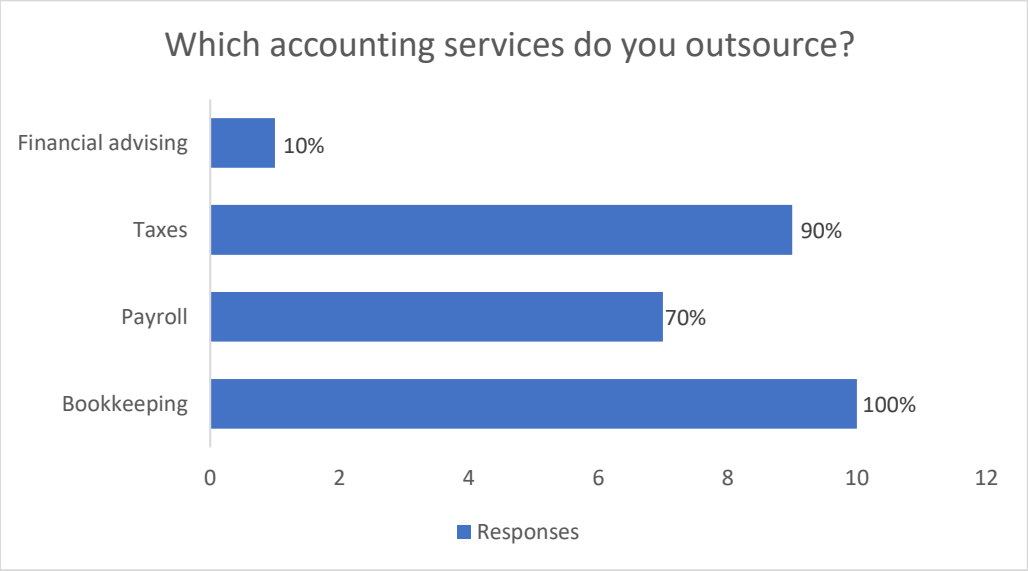


*Figure 5 - Which accounting services do you outsource?*

The survey respondents, who represent a wide range of industries, have demonstrated a strong preference for outsourcing accounting tasks requiring specialized knowledge, such as bookkeeping, payroll, and taxation. This is consistent with the argument made by Domberger (1998), who noted that outsourcing enables businesses to access specialized skills that may not be available or affordable internally.[113] This trend is especially significant for small and medium-sized enterprises, which frequently operate with limited resources and must prioritize core business functions.

[113] See Domberger, S. (1998), pp. 79-80.

Particularly insightful are the primary justifications for outsourcing, which include a lack of in-house expertise and the desire to devote more time to essential business activities. According to Greaver (1999), these reasons emphasize the strategic nature of the decision to outsource, which is an operational choice intended to maximize resource utilization.[114]

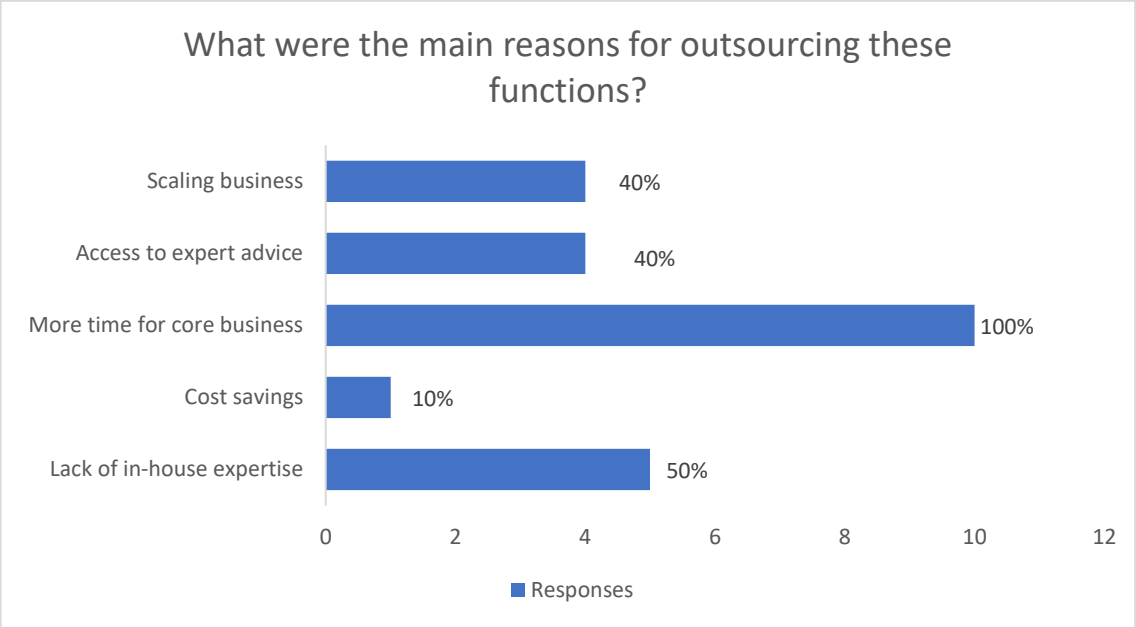


*Figure 6 - What were the main reasons for outsourcing these functions?*

However, the decision to outsource is not without obstacles. The respondents cited quality of work, locating a dependable provider, and communication as the greatest obstacles. These findings align with those of Aron et al. (2005), who highlighted the significance of effective communication and vendor dependability in outsourcing engagements.[115]

[114] See Greaver, M. F. (1999), pp. 113.
[115] See Ravi, A./Clemons, E. K./Reddi, S. (2005), pp. 42-43.

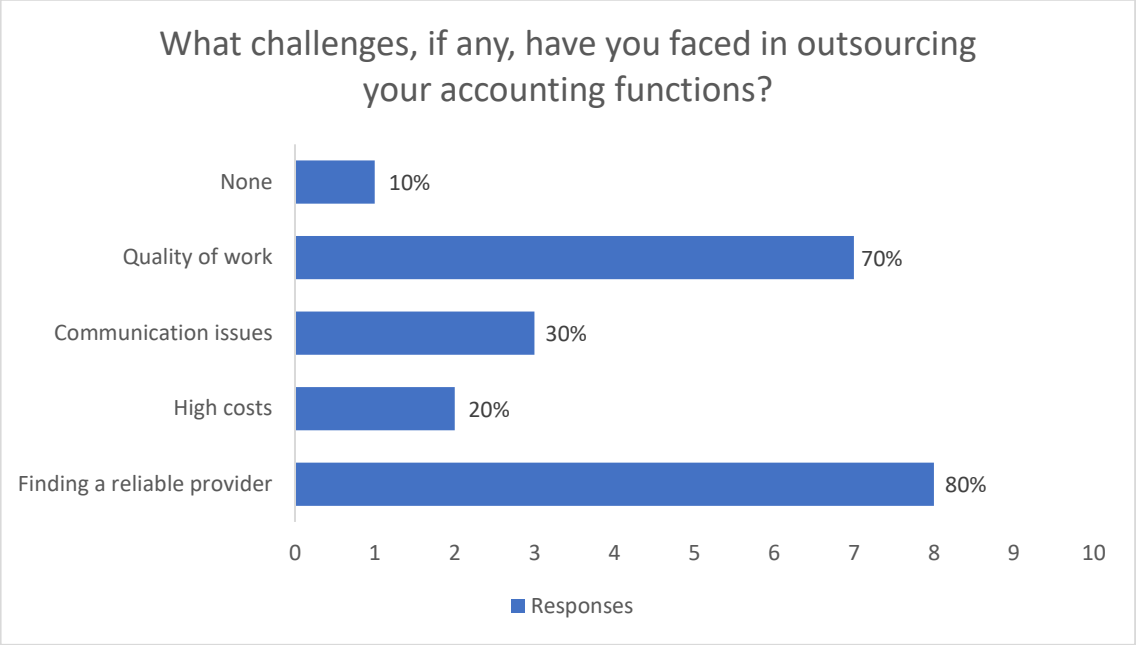


*Figure 7 - What challenges, if any, have you faced in outsourcing your accounting functions?*

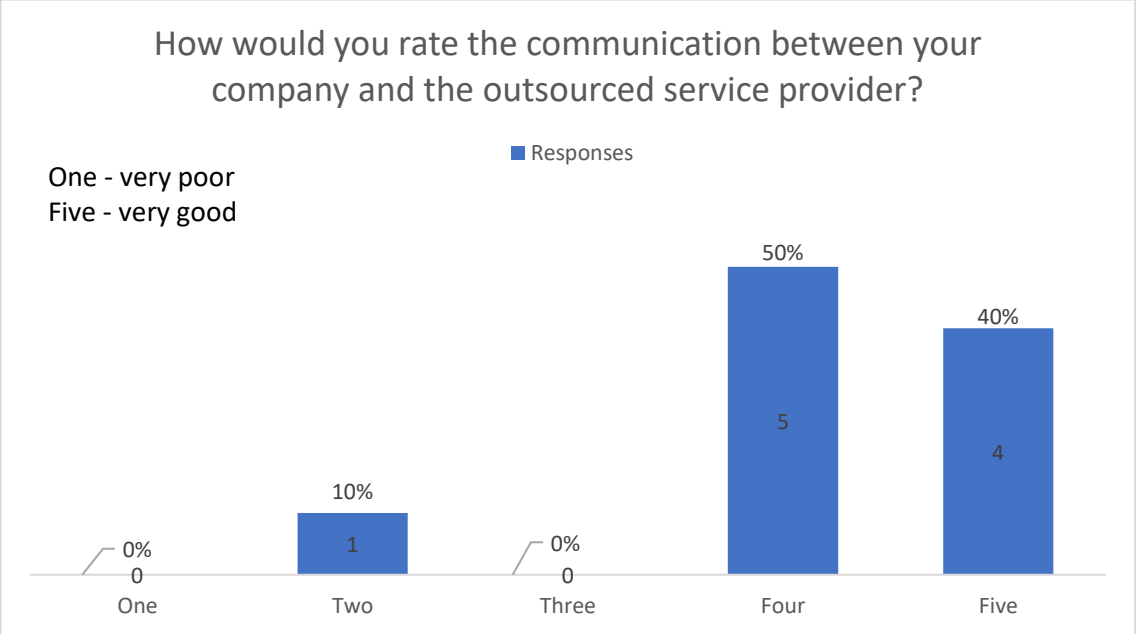


*Figure 8 - How would you rate the communication between your company and the outsourced service provider?*

The level of contentment regarding communication between SMEs and their outsourced accounting service providers was, on average, quite high. This suggests that despite the emphasized communication challenges, SMBs value their current outsourcing arrangements highly. Lee and Kim (1999) emphasize the correlation between high communication satisfaction and successful outsourcing relationships.[116]

[116] See Lee, J.-N./Kim. Y.-G. (1999), pp. 35-36.

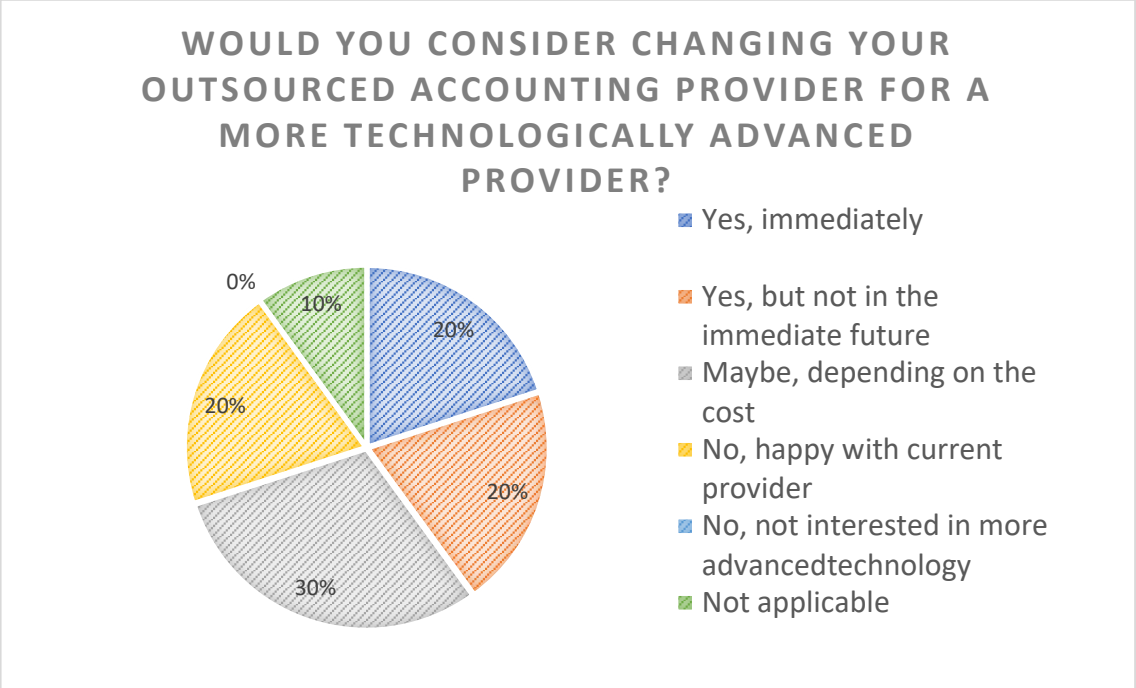


*Figure 9 - Would you consider changing your outsourced accounting provider for a more technologically advanced provider?*

A noteworthy finding was the varying attitudes toward the adoption of more technologically advanced service providers. While some SMEs expressed satisfaction with their current service providers, others indicated a willingness to transition to providers employing more advanced technology, contingent on cost implications. This aligns with the assertion by Lacity et al. (2016) that technological capabilities can serve as a key differentiator for service providers in a competitive market.[117]

## Perception Towards Emerging Technologies

As the thesis progresses through the era of the digital revolution, the perception of newly developed technologies, particularly in the field of accounting, constitutes a crucial component of the analysis. The data provides significant insight into how these companies view the function of accounting technologies such as Artificial Intelligence (AI), Machine Learning (ML), and blockchain.

[117] See Lacity, M. C./Khan, S./Yan, A./Willcocks, L. P. (2010), pp. 414-415.

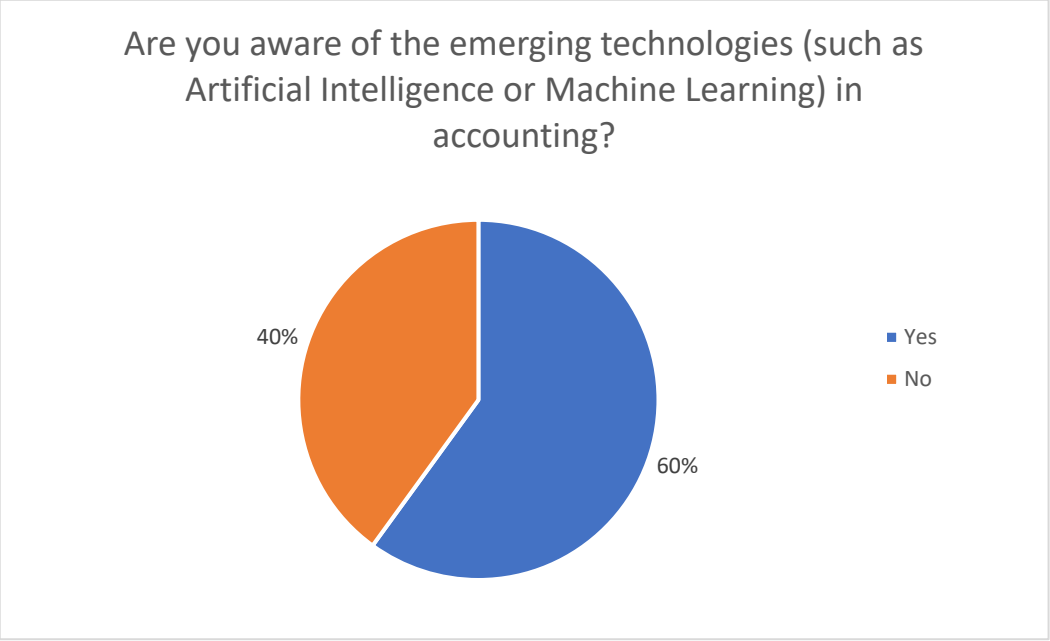


*Figure 10 - Are you aware of the emerging technologies (such as Artificial Intelligence or Machine Learning) in accounting?*

The findings of the survey indicate an encouraging willingness to implement these technologies. The majority of respondents were cognizant of AI and ML, indicating that they have a fundamental understanding of the benefits these technologies can bring to their accounting operations. In addition, a substantial majority of the surveyed SMBs indicated a willingness to incorporate these technologies into their current accounting systems. This demonstrates an inherent recognition of the role that emergent technologies can play in augmenting accounting efficiency and precision.

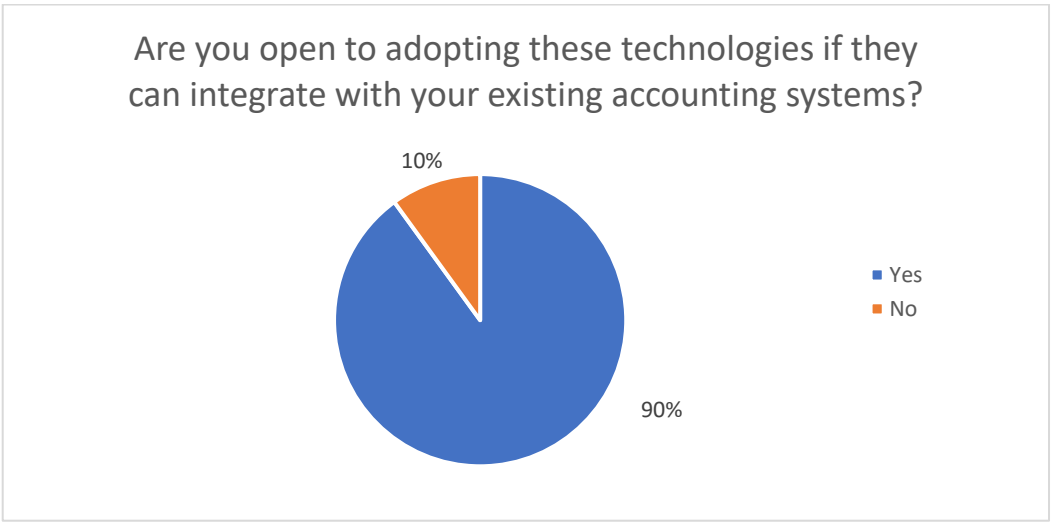


*Figure 11 - Are you open to adopting these technologies if they can integrate with your existing accounting systems?*

According to the participants, the primary perceived benefit of adopting such technologies was the improvement of operational efficiency. Numerous respondents also highlighted the opportunity for real-time analysis and reporting, reflecting the importance of timely and actionable financial data to SMEs. Additional benefits included cost savings and error reduction, both of which are essential for SMBs seeking to maintain profitability and operational precision.

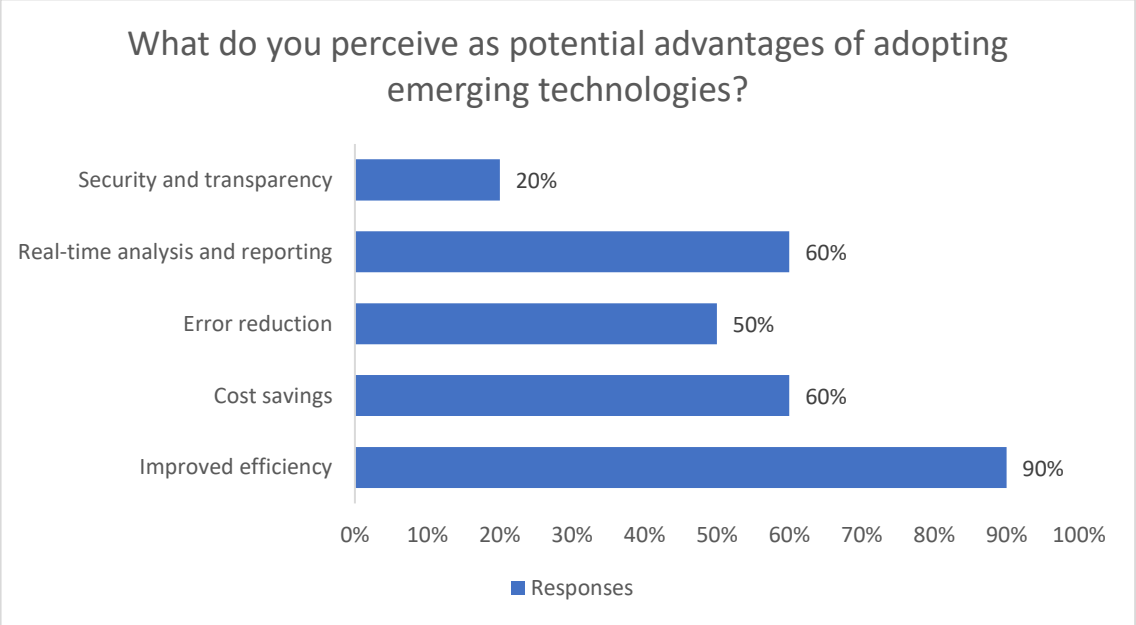


*Figure 12 - What do you perceive as potential advantages of adopting emerging technologies?*

Nevertheless, as previously depicted in Figure 11, the survey data also revealed a reluctance among respondents. When asked if they would contemplate switching to a more technologically advanced outsourced accounting provider, opinions were divided. Some were prepared to make the switch immediately, others were willing but not in the near future, and others were satisfied with their current providers. This indicates that while SMBs perceive the potential of emergent technologies, they also value the stability and dependability of their accounting procedures.

The conclusion is that the perception of emerging technologies among SMBs is generally positive, with an appreciation for their potential benefits. However, the data also reveals a circumspect approach to the implementation of these technologies, highlighting the significance of trustworthiness and dependability in accounting operations. These findings provide an in-depth understanding of the perspective of SMEs on the digital future of accounting, providing a basis for future investigations and academic discussions.

## Overall Feedback and Concerns

The Overall Feedback and Concerns segment provides an in-depth analysis of the participants' perceptions and potential concerns regarding accounting digitization, accounting outsourcing, and the potential for automation. The thesis can acquire a deeper comprehension of the current status of these trends in the sector of small and medium-sized enterprises (SMEs) by analyzing the opinions, comments, and concerns of the respondents. The ten small and medium-sized enterprises that participated in the survey provided a range of responses regarding their opinions on accountancy services and the digitization process. Despite operating in diverse industries, such as retail, eCommerce, insurance, medical, real estate, fractional CFO services, apparel & footwear, and consulting, their responses shared a common theme. Several of those who reported having an overall positive encounter with accounting digitization and outsourcing were also receptive to future scalability and advancements in this area. This demonstrates that SMEs are willing and open to technological innovations in the accounting industry.

Nevertheless, a few issues were also apparent. One of the repeated elements in the outsourcing process was the issue of work dependability and quality. Several respondents cited difficulties in locating a trustworthy provider and assuring the quality of the work. This suggests that while SMBs are receptive to outsourcing, they also seek quality and reliability guarantees that may not always be met by existing service providers. In addition, a few respondents expressed concerns regarding the digitization of their accounting procedures. For instance, obtaining the appropriate software and overcoming employee resistance were cited as significant obstacles. These responses indicate that while digitization improves efficiency, there are implementation obstacles that must be overcome to fully realize its benefits. Some of the participants were receptive to adopting emerging technologies like AI and Machine Learning, while others expressed reservations. This divergence of opinion suggests a need for additional research into what may be causing this reluctance and how it can be addressed to assist more SMEs in transitioning to these cutting-edge technologies.

# Additional Automation Potential

As we move into the sixth chapter of the master's thesis, titled "Additional Automation Potential," the thesis enters a realm brimming with innovation and promise. The accounting industry, notably small and medium-sized businesses (SMEs), has a substantial potential for automation. Emerging technologies such as artificial intelligence (AI), machine learning, and blockchain are creating new opportunities for enhancing accounting functions, with the potential to transform traditional models and processes while providing enterprises with new approaches.[118]

The road ahead begins with a careful examination of these revolutionary technologies. The rise of artificial intelligence has ushered in a surge of changes that have affected numerous economic sectors, including the accountancy industry.[119] AI enables a higher level of precision and efficacy, enabling businesses to automate complex tasks, reduce errors, and boost productivity. Unlike humans, machine learning, a subset of artificial intelligence, can identify patterns in enormous datasets. By employing machine learning in accounting, SME financial projections, risk management, and decision-making capabilities can be enhanced. Even though blockchain is most commonly associated with cryptocurrencies, it has also found a place in accounting, offering a secure and transparent method for recording transactions.

However, there are obstacles to the effective adoption of these technologies, specifically their compatibility with existing accounting systems. How can these advanced technologies be incorporated into existing infrastructures without causing substantial disruption? Are SMEs equipped with the resources essential to implement such sophisticated systems? These are germane concerns that must be addressed. As the thesis investigates the potential benefits of automation, it is essential to keep in mind the transformative advantages it may offer to the accounting process. Automation may lower the amount of time spent on routine tasks, improve data precision, and provide substantial cost reductions. On the other hand, it is crucial to consider the obstacles that could impede this transition, such as the financial burden of implementation, a lack of technical expertise, and concerns over data security and privacy.

[118] See Zhang, Y./Xiong, F./Xie, Y./Fan, X./Gu, H. (2020), pp. 2-5.
[119] See Kommunuri, J. (2022), 585-587.

Despite these obstacles, the automation of accounting processes represents a tremendous opportunity for small and medium-sized enterprises. They will be able to make more informed business decisions as a result of streamlined operations, increased efficacy, and a better comprehension of their financial position. However, the transition to greater automation requires cautious planning and implementation. In order to facilitate this process, the thesis will provide SMBs with practical recommendations tailored to their digitization voyage.

This chapter's primary objective is to describe the enormous opportunity for automation within the accounting industry. The thesis will explore the possibilities, challenges, and practical implications, establishing the groundwork for SMEs and stakeholders to effectively leverage these emergent technologies. The purpose of this investigation is not only to clarify the current situation but also to depict a picture of the future based on the transformative force of technology.

## Emerging technologies (artificial intelligence, machine learning, blockchain)

Emerging technologies like artificial intelligence (AI), machine learning (ML), and blockchain are transforming numerous industries, including accountancy.[120] These technologies have an opportunity to benefit small and medium-sized businesses (SMEs) by automating routine tasks, increasing accuracy, and facilitating decision-making. AI and ML are subfields of computer science that focus on the development and application of algorithms that can learn from data and make decisions or forecasts based on that data1. In the field of accounting, these technologies can be utilized to automate routine duties, analyze vast quantities of data, and produce insights that can guide strategic decision-making.[121] For example, AI can be utilized to automate data entry, invoice processing, and financial reporting, thus decreasing the time and effort needed to finish these tasks. On the other hand, machine learning can be utilized to analyze financial data and discover patterns that can assist strategic decision-making.

Blockchain technology, which underlies cryptocurrencies such as Bitcoin, is a decentralized and distributed digital ledger that keeps track of transactions across

[120] See Qasim, A./Kharbat, F. F. (2020), pp. 108-109.
[121] See Richins, G./Stapleton, A./Stratopoulos, T. C./Wong, C. (2017), pp. 63-64.

multiple computers so that they cannot be modified retroactively.[122] In the accountancy industry, blockchain technology can increase transparency, strengthen the accuracy of financial documents, and lower the risk of fraud. For example, blockchain may be employed to create an auditable, tamper-proof record of financial transactions. This can increase the openness of financial records while lowering the likelihood of fraud.

Incorporation of these technologies into the accounting industry may have major consequences for small and medium-sized businesses. For example, the automation of routine duties can allow accountants to devote more time to strategic tasks, such as financial planning and analysis.[123] The improved precision and openness of financial records can increase the dependability of financial reporting while decreasing the risk of fraud. In addition, real-time financial data analysis may supply SMBs with opportune insights that can guide strategic decision-making. Nevertheless, the implementation of these technologies presents obstacles for SMBs. These involve the need for a substantial initial investment, an absence of technical expertise, and data security concerns. Therefore, in order to completely reap the benefits of these technologies, SMBs have to carefully assess these obstacles and devise strategies for overcoming them.

In summary, emerging technologies such as AI, ML, and blockchain offer the accounting industry immense benefits. To take full advantage of their benefits, however, SMBs have to carefully assess the obstacles related to the adoption of these technologies and devise strategies to overcome them.

## Compatibility with existing accounting systems

Existing accounting system compliance with emergent technologies is an essential component of accounting digitization. This compatibility is essential for small and medium-sized businesses (SMEs) navigating the digital transformation process. Incorporation of new technologies into existing systems may offer numerous benefits, such as increased efficiency, decreased costs, and enhanced decision-making abilities. Nonetheless, it presents obstacles that must be overcome in order to guarantee successful implementation and adoption.

[122] See Bonsón, E./Bednárová, M. (2019), pp. 726-727.
[123] See Fernandez, D./Aman, A. (2018), pp. 127-128.

Several studies have examined the compatibility of accounting systems with emergent technologies such as artificial intelligence (AI), machine learning (ML), and blockchain and discovered that these technologies could considerably enhance the efficacy and precision of accounting tasks.[124] However, the study additionally emphasized the need for substantial adjustments to the design and operation of accounting systems to accommodate these technologies. The subject matter of another study was the compatibility of accounting systems with blockchain technology.[125] The study discovered that blockchain technology could increase the security and transparency of accounting systems. Due to the decentralized nature of blockchain technology and the centralized structure of most accounting systems, the report concluded that integrating blockchain into existing accounting systems may be difficult.

The integration of emergent technologies into current accounting systems requires a thorough evaluation of the technology's compatibility with the system. This includes assessing the technical capabilities of the system, the specifications of the technology, and the possible impact of the integration on the system's operation and performance. Incorporating AI and ML into an accounting system, for instance, necessitates the system's capacity to manage large volumes of data and execute complex computations. It also necessitates the system's adaptability to alterations in the data and the environment, as AI and ML models must frequently be trained and updated in order to preserve performance.

The incorporation of Large Language Models (LLMs) into accounting systems is a revolutionary innovation that is destined to revolutionize the accounting industry.[126] LLMs, with their ability to comprehend and generate text that resembles human language, can be used to automate the interpretation and production of financial narratives. They can analyze massive quantities of financial data and produce insightful reports, providing a deeper understanding of the financial health of a business. This integration can considerably improve the effectiveness and precision of accounting duties, thus lowering the time and effort required for manual data processing. In addition, LLMs can be trained to comprehend complex accounting regulations and standards, thereby ensuring compliance and reducing the likelihood of errors. This technological advancement is anticipated to transform the accounting industry, causing it to become more data-driven and analytical. Integrating blockchain into an accounting

[124] See Rafique, M. (2021), pp. 41-42.
[125] See Vincent, N. E./Daven, S. A. (2022), pp. 80-84.
[126] See Street, D./Wilck, J. (2023), 3-7.

system, on the other hand, necessitates decentralized operations and strong safety mechanisms. Because blockchain runs on a decentralized network where transactions are independently verified by multiple nodes and all transactions are encrypted to guarantee their security, this is the case.

Consideration should also be given to the integration's prospective effect on the operation and performance of the system. Incorporating AI and ML into an accounting system, for instance, could substantially accelerate the processing of accounting tasks and increase the precision of the results. However, it might additionally raise the complexity of the system and necessitate additional resources for training and maintaining AI and ML models. Incorporating blockchain into an accounting system might improve the system's transparency and security, but it might also raise the system's operational complexity and necessitate structural and operational adjustments to accommodate blockchain's decentralized nature.

Compatibility between extant accounting systems and emergent technologies is, in conclusion, a complex topic that requires thoughtful consideration. While these technologies may offer substantial benefits, integrating them into existing systems presents obstacles that must be overcome. In order to guarantee successful implementation and acceptance, SMBs should conduct a comprehensive evaluation of their accounting systems and the technologies they intend to integrate.

## Potential advantages and obstacles

The digitization and automation of accounting processes offers small and medium-sized enterprises (SMEs) a multitude of potential benefits and challenges. These factors are crucial to consider because they have a substantial impact on the operational efficacy, financial management, and overall business performance of small and medium-sized enterprises (SMEs).

On the one hand, digitalization and automation in accounting have numerous benefits. In line with a study by Busulwa et al. (2021), the implementation of digital accounting systems can result in substantial gains in efficiency and precision.[127] The implementation of automated systems lowers the likelihood of human error, which is

[127] See Busulwa, R./Evans, N. (2021), pp. 35-36.

prevalent in manual accounting procedures. Data entry, calculation, and reporting mistakes can result in financial discrepancies, regulatory issues, and impaired decision-making. Digital accounting systems improve the trustworthiness and accuracy of financial data by minimizing these errors.

Additionally, automated systems permit the processing of vast quantities of data in a brief period of time. This capability is especially advantageous for small and medium-sized enterprises that manage complex transactions or function in fast-paced business environments. SMEs can save precious resources and time by automating routine tasks, which are able to be assigned to more strategic duties, such as financial analysis, budget planning, and decision-making. Additionally, the digitization of accounting procedures can result in cost savings. It eliminates the requirement for physical storage, manual record-keeping, and paper documentation. This reduces operational expenses and contributes to environmental sustainability through decreased paper waste.

The move towards digitization and automation, however, is not without obstacles. A study by Muneerali (2020) illustrates the challenges that SMEs may encounter when employing digital accounting systems.[128] These involve high implementation costs, which may be prohibitive for small and medium-sized enterprises with limited budgets. In addition to the cost of the software, the implementation process includes costs related to system integration, data migration, training, and ongoing maintenance. Another important obstacle is the requirement for technical expertise. Utilizing digital accounting systems necessitates a particular degree of technical proficiency. SMBs may be required to invest in staff training or employ IT professionals, which may raise implementation costs.

In addition, the study highlights the unwillingness to change among employees. The transition from traditional to digital accounting processes can be a significant adjustment for employees, particularly those who are not technologically proficient. SMBs must effectively manage this transformation through communication, education, and support in order to ensure a seamless transition and minimize business disruptions. The lack of standardization in digital accounting systems represents a further potential barrier. According to a study by Palos-Sanchez et al. (2017), the absence of uniform standards and protocols can result in incompatibility issues between various systems.[129] This can be a significant obstacle for small and medium-sized enterprises, particularly

[128] See Muneerali, M. T. (2020), pp. 27-28.
[129] See Palos-Sanchez, P. R. (2017), pp. 125-126.

those operating in multiple jurisdictions or interacting with international customers. Small- and medium-sized enterprises must ensure that their digital accounting systems are interoperable with other business systems and satisfy the legal demands of the jurisdictions in which they operate. The prospective advantages associated with digitization and automation in accounting cannot be disregarded despite these obstacles. With the right strategies and resources, SMEs are able to surmount these obstacles and employ the power of digital technology to enhance their accounting procedures and overall business performance.

In summary, while digitization and automation of accounting processes offer numerous benefits to SMBs, they additionally bring their own unique challenges. Therefore, it is essential for SMBs to carefully think about these factors and devise strategies for navigating the digital landscape. This includes not only the choice of appropriate digital accounting systems but also the management of change and the development of technical skills. By doing so, SMEs may capitalize on the benefits of digitization and automation to enhance their accounting procedures, financial management, and business success.

## Recommendations for small and medium-sized enterprises

The digital transformation of SME accounting practices is a key imperative fueled by shifting consumer demands and the desire to maximize asset value, lower operational costs, and spur development. This digital evolution provides a "level playing field," allowing small and medium-sized enterprises to compete effectively with large corporations. Therefore, it is advised that SMEs implement a digital transformation strategy for their accounting practices.[130] Initially, SMEs ought to conduct a thorough audit of their business processes, practices, workflows, and procedures. By optimizing these aspects of business operations, Digital Transformation (DX) provides value and improves productivity. An evaluation of this nature might include utilizing cloud technologies in IT operations or incorporating multiple systems throughout company departments such as sales, marketing, and finance. Employing digital technologies can help automate redundant, repetitive, and error-prone tasks, thereby enhancing the

[130] See Business Tech Weekly (2023).

effectiveness of decision-making. Small businesses are more likely than large businesses to incorporate digital technologies, with nearly 75% of small businesses (less than ten employees) having implemented at least one digital technology for business purposes. Therefore, small businesses should not be intimidated by the perceived complexity of digital transformation and should grasp the opportunities it offers.

The third benefit of digital transformation involves greater savings and efficiencies. By utilizing technologies such as Artificial Intelligence (AI), Automation, and Machine Learning, businesses are able to better comprehend and predict consumer behavior. Such technologies enable SMBs to record, manage, and measure customer interactions, enabling more precise lead scoring and sales forecasting. Moreover, digital transformation can result in an enhanced customer experience. By analyzing consumer data, SMEs can enhance their multichannel offerings, provide personalized services, and introduce new interaction channels. Therefore, customer experience should be the primary focus of digital transformation initiatives.

The development of cloud solutions has enabled small and medium-sized businesses to remain competitive, agile, and innovative at a fraction of the cost of the past. SMBs may take advantage of cloud-based solutions to scale the delivery of high-quality services, thereby enhancing their competitiveness and innovation. SMEs should incorporate data-driven insights into their decision-making processes. In a swiftly evolving digital landscape, data has become one of the most valuable assets for small and medium-sized enterprises (SMEs). Intelligent data utilization enables SMEs to make better strategic and business decisions and position themselves for growth. These recommendations serve as a guide for SMEs navigating the digital transformation of accounting practices. By adhering to these recommendations, SMEs can position themselves for long-term growth and sustainability in a business landscape that is becoming increasingly digital.

# Conclusions and Suggestions

This master's thesis investigated the influence of accounting digitization and outsourcing on small and medium-sized enterprises (SMEs), two significant developments that are reshaping the financial management landscape. Growing opportunities and associated difficulties have been identified, necessitating an effective response in order to maximize potential benefits.

Scuotto et al. (2021) state that the digitization of accounting, supported by modern software and tools, is becoming a vital component for SMBs in the contemporary business world.[131] Still, the implementation of digital technologies is frequently met with resistance due to cost, training, and data security concerns. Numerous case studies have demonstrated, however, that once SMEs surmount these obstacles, they can garner substantial benefits in the form of enhanced efficiency, accuracy, and real-time decision-making capabilities. In order to facilitate a successful digital transformation, SMBs should invest in digital training and strengthen their cybersecurity measures. Governments and other stakeholders must also provide financial support to encourage digitization in this industry.[132] SMEs are increasingly utilizing accounting outsourcing, which offers prospective advantages such as cost reduction, increased focus on core business activities, and access to specialized knowledge and services.[133] However, these benefits are offset by disadvantages such as loss of control, reliance, and possible quality issues. Therefore, the decision to outsource should be taken cautiously after examining a variety of factors, such as the firm's scale, requirements, resources, and the industry context as a whole. To minimize the potential risks related to outsourcing, SMEs must establish comprehensive contractual agreements, cultivate healthy relationships with service providers, and implement effective management and control systems.[134]

The analysis of the survey revealed that the primary reasons for outsourcing accounting services are cost-effectiveness, access to specialist knowledge, and the ability to concentrate more intently on core business operations. Nonetheless, participant satisfaction with outsourcing and digitization varied, indicating a need for

[131] See Scuotto, V./Nicotra, M./Giudice, D. M./Krueger, N./Gregori, G. L. (2021), pp. 382-384.
[132] See Deborah, A./Saliterer, I./Steccolini, I. (2022), pp. 153-154.
[133] See Lacity, M. C./Solomon, S./Aihua, Y./Willcocks, L. P. (2015), pp. 192-193.
[134] See Klaas, B. S. (2003), pp. 46-47.

enhancements in service delivery, client engagement, and dispute resolution processes within outsourcing relationships.

This study also highlighted the unrealized potential of emergent technologies such as artificial intelligence, machine learning, and blockchain in the accounting industry. Despite concerns surrounding their compatibility with present accounting systems, their prospective advantages, such as improved precision, speed, and security, make them promising candidates for future developments. Therefore, it is advised that small and medium-sized enterprises (SMEs) stay aware of technological advancements and progressively incorporate these technologies into their operations while taking measures to minimize potential risks.[135]

In addition, the thesis offers crucial insights into the services most frequently delegated by SMBs, namely tax preparation, payroll, and bookkeeping. However, more complex functions such as financial planning and analysis were outsourced less frequently, suggesting that small and medium-sized enterprises (SMEs) could profit from expanding their outsourcing operations to encompass these areas, provided they can effectively manage the associated challenges. Numerous respondents observed improvements in financial performance, productivity, and strategic decision-making as a result of outsourcing and digitization's impact on business performance. However, there were also fears regarding data security and quality control, highlighting the need for effective management and monitoring systems to guarantee positive results.

In the end, accounting digitization and outsourcing present numerous opportunities for small and medium-sized enterprises. However, the accompanying issues must be recognized and properly tackled. The path to success lies in navigating these trends with care, supported by sensible decisions and proactive management strategies. Further studies should delve deeper into the impact of emergent technologies on accounting practices, investigate the best practices for managing outsourcing relationships, and consider how these trends might be beneficial to the sustainable growth of SME businesses.

[135] See Kroon, N./Alves, M. d. C. (2021) pp. 182-183.

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# Appendix

Client Survey

1. Company Information

1. Company Name:
2. Industry/Sector:
3. Role of respondent:

2. Accounting Digitization:

4. How would you rate your level of accounting digitization? (1 very low; 5 very high)
5. What accounting software or digital tools are you currently using?
    - Quickbooks
    - Xero
    - Sage
    - Freshbooks
    - Wave
    - Other:
6. What motivated you to start using cloud-based accounting software? (Choose one or more)
    - Increased efficiency`
    - Cost savings
    - Improved accuracy
    - Easier access to data
    - Industry trends/Competitor actions

7. What challenges did you face during the digitization of your accounting process? (Choose one or more)

- High implementation cost
- Resistance from employees
- Difficulty in training
- Technical issues
- Finding the right software
- None

3. Accounting Outsourcing:

8. Which accounting services do you outsource? (Choose one or more)

- Bookkeeping
- Payroll
- Taxes
- Financial advising
- Other

9. What were the main reasons for outsourcing these functions? (Choose one or more)

- Lack of in-house expertise
- Cost savings
- More time for core business
- Access to expert advice
- Scaling business
- Other

10. What challenges, if any, have you faced in outsourcing your accounting functions? (Choose one or more)
    - Finding a reliable provider
    - High costs
    - Communication issues
    - Quality of work
    - None

4. Client Satisfaction:

- Data not available for the study.

5. Automation Potential:

11. Are you aware of the emerging technologies (such as Artificial Intelligence or Machine Learning) in accounting?
    - Yes
    - No
12. Are you open to adopting these technologies if they can integrate with your existing accounting systems?
    - Yes
    - No
13. What do you perceive as potential advantages of adopting such technologies? (Choose one or more)
    - Improved efficiency
    - Cost savings
    - Error reduction
    - Real-time analysis and reporting
    - Security and transparency
    - Other

14. Would you consider changing your outsourced accounting provider for a more technologically advanced provider?

    - Yes, immediately
    - Yes, but not in the immediate future
    - Maybe, depending on the cost
    - No, happy with current provider
    - No, not interested in more advanced technology
    - Not applicable