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**The Impact of Cloud Computing on the Skills, Autonomy, and Professional Identities of
Junior External Auditors**

Case Studies of Three of the Big Four Audit Firms in Saudi Arabia

by

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ABSTRACT

This thesis critically applies the Marxist (1954) analysis of capitalism and labour process theory (LPT) to investigate the impact of technological advances – specifically the introduction of Cloud Computing – on the work and experiences of junior external auditors at three of the Big Four audit firms in Saudi Arabia. While previous research has predominantly focused on the organisational level, this study shifts the focus to concentrate on the individual level. The study undertakes three case studies, 29 in-depth semi-structured interviews with junior and senior external auditors, managers, and partners providing a comprehensive perspective of the transformative effects of Cloud technology on the career development of junior auditors. Responding to calls for more qualitative studies in the field of accounting research and more research in developing countries, this thesis expands the scope of Cloud Computing research. The findings reveal aspects of deskilling in the reduced demand for physical and mental effort, while the enhancement of juniors' technical skills represents a form of *reskilling*. Notably, the decrease in autonomy among junior auditors, attributed to the centralising effect of the Cloud, provides support for LPT, illustrating how technological and procedural changes can reshape power dynamics in the workplace. The findings emphasise the dynamic interplay between technology and labour processes; highlighting significant shifts in the roles, behaviours, and attitudes of junior auditors due to the adoption of Cloud technology.

Keywords: Auditing, Cloud Computing, Junior External Auditors, Skills, Autonomy, Professional Identities.

DECLARATION

I, Alaa Alromaihi, confirm that the thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not previously been presented for an award at this or any other university.

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Chapter One: Introduction

1.1 Background of the Study

The emergence of Cloud technology represented a seminal development in contemporary technology trends (Khanom, 2017). “Cloud Computing”, as defined by Khanom (2017), encompasses a platform facilitating online access to data and software, accessible from virtually any device connected to the internet. With the evolution of Cloud Computing capabilities, there arises the potential for a significant reduction in human involvement in various tasks (Rudansky-Kloppers and Van den Bergh, 2019). This transformative potential extends even to traditional domains which face potential disruption from automation (Hanlon, 1994; Issa et al., 2016). For example, auditing characterised by extensive manual procedures is gradually giving way to hybrid approaches that integrate manual and automated components (Moffitt et al., 2018) and fall within the purview of junior auditors’ responsibilities.

One could argue that the transition from statistical logic to risk-based auditing marked a significant paradigm shift. Moreover, it can be contended that the actual paradigm shift lies in the change of approach, facilitated by the Cloud – with the new approach involving the selection of specific audit transactions, rather than requiring the examination of an entire set. For instance, junior auditors often engage in tasks such as “analysing and verifying financial records” (KPMG, b, n.d.). However, the presentation of a business’s current financial status increasingly relies on Cloud-based accounting capabilities (Dimitriu and Matei, 2015), with cloud tools utilised for financial record analysis and verification. Furthermore, Ernst & Young emphasises the importance of continuous communication between junior auditors and their clients’ staff (EY, 2017). Cloud accounting platforms facilitate seamless collaboration among business participants (business owners, accountants, auditors, and clients) by providing

simultaneous online access to current financial data (Dimitriu and Matei, 2015). Consequently, the Cloud has the potential to significantly alter the roles and responsibilities of junior auditors.

The potential transformation of autonomy and skills induced by IT has profound implications for the professionalisation of audit practice, particularly the professional identities of junior auditors (Anderson-Gough et al., 1998). The concept of “professional identity” may necessitate reevaluation and expansion to accommodate the technological change in the profession that is driven by mounting external pressures (Broberg et al., 2018). The shifts in the environment thus alter the characteristics and required tasks of the auditors (Vasarhelyi, 1984), resulting in changes in the skill sets and knowledge prerequisites for effective audit execution (Tarek et al., 2017). As a corollary, proficiencies in business administration, accounting, and auditing may yield precedence to IT skills (Tiberius and Hirth, 2019), a contention substantiated by Adler (1987), Manson et al. (1998), Westermann et al. (2015), and Lowe et al. (2017).

A salient attribute of the Cloud is its “ubiquitous access”, enabling users to access company services from any platform or device via a web browser (Iyer and John, 2010). In the context of audit firms, a pertinent question thus arises: does this seamless access to audit staff by managers and partners imply a diminishing level of autonomy? Braverman’s labour process perspective (1974) suggests that information technology (IT) implementation, often orchestrated by senior management, can serve as a means to enhance management’s control over subordinates, who may harbour reluctance and engage in resistance to this. This perspective finds support from Manson et al. (2001), whose findings indicate that audit automation fosters information-sharing, facilitating heightened surveillance and management control. Orlikowski (1991) similarly observes that, when IT mediates the work process, it creates an “information environment” conducive to management control. This transformation entails a shift from human control over the labour process to a scenario in which the labour

process exerts control over the workforce (Braverman, 1974). However, the existing literature remains silent on whether the Cloud augments or diminishes the autonomy of junior auditors and their role in the audit process, a particularly important inquiry given the already relatively low autonomy of junior staff.

Manson et al. (2001) argue that audit automation tends to lead audit staff to rely on IT, as professional skills are embedded in software. This can erode the autonomy of audit staff, while reinforcing management control (Manson et al., 2001). Consequently, the once-professional auditor may be reduced to a technician or even replaced by less-skilled labourers (Roslender and Boomgaarden, 1992). A pertinent issue here is thus the extent to which automation diminishes the professional skills of auditors and introduces management-prescribed rules and procedures (Manson et al., 2001). While Hanlon (1994), Manson et al. (1997), Manson et al. (1998), and Manson et al. (2001) argue that there is limited evidence of audit automation resulting in the deskilling of professional audit staff, Orlikowski (1991) disputes this, positing that deskilling is discernible in the work of professionals. Thus, it is conceivable that audit automation may either enhance or diminish the skills of audit staff, but notably little attention has been given to the context of junior auditors.

Understanding of auditors' roles and functions (Barratt et al., 2005; Gardner and Bryson, 2021; Pentland, 1993) – primarily those of junior auditors (e.g., Anderson-Gough et al., 1998; Hanlon, 1994; Lee and Brooks, 1999; Lee, 2002) – has predominantly been shaped by research conducted in Western countries. However, the Big Four audit firms have global reach (Barratt et al. 2005). Consequently, the current study departs from the Western-centric research paradigm and directs its empirical inquiry toward the operations of three major global audit firms situated in Saudi Arabia. This geographical shift in focus provides an opportunity to gain

deeper insights into the intricacies of auditing practices in a distinct cultural and economic context (Barratt et al., 2005).

The rationale for examining the impact of Cloud Computing on junior auditors is rooted in academic interest. Firstly, the growing integration of Cloud Computing in business operations presents a significant concern in the auditing field, as evidenced by numerous studies (Westermann et al., 2015; Abou-El-Sood et al., 2015; Arnold, 2016; Senyo et al., 2018; Kogan et al., 2019; Tiberius and Hirth, 2019; Sousa and Rocha, 2019; Moll and Yigitbasioglu, 2019). This research posits that junior auditors, at the beginning of their careers, encounter distinct challenges and opportunities with the adoption of Cloud Computing. This study aims to enhance the understanding of these dynamics. Secondly, this research fills a notable void in existing literature by concentrating on the effects of Cloud Computing on junior auditors, a subject that has received limited attention (Fedyk et al., 2022). This focus yields important insights, enriching the academic conversation around the nexus of Cloud Computing and auditing practices. Thirdly, the study holds practical significance for audit firms and the training of new professionals, illustrating how Cloud Computing shapes the roles of junior auditors and influences training programs. Additionally, the choice to focus on Cloud Computing rather than AI¹ is justified by its extensive use in the

¹ Cloud Computing refers to the delivery of different services through the internet, including data storage, servers, databases, networking, and software (NIST SP 800-145, 2011). Cloud computing allows for the storage and access of data and programs over the internet instead of on a hard drive or local server. It's known for its flexibility, scalability, and efficiency in managing IT resources (NIST SP 800-145, 2011). Artificial Intelligence (AI) involves creating computer systems that can perform tasks that typically require human intelligence. This

business environment of Saudi Arabia. Finally, considering the scope and feasibility of the research, this targeted investigation is well-aligned with the available resources, accessibility to participants, and the overarching research goals.

This study is a theoretically focused, individually centred, and contextually embedded investigation into the implications of Cloud Computing for junior external auditors. This research adopts a critical stance, exploring external-audit labour processes in the theoretical construct of labour process theory (LPT). The amalgamation of LPT's analytical framework with a forward-looking perspective on dynamic IT developments distinctly situates the contributions of this work in the broader academic landscape.

1.2 Research Gaps

Research into accounting firms' technology adoption and utilisation is scarce and outdated (Yigitbasioglu, 2015). The accounting literature addressing Cloud Computing is generally characterised by insufficiency and paucity, primarily due to the novelty of the subject (Meiryani et al., 2023, Huttunen et al., 2019; Moll and Yigitbasioglu, 2019; Salijeni et al., 2018; Yigitbasioglu, 2015; Dimitriu and Matei, 2014; Roslender and Boomgaarden, 1992). There have been numerous calls for additional research into the ramifications of emerging technologies, particularly the Cloud, for accounting and audit practices (M. Albaz et al., 2023;

includes things like problem-solving, recognizing speech, translating languages, and decision making. AI systems can learn from data and improve over time.

Fahmi et al., 2023; Berdichevskaya, 2023; Westermann et al., 2015; Abou-El-Sood et al., 2015; Arnold, 2016; Senyo et al., 2018; Kogan et al., 2019; Tiberius and Hirth, 2019; Sousa and Rocha, 2019; Moll and Yigitbasioglu, 2019). This research responds to these calls.

Our understanding of the auditing profession (Barratt et al., 2005; Gardner and Bryson, 2021; Pentland, 1993), particularly concerning junior auditors (e.g., Anderson-Gough et al., 1998; Hanlon, 1994; Lee and Brooks, 1999; Lee, 2002), has been primarily shaped by research conducted in Western countries, despite the Big Four audit firms each enjoying a global presence (Barratt et al., 2005). Addressing this geographical research gap, this study departs from the Western-centric perspective to empirically investigate the case of three of the Big Four in Saudi Arabia, a prominent oil-rich nation situated in southwest Asia.

Similarly, the scope and geographic orientation of Cloud Computing research have been somewhat limited (Senyo et al., 2018), and there have been calls for more research in developing countries (Senyo et al., 2018). Thus, the current study's presentation of three Saudi case studies responds to this geographic research gap. Furthermore, previous studies on the Cloud have concentrated on the organisational level of Cloud Computing adoption (Senyo et al., 2018), while this study homes in on the individual level, targeting junior external auditors.

Furthermore, the corpus of literature on autonomy is notably dated, with seminal works such as Orlikowski (1991) and Manson et al. (2001) representing some of the earliest contributions. Moreover, this body of literature does not examine autonomy in the context of junior auditors, leaving a significant gap in the scholarly exploration of this demographic. In addition, the extant research – represented by studies such as Hanlon (1994), Manson et al. (1997), Manson et al. (1998), and Manson et al. (2001) – on the phenomenon of deskilling is notably antiquated. These studies only touch upon certain aspects, failing to provide a comprehensive view of

junior auditors' efforts, education, and experiences. The current study, in contrast, enhances understanding of the skills of junior auditors.

Contemporary research on professional identity has predominantly emerged from Western countries, as evidenced by works such as Lee (2002), Brouard, Bujaki, Durocher, and Neilson (2017), Hamilton (2013), Low, Davey, and Davey (2012), and Vough (2012). This thesis addresses this gap by examining the Saudi context. Moreover, this study distinguishes itself by exploring the influence of technological advances – specifically the Cloud – on the professional identity of junior professionals. The current body of literature does not substantially address the impact of the Cloud on the skills, autonomy, and professional identities of junior auditors and their role in the audit process, which is a crucial area of concern, especially considering the often-limited autonomy granted to junior staff. If organisations are to remain effective in the evolving audit landscape, it is essential that they understand the impact of the Cloud on the skills, autonomy, roles, and professional identities of junior auditors, ensuring that junior auditors are adequately prepared for their responsibilities and granted proper autonomy, and maintain human involvement in an increasingly technology-driven environment.

Historical investigations into the impact of technological change in the accounting and audit domain have been informed by a spectrum of theoretical perspectives, including structuration theory and diffusion innovation theory, as well as Marxist, Weberian, functionalist, trait, and symbolic interactionist viewpoints. While each of these has contributed significantly to the accounting and audit literature, none fully covers the research enquiries of this thesis. However, LPT is a useful framework for discerning the influence of technologies at the individual level. Despite an abundance of literature reviews on Cloud Computing (e.g., Bayramusta and Nasir, 2016; El-Gazzar, 2014; Venters and Whitley, 2012; Yang and Tate, 2012), these reviews note

a lack of strong theoretical foundations or models in previous studies (Senyo et al., 2018). The present study therefore enhances the audit literature by utilising LPT.

Furthermore, this thesis endeavours to bridge the research gap through its utilisation of three case studies as its chosen methodological approach. In the field of accounting research, there has been a call for increased qualitative inquiry to counterbalance the dominant quantitative research paradigms (Lee and Humphrey, 2017). This thesis heeds this call by adopting a methodology that invites junior auditors to share their experiences with Cloud capabilities.

1.3 Purpose of the Study

The thesis uses Marx's analysis to critically evaluate the implications of technological advances – namely, the integration of Cloud Computing – on the work and experiences of junior auditors undergoing training at three of the Big Four audit firms in Saudi Arabia, viewed in the context of evolving capitalist dynamics. LPT serves as a tool for unveiling whether Cloud Computing amplifies or diminishes the autonomy of junior external auditors and how it metamorphoses their skill sets and contributes to the transformation of their professional identities. The initial theoretical selection centres on LPT. It is used to scrutinise the intricate dialectical interplay between the capitalist pursuit of control, wealth accumulation, and profit generation – as seen in the context of the adoption of new IT practices – and the consequential impact on employees. This nuanced relationship is expounded upon in Chapter Two of this study.

The choice of three of the Big Four audit firms as the primary data sources is justified on academic, practical, and critical grounds. These firms, being trendsetters in technology adoption, are at the forefront of the accounting and auditing industry. Their global operations and diverse clientele, including multinational corporations, make them pivotal players,

demanding sophisticated technological solutions. The substantial resources allocated by the Big Four to technology underscore a commitment to operational efficiency and competitiveness. The firms' global presence enables the development of a nuanced understanding of the global impact of Cloud adoption in auditing. This analysis of juniors' experiences in three of the Big Four thus provides insights into overarching trends and industry-specific variations, contributing to the discourse on audit practice in the digital era.

Using the labour process framework, this study examines the ramifications of technology for the workforce and the prospects for human emancipation by unearthing the sources of domination and repression rooted in the ideological, political, and economic substrata of the capitalist system, as expounded by Carchedi (1975). The paramount objective of this research is to explore the dynamics of power in management structures that may find expression through the utilisation of Cloud Computing. The systematic delineation of IT interventions and their implications will reveal whether the Cloud is able to enhance autonomy and reshape the skills, behaviours, attitudes, and roles of junior auditors, potentially affording them a platform for critical reevaluation.

The empirical findings of this study will make a valuable theoretical contribution to LPT as developed by Marx (1967), Braverman (1974), and Carchedi (1975) by providing empirical evidence that can be applied to refine and extend previous scholars' ideas in five domains, as follows.

(1) Complexity of deskilling and upskilling: The empirical findings challenge the traditional dichotomy of deskilling versus upskilling proposed by Braverman. While Braverman argues that technological change inherently leads to deskilling, this research shows that the impact is more complex in the context of audit firms, where some roles experience *upskilling* effects due

to technology adoption. This nuance adds depth to Braverman's ideas and suggests that the relationship between technology and skill development may be multifaceted. Junior auditors are often required to develop new competencies to manage sophisticated technological tools such as advanced data analytics and automation software. This nuanced interaction indicates that while technology automates routine tasks, it simultaneously enhances the capacity for more complex, judgment-intensive audit work. The impact of technology on skill levels is not uniform but varies across different roles within these firms. These observations necessitate a reconsideration of training and development practices within the Big Four, emphasizing continuous learning to adapt to technological changes. Furthermore, this complexity has significant implications for labor in audit practice and educational policies, highlighting the need for strategic interventions to support junior auditors in navigating these shifts.

(2) *Marxian concept of profitability*: The study on the adoption of Cloud technology in audit firms reflects a Marxian approach to profitability, where increasing productivity is seen as a route to higher profits. Karl Marx posited that technological advancements would drive productivity, theoretically lowering costs and increasing profitability. In the context of modern audit firms, the implementation of Cloud technology exemplifies this principle by enhancing efficiency and streamlining processes, thus potentially raising profit margins. However, the thesis expands on Marx's concept by arguing that these firms should not solely focus on profitability but also consider their impact on societal well-being and sustainability. This broader perspective suggests a redefinition of corporate responsibility, asserting that firms should leverage their technological advancements not just for economic gains but also to address and integrate societal concerns. By redirecting services towards enhancing societal well-being, these firms align with contemporary expectations of corporate social responsibility, reflecting an evolved role in modern society where businesses are seen as pivotal players in

promoting sustainable practices. This expansion of Marx's framework indicates a shift from viewing technology merely as a means of increasing efficiency to a tool for broader social impact, emphasizing a dual focus on profitability and sustainable development.

(3) *Mechanisms and control of professionalism*: The empirical findings illustrate the presence of professionalism mechanisms in audit firms that protect access to commercial services. This aligns with Braverman's idea of control over the labour process, but it also adds a layer of complexity by showing how mechanisms of professionalism: methods to establish and maintain professional standards and control in a workplace (Evetts, 2003), can mediate the impact of technology on workers' roles. This suggests that control mechanisms: tools and methods used to regulate and manage activities and behaviors in an organization (Edwards, 1980), in the contemporary workplace can be influenced by both technological and professional factors.

(4) *Social and soft skills*: The study highlights the potential impact of technology on social and soft skills, an area not extensively explored by Marx, Braverman, or Carchedi. This focus underscores the importance of considering these interpersonal skills in the context of technological change to offer a more holistic view of labour processes.

(5) *Organisational Adaptation*: The research reveals how audit firms adapt to technological advances while preserving their core professional values. This adaptation is in line with Carchedi's discussions of labour process and organisational change. It demonstrates that the labour process is not static and can evolve in response to technological disruptions, as well as broader societal and economic considerations. In summary, the empirical findings of this study enrich LPT by providing empirical evidence that refines and extends the ideas of Marx, Braverman, and Carchedi. They demonstrate that contemporary labour processes are

influenced by a complex interplay of technological, professional, and organisational factors, leading to a more nuanced understanding of how work is shaped in the modern era.

This research study is situated in the realist research paradigm, as corresponds with the categorisation established by Burrell and Morgan (1979). This alignment has been chosen as the study investigates the capacity of the Cloud to influence the unique context of individual junior auditors, acknowledging the various realities in which they operate. In the context of junior auditors and Cloud Computing, it is imperative to develop a methodological approach that both considers the potential for technology to deskill certain aspects of their work and recognises their inherent human capabilities. This approach is vital for understanding how junior auditors perceive and navigate the process of technological change in their profession. It is important to capture the nuanced interplay between Cloud Computing and the skills and capabilities of junior auditors. This involves examining how the adoption of Cloud technology affects their day-to-day tasks, responsibilities, and overall work experience. Furthermore, with this methodological approach, the study analyses the relationship between the experiences of junior auditors as they adapt to Cloud Computing and the imperative driving this technological change in the industry. It explores whether Cloud adoption is primarily motivated by a desire to streamline processes and reduce costs, to deskill certain auditing tasks, or to leverage the unique capabilities of junior auditors in a digitally transformed audit landscape.

1.4 Research Questions

This thesis provides a critical analysis of the examination of capitalism and LPT presented by Marx (1954). It investigates how technological advances, specifically Cloud Computing, affect the work and experiences of junior auditors undergoing training at three of the Big Four audit firms in Saudi Arabia, considering the evolving dynamics of capitalism. Drawing from the

study background and research gaps described above, the following research questions are posed:

- 1) How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed?
- 2) How has the introduction of Cloud Computing affected the physical and mental effort, manipulative and general skills, education, and experience of junior external auditors (Braverman, 1974)?
- 3) How is the Cloud affecting the autonomy of junior external auditors and their audit tasks?
- 4) How has Cloud Computing affected the professional identities of junior external auditors (i.e., their behaviours, attitudes, and roles)?

The first research question serves as a foundational inquiry, examining the evolution of audit tasks since the adoption of Cloud technology. The second research question is most closely related to the central aim of this thesis, as it asks whether the adoption of the Cloud has been associated with changes to junior external auditors' efforts, skills, education, and experience. In the literature on deskilling, some authors argue that the adoption of IT, information and communications technology (ICT), and audit automation has not led to the deskilling of the professional staff in accounting firms (Hanlon, 1994; Manson et al., 1997; Manson et al., 1998; Manson et al., 2001). In contrast, others argue that deskilling is evident in the work of professionals (Orlikowski, 1991). This research question contributes to the literature by addressing this debate.

Furthermore, the literature shows that IT and audit automation has increased management control over professional workers (Orlikowski, 1991; Manson et al., 2001). In response, the

third research question listed above concerns the nature of Cloud Computing itself, asking how it exerts autonomy and whether – and to what extent – the autonomy of junior external auditors and their audit tasks is influenced. By revealing how these autonomy concepts are applied in practice, this research question makes a further contribution to the body of knowledge. The fourth research question relates to the impact of Cloud Computing in an individual case. As mentioned in section 1.1, prior studies have found that ICT, IT, and AI have all variously reshaped the roles and expertise of accountants and the roles of auditors by influencing individuals' behaviour and attitudes (Omoteso et al., 2010; Lowe et al., 2017 and Munoko et al., 2020). The intention of this research question is thus to analyse how this occurs in relation to the Cloud in the Saudi context. The thesis contributions are presented in the following section.

1.5 Thesis Contributions

The primary objective of this thesis is to employ Marx's seminal analysis (1954) of the evolution of capitalism and LPT to clarify the influence of technological advances – namely, the introduction of the Cloud – on the work, experiences, and roles of junior auditors undergoing training at the offices of three of the Big Four firms in Saudi Arabia. This exploration makes four significant contributions. First and foremost, this study is an empirical investigation into the work of junior auditors in Saudi Arabia, thus expanding the literature beyond its predominant focus on Western audit offices. In light of the global reach of the Big Four firms of chartered accountants (Barratt et al., 2005), this study illuminates the similarities in audit organisation between Saudi Arabian offices and their Western counterparts.

Second, this research chronicles the transformation of auditors' tasks following the integration of the Cloud. The expansion of audit firms since the 1960s has led to phases of transformation

in the development of audit methodologies. The current research documents the technological progression, commencing with the increasing use of portable computers, moving onto the transitioning to the intranet, and culminating in the integration of the Cloud. The Cloud's facilitation of remote access to stored data and programs has empowered audit firms to incorporate routine control of tests, while simultaneously outsourcing other routine audit-related tasks to regions with access to affordable labour. The evidence suggests that the Cloud's capacity to facilitate comprehensive audit-evidence review and synthesise audit information with other data enables junior auditors to develop project management and data-analytics skills.

The third notable contribution of this thesis lies in its application of Marx's perspective on the development of capitalist industry to audit firms. This extends Marx's argument to show that the pursuit of profitability through increased productivity is pertinent to the trajectory of technological advancement in auditing. The sequence of advances that saw the arrival of portable computers, the intranet, the Cloud, and the internet was intended to achieve greater productivity, which aligns with Marx's viewpoint. The work of Bryer (2017; 2019) has been instrumental in showing how the manifestations of capitalist accounting categories such as costs, investments, selling prices, and profit, accompanied by a calculative mentality, can reduce the tendency for the rate of profit to decline when technology is introduced, with the technology transferring only a proportion of its value to a new product or service while displacing the labour capable of creating new value, thus precipitating a crisis. The introduction of technology to replace junior audit labour, historically contributing to audit value creation through activities such as stocktaking to ensure the availability of production materials, may exacerbate the inclination for the rate of profit in capitalist economies to decline. Audit firms might mitigate this trend by providing consultancy services to enhance the production of goods and services with utility value and eliminating processes solely. In economies professing

concern for social welfare and planetary sustainability, such a shift would likely be welcomed by many.

It is imperative to note that this suggestion does not naively deny the historical practices of large audit firms in facilitating the extraction, realisation, and allocation of surplus value, including aiding their clients in avoiding tax and their proper contributions to a collective treasury (Arnold and Cooper, 1999; Armstrong, 1987; Mitchell and Sikka, 2011; Sikka, 2009, 2016; Sikka and Willmott, 2013). Nor does it seek to challenge calls for increased regulation of audit firms to curtail such activities.

The fourth noteworthy contribution of this thesis pertains to the application of LPT, as introduced by Braverman in 1974, to a study of the integration of the Cloud. The Cloud has introduced heightened direction into certain audit tasks, in line with LPT. However, it has also opened avenues for the development of advanced knowledge of project management and data analytics. The concept of class positioning within the field of auditing, has been scrutinised by scholars employing the Carchedi (1975) concept of the global function of capital and the collective labourer, along with the Armstrong (1987) division of the global functions of capital into tasks related to the extraction, realisation, and allocation of surplus value, performed in exchange for a share of surplus value in the form of rent. In labour process theory, "share of surplus value in the form of rent" refers to the portion of surplus value (profit generated by labor) that is extracted by owners as payment for the use of resources, rather than being retained by the laborers or producers (Braverman in 1974). Although there is tension in audit firms regarding the distribution of rent between partners who control the capital of these firms and junior staff, this schism is less pronounced than the one between labour and those who hold capital in other corporate entities. This is due to the manner in which social relations pertaining to production are perpetuated in audit firms. These social relations are not merely inherited

through ownership and command over monetary and physical assets but also through the knowledge base of auditors, safeguarded by institutional factors such as Royal Charters. Prospective partners must acquire the knowledge base of an auditor to attain partner status. Consequently, in safeguarding their access to commercial services, large audit firms leverage their professional knowledge base both to exclude others and to educate their successors. It is, therefore, in their own best interest to impart knowledge concerning project management and data analytics facilitated by the Cloud to newcomers in the profession. Thus, while conventional LPT can explain certain aspects of deskilling in audit tasks, the use of professionalism mechanisms to safeguard access to commercial services show how these deskilled tasks have been interwoven with augmented knowledge in the roles of junior auditors.

The thesis shows that LPT itself sets broad parameters for firms' operations, defining income-generation goals. Firms have flexibility in these bounds to employ various strategies, as indicated by Andy Friedman (1977), who discussed responsible autonomy and direct control in labour contexts. However, these strategic choices are not confined to manufacturing and can be adapted for audit firms, which can enrich LPT by exploring diverse strategies for achieving their objectives.

The final contribution of this thesis, rooted in LPT and the work of Braverman (1974), concerns the transformation of labour power into tangible work, especially in the context of Big Four auditing firms. These firms require aspiring partners to demonstrate financial prowess and invest capital, while maintaining their professional qualifications. This dynamic challenges traditional LPT by emphasising the importance of skill and knowledge transfer. This research thus reveals the adaptability of LPT to various professional contexts and organisational structures.

Overall, this empirical research has several implications for LPT:

(1) *Complexity of technological impact:* This study demonstrates that technology's influence on labour processes is multifaceted, challenging the conventional deskilling versus upskilling dichotomy.

(2) *Significance of professionalism:* It highlights the role of professionalism in mitigating potential deskilling consequences and in upholding access to commercial services.

(3) *Relevance to Marx:* It aligns with Marx's notions of profitability through enhanced productivity, accentuating the need for audit firms to harmonise the pursuits of economic profit and societal well-being.

(4) *Consideration of soft skills:* The research emphasises the importance of social and soft skills in the context of technological change.

(5) *Organisational adaptability:* It unveils how audit firms adapt to technology while maintaining professional standards, thereby exemplifying organisational resilience.

In summary, this thesis enriches LPT by providing a pragmatic and context-sensitive examination of technology's influence over the roles of junior auditors. It offers insights into the intricate interplay between technological evolution, professionalism, and broader economic and societal factors, thereby contributing to a deeper comprehension of modern labour processes.

1.6 Thesis Overview

This thesis consists of an introduction and eight subsequent chapters, as follows:

Chapter Two: Building the Theoretical Framework and Literature Review: This chapter lays the groundwork for the study by discussing the key LPT framework in relation to technological advances and their impact on labour dynamics in capitalist economies.

Chapter Three: The Saudi Context: In this chapter, the Saudi context is analysed, laying the foundation for the study's exploration of the transformative impact of IT on the auditing profession.

Chapter Four: Methodology: In this thesis, the interpretivist research philosophy is embraced, departing from the positivist approach that is predominant in management research, and a realist perspective is adopted, acknowledging the different realities of junior auditors.

Chapter Five: Analysis of Theme (1) – Auditing Before and After the Introduction of Cloud Computing: These findings shed light on the significant changes in auditing practices since the introduction of the Cloud.

Chapter Six: Analysis of Theme (2) – Junior Auditors' Efforts, Skills, Education, and Experience: Drawing upon Braverman's worker-contribution or -sacrifice framework, the study examined how Cloud Computing has affected junior auditors' physical and mental efforts, skills, education, and experience.

Chapter Seven: Analysis of Theme (3) Junior Autonomy: The analysis explored how Cloud Computing impacted the autonomy and responsibility of junior auditors.

Chapter Eight: Analysis of Theme (4) Junior Professional Identity: The study investigated the transformation of junior auditors' professional identities, including their behaviours, attitudes, and roles.

Chapter Nine: Discussion and Conclusion: This chapter summarises the findings. It presents an interpretation of the significance of the findings, addresses the research objectives, discusses the theoretical contributions and practical implications of this work, acknowledges the limitations, suggests future research directions, and provides a conclusion to the study.

1.7 Summary

The primary focus of this thesis is the impact of Cloud Computing on junior external auditors in the context of three audit firms in Saudi Arabia. This research is distinguished by its innovative integration of LPT and a case-study approach, chosen to obtain insights for both theoretical advancement and practical application. Chapter Two of this dissertation provides the theoretical groundwork of this study, drawing from LPT and the work of Marx, Braverman, Carchedi, and Armstrong to inform the study. It also presents the findings of a literature review on auditing, autonomy, the dynamics of deskilling and upskilling, auditing professionalism, and the influence of Cloud Computing in the auditing domain.

Chapter Two: Building the Theoretical Framework and Literature Review

2.1 Introduction

This thesis explores three of the Big Four auditing firms in Saudi Arabia, with a focus on the transformative impact of Cloud Computing on the roles, responsibilities, and overall experiences of junior external auditors. This research is designed to clarify how Cloud Computing can reshape fundamental aspects of the profession, such as the autonomy, skill sets, and identities of junior external auditors. This chapter provides the theoretical framework and literature review of the research. It justifies the adoption of the LPT to examine how auditing practice has been influenced by commercialisation and the pursuit of profit inherent in the introduction of Cloud Computing. It explores the mechanisms behind these developments and elucidates the underlying reasons for them. Its primary functions are the introduction of the theoretical framework underpinning the investigation, the facilitation of a nuanced understanding of the research's broader context, and the provision of methodological guidance that will inform the data collection and interpretation of findings.

The framework of this study integrates social interpretivism from the management field (Burrell and Morgan, 1979) and accounting field (Hopper and Powell, 1985) and draws on contributions from broader social sciences, particularly the works of Marx (1967), Braverman (1974), and Carchedi (1975). Marxian LPT is strategically employed in two capacities. First, it is applied to clarify how Cloud Computing transforms the labour of junior auditors. This transformation is steered by the concerted endeavours of audit firm partners, who aspire to amplify their proportion of the surplus value appropriation facilitated by those instrumental in realising such surplus value. This impels a discernible inclination toward the erosion of skill

complexity in audit tasks. Second, the Cloud augments the scope for expansive data analytics in a milieu characterised by the pervasive influence of globalisation. This creates the potential for greater knowledge reservoirs. A confluence of the latter factors, plus a diminished cohort of junior auditors in Saudi Arabian firms and the imperative to elevate proficient auditors to partner roles, appears to counteract the prevailing trend toward wholesale junior-auditor deskilling.

This chapter begins with an overview of the sociology of professions (section 2.2), followed by an explanation of LPT, as applied in this study (section 2.3). Section 2.3 covers LPT's concepts, schools of thought, and theoretical background and the Marxist analysis of the degradation of work. It also discusses the new middle-class, its relevance in accounting and auditing contexts and its connection to labour, profit, technological progress, labour substitution.

This chapter critically and analytically explores the body of literature on the multifaceted impact of Cloud Computing on the audit profession and junior external auditors in section 2.4. The exploration comprises a series of sections, each addressing critical dimensions of this impact. The chapter as a whole explores the profound implications of Cloud Computing for the labour processes in auditing. By drawing upon the insights of LPT, this chapter unravels the intricate relationship between technological change and its impact on the skills, autonomy, and professional identities of junior external auditors. The chapter is structured into four main sections, each one aligned with one of the four research questions guiding this thesis. The chapter concludes with a summary in section 2.5.

2.2. The Sociology of Professions

This chapter begins the sociology of the profession as an acknowledgement that auditors are professionals. In the context of this study, it is essential to clarify that auditors are regarded as such due to their qualifications, specialised expertise, and adherence to a code of ethics and conduct that governs their practice (Jackson, 1970). Auditors typically hold professional certifications, qualifications, and titles such as “Certified Public Accountant” (CPA) or “Chartered Accountant” (CA), which require rigorous educational and professional training. These qualifications signify a level of expertise and competence that distinguishes an auditor from non-professionals in the field.

Furthermore, auditors operate in a framework of professional standards and guidelines, such as the International Standards on Auditing (ISAs) or Generally Accepted Auditing Standards (GAAS), which outline the principles and procedures that must guide their work. These standards emphasise objectivity, independence, integrity, and confidentiality. In this study, auditors are unequivocally considered professionals. This recognition is fundamental to understanding the significance of their work and the potential impact of technological advances, such as Cloud Computing, on their professional roles and identities.

In the field of sociology, the distinction between professions and other occupations has long been a topic of interest (Johnson, 1972). Scholars have approached the sociology of professions from various perspectives, each offering distinct insights and contrasting viewpoints (Willmott, 1986). Prior to the 1970s, two approaches were prevalent: the functionalist perspective and the interactionist perspective (Willmott, 1986). The functionalist approach views professions as serving specific social functions, such as promoting social order and providing specialised expertise (Willmott, 1986). In contrast, the interactionist perspective emphasises the symbolic

interactions and social processes that underlie the development of professional identities and roles (Willmott, 1986). However, the landscape shifted with the emergence of a more critical perspective deeply rooted in the works of Max Weber and Karl Marx (Willmott, 1986). This critical approach questions the power dynamics in professions and considers issues of class, inequality, and exploitation (Willmott, 1986). It unveils the mechanisms that sustain professional dominance and influence in societies. This approach is adopted in the current thesis.

The foundation of this viewpoint lies in the writings of Weber and Marx, which contextualise the formation and development of professional associations in the material framework of a bureaucratic–capitalist society (Willmott, 1986). In a society marked by bureaucracy and capitalism, it is essential to understand these two core concepts. “Bureaucracy” is a system of organisation known for its hierarchical structure, standardised procedures, defined roles, and emphasis on efficiency. “Capitalism” is an economic system in which private individuals and corporations own and invest in production to make a profit. The interaction between bureaucracy and capitalism can create complex dynamics that impact governance, industry, and society as a whole. In this context, professional bodies emerge as a means of achieving collective social mobility by gaining control over and security for a market niche for skilled labour (Larson, 1977). Thus, “professionalism” is not solely a reflection of the technical and social functions performed by professional employees, but rather a strategy for controlling a profession through solidarity and closure, thereby managing the supply of professional workers to the market and providing a foundation for dominant institutions, organisations, and other professions in association with it to exert control (Parry and Parry, 1977, p. 118).

To summarise, the critical perspective enriches the insights of the interactionist approach by contextualising them in the broader realms of economy and politics (Willmott, 1986). This

thesis primarily considers the domains of labour dynamics, skill degradation (deskilling), control, and modes of production – all of which constitute fundamental tenets of LPT. Serving as a conceptual scaffold, LPT clarifies the research findings and enriches understanding of the underlying research phenomena. Section 2.3, which follows, will discuss this framework in more detail.

2.3. Theoretical Approach: Labour Process Theory (LPT)

2.3.1. Origins and Concepts

The origins of the LPT can be traced back to Karl Marx's seminal work, *Capital: A Critique of Political Economy. Volume I: The Process of Capitalist Production* (1967). In this volume, Marx delineates the capitalist labour process as the mechanism by which human labour transforms raw materials into commodities that yield profit through exchange in the marketplace. Building upon Marx's foundation, Harry Braverman introduced the concept of the labour process into contemporary literature in 1974, further expanding on it in his influential work, *Labour and Monopoly Capital*. Braverman's personal experience as a factory worker heavily influenced his analysis, which draws heavily upon Marxist theory and extends Marx's critique of the capitalist labour process into the 20th century.

Braverman vividly illustrates the prevailing trend of job fragmentation in capitalist work organisations. He argues that this fragmentation has a deskilling effect due to the widespread separation of task conception from task execution. Consequently, a homogeneous workforce is created and job information is concentrated in management. Braverman observed, on the shop floor, a significant decline in the skill levels of blue-collar workers due to this process of deskilling. He also argues that white-collar employees will eventually be subject to similar effects. The current thesis examines this phenomenon in the Saudi audit sector. The following

subsection (2.3.2) introduces the various schools of thought in LPT, offering further insights and perspectives.

2.3.2. Schools of Thought

The analysis and classification of machine evolution can be approached from various perspectives – including motive power, complexity, and the utilisation of physical principles (Braverman, 1974). In his work, Braverman (1974) identifies two distinct modes of thought that underlie these approaches. The first is the “engineering approach”, which examines technology based on its internal relationships and defines machines as technical facts unto themselves (Braverman, 1974). The second is the “social approach”, which examines technology in terms of its relationship with humanity and defines machines as social artefacts shaped by human labour (Braverman, 1974). The current research adopts the social approach to examine Cloud Computing in the specific context of junior external auditors and their labour processes. By employing the social approach, this study will explore how Cloud Computing impacts the work of these auditors and the broader social implications thereof.

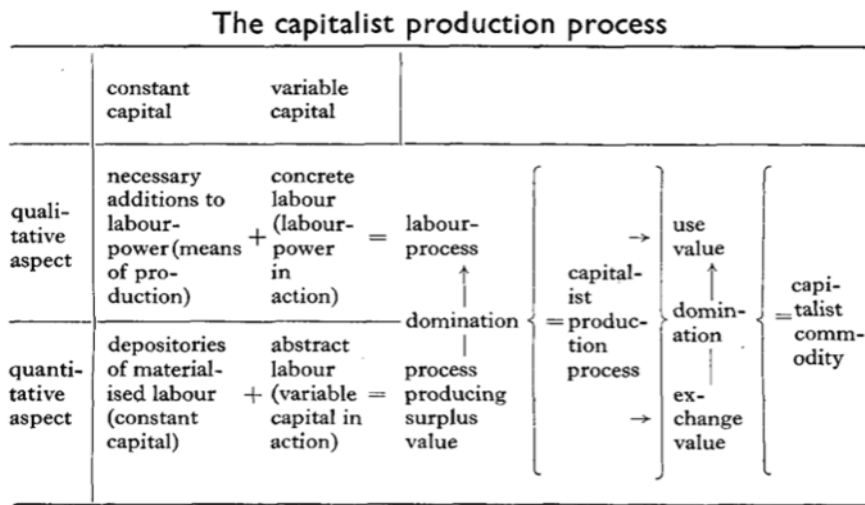
Section 2.3.3 below will introduce an outline of the research theoretical background, providing further insights into the topic at hand.

2.3.3. Outline of the Theoretical Background

This thesis applies Carchedi’s theoretical framework (1975, p.5), which consists of three key components: the labourer or producer, the means of production, and the non-labourer or non-producer who extracts the surplus value (Carchedi, 1975). These elements interact in the capitalist production process, where the means of production are owned by the non-producer and not by the producer and the producer must, therefore, sell their labour power to meet their

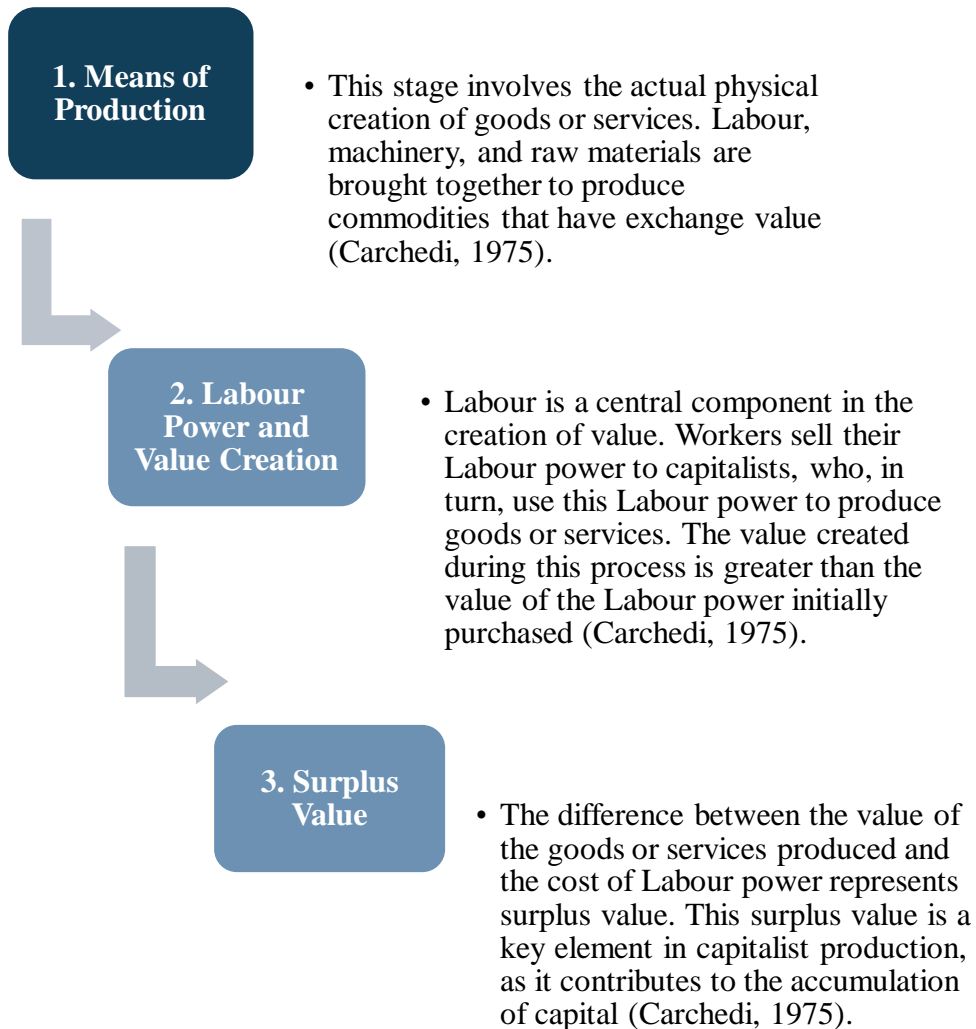
needs (Carchedi, 1975). The non-labourer, who possesses both the means of production and labour power, claims ownership of the product and appropriates the surplus labour (Carchedi, 1975). By selling the product, the capitalist realises the surplus labour as surplus value (Carchedi, 1975). Figure 1 below provides an illustration of the capitalist production process (Carchedi, 1975).

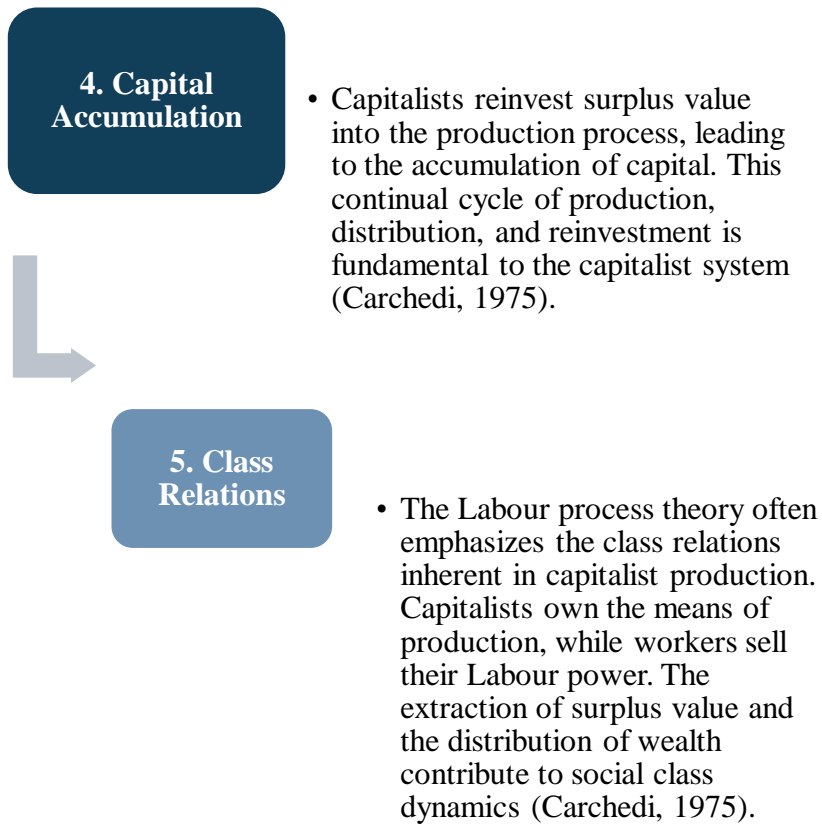
Figure 1. The Capitalist Production Process:



The capitalist production process, as postulated by Carchedi (1975), is detailed in the diagram below.

Figure 2. The Capitalist Production Process (Carchedi, 1975):





Utilising the perspective proposed by Carchedi (1975), the audit production process can be delineated as shown below in Figure 3.

Figure 3. Audit Production Process (thesis case analysis based on Carchedi, 1975):

**Audit
Production
Process**

1. Means of Production:

This stage involves the coordinated efforts of junior auditors, the utilization of Cloud Computing, and the examination of audit information. Together, they contribute to the production of audit services, which, in the context of external auditing, are intangible commodities that hold value in the exchange of professional services .

2. Labour Power and Value Creation:

In the context of junior auditors in the audit profession, Labour is a fundamental element in the generation of value. Junior auditors contribute their skills and efforts in exchange for compensation from audit firms, akin to workers selling their Labour power to capitalists in other industries. Audit firms, acting as the capitalists in this scenario, harness the Labour power of junior auditors to conduct audits and provide professional services. The resulting value, represented by accurate and reliable audit outcomes, exceeds the initial value of the Labour power procured from junior auditors.

3. Surplus Value:

In the audit Labour process involving junior auditors, the surplus value emerges as the disparity between the value of audit services rendered and the cost of the Labour power supplied by these junior professionals. This surplus value plays a pivotal role in the capitalist production dynamics in the auditing field, contributing significantly to the accumulation of capital for audit firms.

**Audit
Production
Process****4. Capital Accumulation:**

In the audit Labour process involving junior auditors, audit firms act as capitalists who reinvest the surplus value generated back into the audit production process. This cyclical pattern of production, distribution, and reinvestment is a cornerstone of the capitalist system in the context of auditing. It perpetuates the growth and accumulation of capital for audit firms.

5. Class Relations:

Within the audit Labour process, the Labour process theory underscores the class relations inherent in capitalist production. In this context, audit firms, acting as capitalists, own the means of production, while junior auditors represent the workers selling their Labour power. The extraction of surplus value and the subsequent distribution of wealth play significant roles in shaping social class dynamics in the audit profession.

The stages of the labour process and the role of junior external auditors in the context of external auditing in relation to Cloud Computing are detailed in Table 1 below.

Table 1. Stages of the Labour Process and the Role of Junior External Auditors in the Context of Cloud Computing:

Stages of the Labour Process and the Role of Junior External Auditors in the Context of Cloud Computing		
Stage	Traditional Auditing Labour Process	Junior Auditors Using Cloud Computing
1. Planning and pre-engagement	Involves manual and physical planning and coordination of audit activities, identification of audit risks, and initial assessment of the client's business environment.	Juniors plan and coordinate audit activities, identify audit risks, and make an initial assessment of the client's business environment (via the Cloud).
2. Risk assessment	Junior auditors participate manually and physically in risk identification and assessment, helping to clarify the potential for material misstatements in financial statements.	Junior auditors examine the reliability of controls, working in a Cloud environment with the support of analytical IT tools.
3. Testing controls	Junior auditors are actively involved (manually and physically) in testing internal controls to ensure they are effective for preventing or detecting errors and fraud.	Controls are tested with the support of IT analytical tools, using Cloud Computing, with the junior auditor taking the role of a mediator.

4. Substantive testing	Involves active and detailed testing of account balances and transactions to obtain audit evidence supporting the financial statements.	Involves substantive testing of data stored in the cloud, ensuring the accuracy and completeness of financial information processed through Cloud-based systems.
5. Documentation and reporting	Junior auditors contribute to the documentation of audit procedures and findings. They may assist in preparing audit reports.	Documentation of audit procedures and the findings of prior clients are saved in the Cloud. The junior's contribution to the audit process is thus weakened. The Cloud has a management tool that simulates the current audit documentation, Build format and steps for the audit engagement process. And fills it based on prior knowledge of prior audits done by prior auditors making the process easier.
6. Continuous learning and adaptation	Junior auditors engage in ongoing professional development and adapt to changes in auditing standards.	Juniors remain up-to-date with advances in IT, Cloud Computing, cybersecurity, data analytics, and data privacy and adapt their audit approaches accordingly.

The incorporation of Cloud Computing into external auditing requires auditors – including juniors – to possess specialised knowledge and skills related to IT and data security. It also

affects their autonomy and professional identities, creating a divergence from those in the traditional audit labour process. Their new role thus extends beyond traditional financial auditing to encompass complexities associated with modern technological environments.

Section 2.3.4, which follows, presents a critical analysis of the accounting research and its implications for capitalist production.

2.3.4. A Critical Analysis of Accounting Research and its Implications for Capitalist Production

Writing in the field of accounting research, Peter Armstrong (2017) conducted a comprehensive examination of the labour process and defines the “labour process” as the work from which surplus value is extracted to enhance capital. In Marx’s terminology, labour is transformed into capital, with workers now regarded as “employees”. Employees have limited control over production processes, as the latter are designed and overseen by employers and their representatives (Hopper and Armstrong, 1991). From the perspective of LPT, the goal of scientific management is not merely the enhancement of technical efficiency, but rather the deskilling and fragmentation of labour through the integration of production engineering and control into management practices (Hopper and Armstrong, 1991). According to Marx and Braverman (1974), this subordination of labour to capital represents a fundamental characteristic of the capitalist mode of production (Hopper and Armstrong, 1991).

In the same way that Armstrong defines the labour process as the mechanism for enhancing capital through surplus value, Cloud technology may enhance audit efficiency and thus contribute to capital enhancement. Just as labour is transformed into capital in formal terms, junior auditors are transformed into technology-empowered employees. However, control over auditing – much like that over production processes – is structured by the technology. The

principles of scientific management, emphasising specialisation and fragmentation, are mirrored in Cloud technology's role specialisation in auditing. This integration aligns with Armstrong's labour-to-capital transformation and the views of Hopper and Armstrong (1991) regarding production control and labour dynamics.

Section 2.3.5, which follows, explores the interconnectedness of labour, profit, and the tendency of declining rates.

2.3.5. The Capitalist Dilemma: Labour, Profit, and the Tendency of Declining Rates

In *Accounting for Value in Marx's Capital: The Invisible Hand*, Bryer (2017) delves into the role of LPT in industry development and control. Analysing Marx's analysis of historical shifts in social relations in the labour process, Bryer highlights the transition of European workers from independence to subordination under capitalism, marking the emergence of the "formal subordination" of labour to capital. This shift entailed a shift in accountability from physical coercion to a financial relationship centred on the buying and selling of labour power. Despite the facade of freedom, workers were thus compelled by their dependence on the labour market to adapt and self-regulate. Just as workers transitioned from independence to subordination under capitalism, junior auditors are moving away from manual tasks and towards the use of Cloud technology. This mirrors the historical shift and aligns with the concept of "formal subordination" of labour to capital. Cloud technology has become integral to their tasks, prompting adaptation and self-regulation similar to workers' responses to labour market dependence.

Marx's accounting theory explains that capitalists exercise real subordination by holding managers and workers accountable for capital circulation. A parallel can be drawn to management control theory's differentiation between "action" and "results" control. Marx

emphasises the importance of holding individuals responsible for the outcomes of capital circulation, with profit maximisation a significant objective. This emphasis on profit maximisation aligns with the benefits that Cloud Computing brings to auditing. However, there remains a dearth of in-depth studies exploring audit practices through the lens of Marx's theory, leaving a theoretical gap. This introduction of the Cloud reflects the evolving nature of auditing and auditing's alignment with both technological progress and theoretical understanding. Thus, this thesis takes an original approach to address this gap and examines the interplay of technological progress, labour substitution, and capitalist crises (section 3.4.7).

Section 2.3.6, which follows, will discuss the pursuit of profit in the capitalist system.

2.3.6. The Pursuit of Profit

Previous sections have shed light on the critical interplay between labour, surplus value, management, and rent in the capitalist system, as analysed through Marx's lens. Within this system, the primary objective of production is to maximise profits by creating surplus value through labour (Marx, 1967). The audit profession then verifies and confirms the proportion of surplus value that constitutes profit or rent, highlighting the importance of capitalist accounting control (Bryer, 2017). This control system holds management accountable to the market for capital circulation, while employees are accountable to management for their financial performance (Bryer, 2017). The multinational nature of the Big Four audit firms – namely, Deloitte, EY, KPMG, and PwC – gives rise to their primary focus on generating financial benefits for their partners. This pursuit of narrow commercial interests has led to persistent criticisms, as documented in prior research (Arnold and Cooper, 1999; Clikeman, 2013; Sikka, 2009; Sikka et al., 2007). Consequently, auditors' roles are shaped by the convergence of their aspiration for a professional image and their increasing emphasis on commercial objectives, a

trend observable in recent decades (e.g., Arnold and Cooper, 1999; Gardner and Bryson, 2021; Hanlon, 1994). The increasing commercialisation of these audit firms justifies the application of theories of capitalist development to explore their operations.

An exploration of the rate of profit reveals that capitalists prioritise the excess value of the product over the value of the capital consumed (Marx, 1894). For this reason, capitalists exploit labour by exchanging advanced variable capital for living labour (Marx, 1894). However, the exploitation of labour requires the capitalist's investment in conditions for labour, such as machinery and raw materials (Marx, 1894). It is noteworthy that the capitalist's focus lies in the rate of profit rather than the rate of surplus value, blurring the boundaries between the variable and constant portions of capital (Marx, 1894). The law of the tendency of the rate of profit to fall further illustrates the dynamic: as constant capital (e.g., machinery) increases relative to variable capital (e.g., labour), the general profit rate tends to decline (Marx, 1894). This decline is driven by the increasing productivity of labour and the growth of constant capital, which results in a decrease in the relative proportion of variable capital and an increase in the organic composition of total capital (Marx, 1894). Applying this analysis to the case study of the audit profession, the adoption of new technologies such as Cloud Computing (constant capital) raises concerns about the potential displacement of junior auditors (variable capital) and its impact on the rate of profit. The shift towards more constant capital relative to variable capital diminishes the value of its elements due to increased labour productivity, leading to a decline in the profit rate (Marx, 1894). This trend highlights the possibility of capitalist crises arising from the pursuit of profit at the expense of labour, as surplus value is extracted, depriving junior auditors of the value of their labour.

Marx's theory further suggests that crises emerge from a combination of the declining production of value and surplus value, along with the increased productivity resulting from

technological advances (Carchedi, 2011). Innovations that substitute labour with machines contribute to a higher ratio of machines to workers and a lower average profit rate (Carchedi, 2011). Although productivity increases and more use-value is produced, the underlying cause of economic crises lies in the diminishing creation of value (Carchedi, 2011). The contradiction arises from the fact that heightened productivity reduces the amount of labour incorporated into the product, making segments of the labouring population redundant (Carchedi, 2011). This prompts an inquiry into whether the introduction of Cloud technology has led to a reduction in the number of junior auditors. The current research will address this very question. The following section (2.3.7) offers a detailed exploration of LPT in the context of auditing, shedding more light on its implications and applications in this field.

2.3.7. Impact of Audit Firms and Technological Innovations: A Marxian Perspective

Audit firms ensure financial integrity, regulatory compliance, and risk management, providing stakeholders with reliable information and enhancing organizational trust and performance. They employ a combination of technology and labour to accomplish these objectives. Over time, audit firms have transformed into large corporations with organisational structures tailored to facilitate their activities in dynamic contexts. The underlying principle of this system is “production for profit”, which entails human and environmental exploitation, rather than production for the fulfilment of societal needs in harmony with nature (Carchedi, 2010). Just as audit firms work to market principles to organise the financial sector, Cloud technology shifts junior auditors’ roles by centralising data and streamlining tasks. The shift towards “production for profit” in audit firms parallels the efficiency-driven impact of Cloud Computing on junior auditors, aligning their work with profit-oriented objectives.

According to Carchedi (2010), Marx's theory suggests that innovations in production increase labour productivity, measured as the output per unit of capital invested. However, these innovations often replace labour with means of production, resulting in a higher proportion of machines to workers and a decline in the rate of profit. This is manifested in increased output or use-value, alongside the decline in overall profit rates. These tendencies intermittently intersect with phases of rising profitability, creating a contradictory outcome of technological advances, and contributing to economic crises (Carchedi, 2010). Just as technological innovations enhance productivity in production, Cloud technology may elevate junior auditors' efficiency. However, exemplifying this concept of labour-replacing innovations, Cloud technology may reduce manual tasks and thus increase the technology-to-human labour ratio. This parallels the increased machines-to-workers ratio. Similarly, while Cloud technology boosts efficiency, changes in labour dynamics can lead to challenges resembling economic crises. The impact of commercial audit firms on junior auditors and their implications are examined in this thesis, revealing overlooked features of the modern economy. Marx's work serves as a foundational framework on which to develop a comprehensive theory for understanding the present and future state of the contemporary world (Carchedi, 2010).

Section 2.3.8, which follows, examines the evolving modes of capitalism and the emergence of the new middle-class, as viewed in the framework of LPT.

2.3.8. Capitalism's Changing Towards Technology

The transition from feudalism to capitalism entailed profound changes in the labour process and the underlying modes of production. According to Carchedi (1975), although certain elements of the labour process remained constant, substantial transformations occurred in the conditions and modes of production. Capitalism introduced a more intricate labour process,

with a shift from individual labourers producing complete commodities to a unified collective labourer. This transition arose from the technical division of labour, with various agents performing fractional operations in contribution to the overall labour process (Carchedi, 1975). The adoption of Cloud Computing technology in the domain of junior external auditors mirrors this historical transition from feudalism to capitalism as outlined above. This shift entails substantial changes in the labour process and underlying modes of production. In the transition to capitalism, the technical division of labour led to a transition from individual labourers producing complete commodities to a more unified collective labourer approach. Similarly, Cloud technology facilitates a collaborative approach to auditing tasks, where specialised auditors work together in a shared framework.

Under private capitalism, the functions previously carried out by a single capitalist are divided into multiple fractional operations collectively performed by the global capitalist (Carchedi, 1975). The capitalist assumes the role of capital through control and surveillance, while also functioning as the coordinator of the labour process, fostering coordination and unity as the collective worker (Carchedi, 1975). In contrast, individual labourers operate in the context of the formal subordination of labour to capital, independently executing the entire labour process and generating use-value to produce surplus value (Carchedi, 1975). The integration of Cloud Computing technology into the work of junior external auditors can be compared with private capitalism's division of functions. Under capitalism, a single capitalist's tasks are fragmented among global capitalists, who then collectively contribute. Similarly, Cloud Computing transforms the roles of junior auditors. Instead of working individually, they each collaborate on specific tasks in a unified audit process.

Section 2.3.9, which follows, will examine the economic identification and characteristics of the proletariat and bourgeoisie under capitalism.

2.3.9. Proletariat and Bourgeoisie Under Capitalism: Economic Identification and Characteristics

There are stark contrasts between the respective economic identifications and characteristics of the proletariat and the bourgeoisie under capitalism. Carchedi (1975) explains that the proletariat, as a class, endures economic exploitation or oppression, lacks ownership of the means of production, and engages in individual labour without the application of the technical division of labour. Their income is contingent upon the value of their labour power, which can be received either as a proportion of the value that they directly produce or as payment derived from the value created elsewhere through the expropriation of surplus labour (Carchedi, 1975). The integration of Cloud Computing technology into junior external auditors' work creates an economic distinction similar to that between the proletariat and the bourgeoisie: specifically, similar to the proletariat's lacking ownership of the means of production and their engagement in individual labour, junior auditors lack direct control over the Cloud infrastructure. However, as with the proletariat's value extraction, the technology's efficiency and collaboration can lead to surplus insights and outcomes for the audit process, akin to surplus value.

In contrast, the bourgeoisie, as Carchedi (1975) elucidates, economically exploits or oppresses others, has ownership of the means of production, assumes the role of non-labourers performing the function of capital, and derives their income from surplus value. The magnitude of their income is constrained by the extent of the surplus value generated, and it can be generated in their own enterprise or acquired through their involvement in the distribution of surplus value produced elsewhere (Carchedi, 1975). In section 2.3.10, which follows, there is a scholarly analysis of the dual roles played by the new middle-class in the confines of monopoly capitalism.

2.3.10. The New Middle-Class: Dual Roles in Monopoly Capitalism

With the rise of monopoly capitalism, a new middle-class has emerged, characterised by the dual functions it performs in the capitalist system (Carchedi, 1975). As joint-stock companies and the separation of legal and economic ownership of the means of production become prominent, the function of capital has extended beyond the capitalist class to those who do not legally or economically own the means of production (Carchedi, 1975). This new middle-class performs the global function of capital while also undertaking the function of the collective worker (Carchedi, 1975). They exist as both exploiters or oppressors and exploited or oppressed, as they neither exclusively own the means of production nor solely function as labourers (Carchedi, 1975). The introduction of Cloud Computing technology into junior external auditors' tasks can be understood through the analogy presented in the argument. Just as the rise of a middle-class in monopoly capitalism leads to the creation of dual roles, the arrival of Cloud technology transforms the functions of junior auditors. The junior auditor now operates as both global external auditor and collaborative worker, reflecting the multifaceted roles emphasised in the argument.

Crucially, the new middle-class exhibits the ability to perform both the function of the collective worker and the global function of capital to varying degrees and in different combinations (Carchedi, 1975). This existence and dual functions of this class are a product of the dynamics in capitalism, particularly the separation of legal and economic ownership and the expansion of the global function of capital (Carchedi, 1975). Similarly, Cloud technology transforms junior auditors into both collective workers and global data analysts. This adaptability mirrors the dynamics highlighted in the argument, where the middle-class performs various combinations of roles based on capitalist dynamics.

In the framework of Marxist theory, the sole party capable of generating surplus value beyond its own sustenance is labour. Technological advances can only reallocate a proportion of their inherent value into the resultant goods and services. The profit rate is contingent upon the proportion of variable capital (i.e., labour) relative to the value of constant capital (such as technology). The augmentation of constant capital engenders a proclivity for the profit rate to decline, thereby diminishing incentives for further investment and inciting crises. Concurrently, the value of technology wanes, often culminating in the emergence of new technological iterations necessitating fresh labour inputs. As a result, capitalist economies are punctuated by intermittent crises and episodes of technological transformation, the most recent being the adoption of the Cloud. Understanding these dynamics is crucial for comprehending the complexities of the capitalist mode of production and its impact on different social classes.

Section 2.3.11, which follows, examines the degradation of work in the 21st century through the lens of LPT.

2.3.11. The Degradation of Work in the 21st Century

In modern production, complex processes are simplified into simple tasks, thereby reducing the need for specialised knowledge and skills (Braverman et al., 1998). As technology advances, workers become less knowledgeable about the processes in which they are involved and machinery comes to dominate (Braverman et al., 1998). The thesis explores whether Cloud Computing technology has led to the simplification and potential elimination of audit tasks performed by junior auditors, along with the broader implications of this for auditors' work experiences.

In modern capitalist economies, independent audits conducted by accounting firms play a crucial role in verifying the accuracy of financial statements (Braverman et al., 1998).

However, this process often results in administrative duplication and a paper-based system that consumes labour (Braverman et al., 1998). This study recognises the role of auditors in maintaining and transferring value and surplus value in a society based on the value-form (Braverman et al., 1998).

The separation of conception and execution is a characteristic of capitalist production, where mental labour is reduced to repetitive functions and clerical categories focus solely on manual labour (Braverman et al., 1998). This thesis critically examines the issue of deskilling in the context of junior auditors and the adoption of Cloud Computing, exploring the progressive elimination of thought and the separation of conception and execution in their audit tasks (Braverman et al., 1998). It examines the degradation of work in the 21st century, focusing on the dynamic roles of the new middle-class in capitalist production. It explores the implications of technology adoption for labour requirements and the changing landscape of work in the capitalist system.

In the following section (2.3.12), the contribution of LPT to this thesis is delineated.

2.3.12. Contributions of Labour Process Theory (LPT) to this Thesis

Technology and digitalisation have increasingly become the focus of labour research (Bogedan and Hoffmann, 2015, cited in Leitner-Hanetseder et al., 2021), with scholars exploring how they impact tasks and work (Brynjolfsson and McAfee, 2014, cited in Leitner-Hanetseder et al., 2021). This thesis draws on Marx's theory recognising capitalism's self-destructive nature and its influence on labour struggles (Carchedi, 2011). Marx developed his theory of value by studying the accounting practices of his own time, according to Chiapello (2007, p. 292, cited in Bryer, 2017). This theory is applied here to explain the principles and practices of accountants and to provide insights into capitalism as a system of social control (Bryer, 2017).

In this thesis, Marx's theory is utilised to analyse auditors' practices and show how capitalism functions as a social-control system comprising market mechanisms and audit controls.

Marx's theory can explain the various forms observed in capitalist accounting (Bryer, 2017). To resolve the debates surrounding his theory of value, Marx developed a theory based on the categories he identified in accounting and political economy. (Bryer, 2017). The phenomena identified by Marx in accounting practice are similar to those discussed in this thesis in the context of audit practice (Bryer, 2017). The contribution of LPT extends beyond auditing and audit practice to include Cloud Computing and IT research.

2.4. Literature Review

2.4.1. Auditing Before and Since the Introduction of the Cloud

This section explores how the adoption of Cloud Computing is reshaping auditing practices. It examines the shift from traditional auditing methods to technology-driven audits, the impact of emerging technologies on junior-auditor roles, and the broader transformation brought about by Cloud Computing. LPT is applied to gain insights into how these technological changes are influencing the labour process in auditing, potentially leading to shifts in job roles, skill requirements, and work processes (Marx, 1967; Braverman, 1974).

2.4.1.1. The Auditing Profession's Role and Origins

The primary function of the accounting profession is the provisioning of information, while the audit profession assumes responsibility for ensuring the adherence of this information to established accounting principles and standards (Tarek et al., 2017). This professional domain can trace its inception to the United Kingdom, where the major advances were being made until the early 20th century (Omoteso, 2013). In the mid-20th century, the mantle of leadership

transitioned to the United States. This continued dominance of the United States in this field can be attributed to the country's considerable concentration of significant enterprises – including multinational corporations that maintain their headquarters there (Omoteso, 2013). This historical transition has not only shaped the global auditing landscape but also altered the labour processes and roles of auditors. An analysis of this transition in Saudi Arabia, as viewed through the critical lens of LPT, provides insights into how economic and social forces interact to produce the evolution of the auditing profession.

In section 2.4.1.2, which follows, the definitions of internal and external audits are provided.

2.4.1.2. Definitions of Internal and External Audits

An understanding of the definitions of and distinctions between internal and external audits is integral to understanding the labour processes, roles, and power dynamics in the auditing profession. According to Cosserat (2009), the term “audit” describes the process of meticulously examining the financial records of a given business entity to ensure the alignment of its financial declarations with established accounting standards and principles. The domain is bifurcated into internal and external audits (Cosserat, 2009; Omoteso, 2013). Internal audits are executed by a dedicated department of the organisation, with the resulting audit report remaining internal and company personnel assuming responsibility for scrutinising financial and non-financial reports. The scope of the audit activities is contingent upon the parameters delineated in the annual audit framework (Hooda et al., 2018). Conversely, an external auditor operates as an independent entity mandated with the formal annual assessment of financial statements (Hooda et al., 2018). An analysis of the external-audit dynamics, as seen through the lens of LPT, sheds light on how economic, organisational, and regulatory factors shape auditors' work and responsibilities in these audit categories.

The roles and responsibilities entrusted to junior auditors are discussed in section 2.4.1.3.

2.4.1.3. The Significance of Junior External Auditors

External auditors are primarily responsible for the scrutiny of financial statements, the accounting information system, and the controls that influence these statements (Engle, 1999). In this professional domain, a hierarchical structure prevails. This hierarchy, as delineated by EY (2018), encompasses the levels of junior auditors, senior auditors, managers, senior managers, partners, and directors. The initial rung of this ladder is that of the junior staff auditor, who holds a comprehensive three-year training contract. This transformative phase takes them from the state of “novice”, characterised by limited auditing acumen, to that of a “qualified accountant”. This qualification is earned by amassing two years of experiential learning, which renders them eligible for a practising certificate. This certification equips the auditor to engage autonomously in the provision of audit services (Grey, 1994; Lee, 2002).

In the following section (2.4.1.4), a scholarly examination of the transition to technology-based audits is presented.

2.4.1.4. Transition to Technology-Based Audits

There has been a substantial increase in the integration of IT into the audit process in recent years (Manson et al., 1998; Manson et al., 2001), inducing a transformation in the modus operandi of external audits (Vasarhelyi and Romero, 2014). Notably, there has been a transition from the conventional audit paradigm to a technologically grounded audit framework (Tarek et al., 2017). This divergence between the traditional and computer-based approaches is evident in the recording of transactions, with paper having been supplanted by digital alternatives, including disk-based recording (Hanlon, 1994). This paradigm shift affects the planning,

control, and documentation procedures (Manson et al., 2001). This evolution reflects changes in the auditors' clients' own use of technology (Bierstaker et al., 2001; Tarek et al., 2017). There is evidence to suggest that integration of IT into the audit process has led to a fundamental shift in the labour processes, roles, and power dynamics in the profession (Marx, 1967; Braverman, 1974). An analysis of this transformation through the critical lens of LPT can clarify how technological advances such as the Cloud are influencing the roles and experiences of junior auditors and the broader audit framework.

In section 2.4.1.5., the scholarly discussion surrounding emerging technologies and their impact on the tasks traditionally assigned to junior auditors is explained.

2.4.1.5. Emerging Technologies and Junior Auditor Tasks

Manson et al. (1998) discern two distinct paradigms in the realm of audit methodologies, denoted as the “organic” and the “mechanistic” approaches. The organic perspective posits that audits are predominantly reliant upon an auditor’s discernment, grounded in their comprehension of the specific client’s circumstances. This evaluative process is typically spearheaded by senior managers. Conversely, the mechanistic stance perceives audits as primarily constituting an assemblage of procedures that are applicable across diverse audit engagements (Manson et al., 1998). The execution of this approach usually falls in the purview of junior auditors. Notably, Manson et al. (1998) posit that the latter mechanistic orientation lends itself more readily to computerisation. LPT clarifies how this division of labour is influenced by power dynamics and control mechanisms in the auditing profession.

The ability to computerise functions is not solely due to scale, but rather the operational milieu and the nature of the task at hand (Wilson and Sangster, 1992). Routine functions have a higher propensity for automation. The term “routine”, as defined by the Oxford English Dictionary,

connotes “A pattern of behaviour that is observable and is repeated on a regular basis”. Thus, routine tasks are those characterised by their recurrent nature. Junior auditors are typically entrusted with the formal completion of relatively uncomplicated and routine tasks, which aligns with their status as individuals yet to attain full qualification. LPT can be used to analyse how the automation of routine functions affects the required skills and job roles of junior auditors.

In the first year of their training, trainees in prominent firms typically assume the role of assistants, contributing to examinations (Lee, 2002). Subsequently, they advance to the audit of more tangible segments of the balance sheet, including cash, banking, salaries, and fixed assets. These sections, characterised by the availability of concrete or third-party evidence, mitigate the necessity for judgements of substantial magnitude (Lee, 2002). As their training progresses into the second year, trainees undertake responsibility for auditing sections of the profit and loss account that include elements of heightened risk. For instance, stock that might be prone to obsolescence and debtors from whom non-payment is conceivable fall under this purview (Lee, 2002). Thus, junior auditors undergo a structured training progression, starting as assistants and gradually taking on more responsibilities, and LPT clarifies the changes in the labour process and level of autonomy granted to junior auditors as they gain experience.

During this trajectory, trainees engage in activities to verify concordance between the company’s cash balance records and corresponding bank records (KPMG, b, undated). As the trainee moves into their final year, the scope of their responsibilities can increase, with some entrusted with the task of devising audit plans subject to managerial review. This involves a multifaceted process, integrating insights from prior years’ files, external intelligence, and on-site visits to assess areas of inherent risk and validate the implementation of earlier control enhancement recommendations (Lee, 2002). The tasks performed by junior auditors, as

detailed by KPMG, encompass a wide range of activities, from verifying asset valuations to assessing statutory accounts. LPT can be applied to examine how these specific tasks evolve over time and how they contribute to the skill development and expertise of junior auditors.

To provide further granularity, KPMG notes several tasks executed by trainees during their training progression. These tasks include scrutinising the existence of trade receivables through customer communication, verifying the ownership and valuation accuracy of fixed assets (e.g., buildings, machinery, computers, cars), ensuring the comprehensiveness of the company's supplier roster, participating in the assessment of statutory accounts, and participating in stock-takes to observe stock recording methods and conduct test-counting (KPMG, b, undated). This sequential evolution in tasks and responsibilities reflects a structured learning curve. LPT can provide insights into how this learning curve is shaped by the hierarchical structure, technological advances, and broader labour processes in the profession.

Section 2.4.2, which follows, offers an overview of Cloud Computing.

2.4.2. Cloud Computing

With previous section having examined the domain of auditing and its evolution in response to IT transformation, it is important to now shift the focus towards a detailed exploration of Cloud Computing. This will entail unfolding its origins (2.4.2.1), providing precise definitions (2.4.2.2), critically evaluating the transformative impact it has had on auditing practices (2.4.2.3), and describing its portrayal and significance in the accounting literature (2.4.2.4). This will enhance understanding of the profound implications of Cloud Computing's utilisation in the auditing profession.

2.4.2.1. The Origins

The advent of “Cloud Computing” has triggered a transformation of the way in which organisations engage with their stakeholders – namely, their customers, vendors, and employees (Garg and Bawa, 2017). This paradigm shift began in the commercial arena circa 2000, with the inception of Cloud’s commercialisation (Senyo et al., 2018). This unfolded against the backdrop of the “fourth industrial revolution”, disrupting the landscape of the accounting industry (Rudansky-Kloppers and Van den Bergh, 2019). This revolution has been characterised by rapid strides in the scientific and technological domains, including the emergence of the Internet of Things (IoT). This amalgamation of transformative technologies forms the cornerstone of cyber-physical systems, bolstered by smart machines designed to optimise production chains (Liao et al., 2018). The emergence of Cloud Computing and the broader technological shifts associated with the fourth industrial revolution have had far-reaching implications for labour processes, roles, and power dynamics in the audit industry. An analysis of these transformations through the critical lens of LPT provides insights into the evolving nature of work in the audit profession in the digital age.

In the following section (2.4.6.2), a definition of “Cloud Computing” is presented.

2.4.2.2. Definition of “Cloud Computing”

The National Institute of Standards and Technology (NIST), an agency under the aegis of the US Department of Commerce, defines “Cloud Computing” as follows:

A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (NIST SP 800-145, 2011)

The International Standards Organization (ISO; 2020) proposes the following definition:

A paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand.

Section 2.4.2.3, which follows, explores the transformation of auditing brought about by Cloud Computing.

2.4.2.3. The Cloud's Transformation of Auditing

Cloud Computing is a transformative technology that has fundamentally reshaped the methodology of auditing (Deloitte). In a Cloud-based environment, the process of auditing is centralised, facilitating widespread user access across locations (Kalia et al., 2019). This transition is particularly evident in the context of multinational enterprises, as all transactions – regardless of the location in which they occur – are registered centrally in a designated Cloud environment and subsequently synchronised across geographically specific systems (Kalia et al., 2019). This centralisation has enabled a shift in the division of labour in auditing. Auditors are now required to engage with data hosted in the Cloud, necessitating new skills and approaches to perform their tasks.

Auditors must now confront the inherent risks of “centralised automated controls” (Kalia et al., 2019). This has influenced the labour processes of auditors, as they adapt to the automated controls and reconfigure their roles accordingly. The Cloud, in conjunction with other emerging technologies, facilitates auditing processes, hosting data in a space with nearly limitless capacity (Hoggett et al., 2019). This integration empowers auditors to undertake

comprehensive reviews of their stored documents and invoices, engaging a fleet of 100 software bots with a single command (Hoggett et al., 2019).

As auditing embraces heightened digitalisation, auditors are being compelled to amass increasing volumes of “digital data” for the purpose of “advanced analytics” (Kalia et al., 2019). This is then necessitating the acquisition of new skills in data analytics and the ability to harness the Cloud’s capabilities for data extraction. The Cloud makes this data accessible around the clock, permitting auditors around the world to seamlessly collaborate (Kalia et al., 2019). This globalisation of audit processes has altered the traditional boundaries of work. Thus, the Cloud facilitates data extraction which is challenging to locate in traditional ERP and other conventional systems, offering the valuable assistance previously provided by a junior auditor during their initial year in the profession (Lee, 2002). Thus, owing to these enhancements of data accessibility and automation, the role of junior auditors may be forced to evolve.

Ma et al. (2021) conducted an exploratory investigation of the determinants and impact of Cloud-based client accounting adoption by small and medium-sized accounting practices (SMPs). The qualitative inquiry centred on eight SMPs in New Zealand and included 14 semi-structured interviews with primary IT decision-makers. When the Carney (1990) “ladder of analytical abstraction” is applied, the findings reflect a post-adoption shift from traditional accounting services to advisory services, as explained by transaction cost economics and agency theory. This transformation underscores the influence of Cloud adoption on firms’ functions. It is noteworthy that large audit firms were not included in this study – a significant gap that this thesis endeavours to address. Furthermore, the study had an organisational-level focus, neglecting individual-level factors. This aligns with the observation by Senyo et al. (2018) of a broader research gap in this domain.

Peng and Gala (2014) investigated the potential benefits of and barriers to the adoption of Cloud enterprise resource planning (ERP). They conducted in-depth interviews with ERP and Cloud consultants, gathering insights into the economic and technical benefits. However, the realisation of cloud ERP's potential also comes with challenges, stemming from organisational factors, legal intricacies, and the complexities of the Cloud environment. The adoption and utilisation of ERPs can reshape the organisational culture, structure, and processes, thereby influencing the power dynamics, autonomy, and responsibilities in the organisation (Pan, Baptista Nunes & Chao Peng, 2011, as cited in Peng & Gala, 2014). This reshaping has repercussions for auditors in these organisations, impacting their labour processes, roles, and autonomy (Marx, 1967; Braverman, 1974). The Peng and Gala study's constraints stem from its limited interview sample size and its failure to consider the variation in the Cloud's impact across organisational sectors, such as audit firms.

There is a gap in the literature regarding Cloud adoption in large audit firms which this thesis aims to address. This omission concerns an important aspect of labour dynamics in the auditing profession. The adoption of Cloud technologies can have unique implications for large audit firms, including changes in roles, responsibilities, and power dynamics for junior auditors.

The following section (2.4.2.4) discusses the portrayal of Cloud Computing in the accounting literature.

2.4.2.4. The Accounting Literature

Cloud Computing has gained immense popularity in the business landscape, academic research, and industrial sectors (Chou, 2015; Bayramusta and Nasir, 2016; Zafar et al., 2017; Kemp, 2018; Kumar and Goyal, 2019; Banijamali et al., 2020). However, Alles (2018) examined the literature pertaining to Cloud Computing in the domain of accounting

information systems and identified only a small number of contributions. Specifically, there were just seven conference papers and 12 published papers in the 2018 *Journal of Information Systems*, a modest count considering the profound impact and widespread integration of Cloud technology. Notably, many of the previous studies adopt a general perspective and a technical orientation (Senyo et al., 2018). This points to a gap in understanding of how Cloud technology impacts the labour processes of auditors. However, LPT permits critical questioning of why this transformative technology has not received more attention in the academic audit community.

Previous research in this domain has centred on the adoption of Cloud Computing and the multitude of factors shaping this phenomenon (Bayramusta and Nasir, 2016; Senyo et al., 2018). However, these investigations have primarily focused on organisational contexts, giving less attention to the exploration of individual-level and country-level adoption dynamics (Senyo et al., 2018). LPT encourages an exploration of the implications of Cloud adoption at the individual level, particularly among junior external auditors. How does Cloud adoption impact their daily tasks, roles, and autonomy? Addressing this gap, the current thesis concentrates on the individual level, namely junior external auditors in Saudi Arabia. By focusing on this underrepresented domain of Cloud adoption, the thesis endeavours to contribute to understanding of the Cloud's influence at the individual level and in a specific national context.

A second gap in the literature concerns the debate around whether IT is responsible for deskilling or upskilling. This is discussed further in the following section (2.4.3).

2.4.3. Deskilling or Upskilling

2.4.3.1. The Labour Process Theory (LPT) Perspective

'Deskilling' is the process of disentangling the conceptualisation and execution of tasks, with the objective of divesting workers and the production process of a substantial amount of knowledge (Braverman, 1974: 82). LPT shows that vulnerability to deskilling is exacerbated when workers lack comprehensive information and thus become interchangeable (Hanlon, 1994). This phenomenon of deskilling furnishes capitalists with control over the workforce, achieved through meticulous task fragmentation and the assimilation of control mechanisms facilitated by technology. These manoeuvres are meticulously orchestrated to ensure that the labour force can be effortlessly replaced with a more pliable and submissive counterpart (Hanlon, 1994). Notably, the realm of deskilling is not confined solely to the manufacturing sector, as it pervades the service industry as well (Braverman, 1974: 83).

Omidi et al., (2023) systematically reviews 103 empirical studies from 2000 to 2021 to examine the integration of Labor Process Theory (LPT) in critical Human Resource Management (HRM). LPT, rooted in Marxist tradition, addresses the conflict between capital and labor, highlighting how workplace transformations reflect broader structural contexts. The review identifies four key themes: institutional forces, control regimes, solidarity and resistance, and the deskilling-upskilling paradox. The findings suggest that while some studies demonstrate worker autonomy and upskilling, others reveal increased routinisation and control. The paper advocates for LPT as a critical lens to challenge the optimistic perspectives of pluralist HRM approaches, urging scholars to connect workplace issues with broader economic and political contexts and to employ both qualitative and quantitative methods for a more comprehensive understanding of HRM dynamics. However, a limitation of the review is that it does not cover audit practices within these themes, which this thesis addresses.

The dynamics of deskilling, as delineated in this discourse, evoke Braverman's seminal proposition and its interpretation through the lens of LPT. These theoretical frameworks shed light on the multifaceted process of deskilling and its ramifications for workforce control, task allocation, and technological integration in the manufacturing and service sectors.

The debate surrounding deskilling and upskilling is further elaborated upon in the following section (2.4.3.2.).

2.4.3.2. The Deskilling vs Upskilling Debate

There is a question as to whether the evolution of audit functions into more routine and standardised processes engenders deskilling (Manson et al., 1998). Some posit that the introduction of IT reinforces an existing trend towards heightened formalisation in audit work, characterised by rigid procedures and rules. This engenders the underutilisation of the skill set possessed by qualified accountants, ultimately relegating the once-professional auditor to a technician role or even displacement by individuals with fewer competencies (Roslender et al., 1992). However, an opposing view contends that a simultaneous "upskilling" trajectory occurs, as auditors acquire proficiencies (Manson et al., 1998). Sallaz's (2014) study reevaluates Harry Braverman's seminal work, *Labor and Monopoly Capital* (1974), within the context of modern capitalist economies. Sallaz argues that while Braverman's insights into the degradation and deskilling of labor under capitalism remain vital, the book overlooks significant developments such as service sector expansion, state interventions, and the rise of neoliberal globalisation. The study critiques Braverman's deterministic view of deskilling and his lack of foresight regarding the state's role in providing welfare and regulating labor markets. Additionally, Sallaz highlights how modern ethnographic studies reveal limits to the routinisation and standardisation of labor, especially in service work, where flexibility and autonomy often

prevail. This reevaluation underscores the enduring relevance of Braverman's work while advocating for a more nuanced understanding of labor dynamics in contemporary capitalism.

This question concerning the deskilling of professionals has been scrutinised by various researchers. Hanlon (1994), Manson et al. (1997), Manson et al. (1998), and Manson et al. (2001) have all contributed to a growing body of evidence indicating that the integration of IT, ICT, and audit automation into accounting firms has not led to the deskilling of professional staff. Manson et al. (1998) discerned that neither the United Kingdom nor the United States have seen substantial evidence of deskilling in the sense of qualified staff being replaced by less-qualified personnel due to increased IT incorporation for auditing purposes. In fact, the findings suggest that audit automation has liberated professional staff to allocate more of their time to non-routine technical aspects, thus enhancing job satisfaction – an effect particularly discernible in the Big Six firms. A later study by Manson et al. (2001) delved into the nature and prevalence of audit automation in UK and US firms. Data collection was undertaken through the dissemination of a survey to the Big Six and a number of medium-sized audit firms. Notably, the earlier survey (disseminated in 1997) solely targeted senior staff, while the 1998 questionnaire targeted IT lead partners in the audit process, thus excluding junior audit staff perspectives. An important limitation of these studies pertains to the evolving landscape of IT tools and practices, rendering prior findings less transferable to the contemporary audit milieu (Lowe et al., 2017).

However, Orlikowski (1991) offers a contrasting perspective, suggesting that deskilling has occurred in the context of blue-collar work but been manifested differently in the realm of consultancy, potentially leading to a lack of skill development among workers. The author contends that reliance on technology-incorporated knowledge – as opposed to worker-held expertise – erodes an organisation's claim to professionalism. Furthermore, the very

deployment of IT seemingly contradicts the case study firm's articulated ideology of professionalism.

On the other hand, Taha et al. (2021) conducted an investigation employing a quantitative research design, taking a sample of 201 auditors from Iraq. Their findings indicate that external auditor–Cloud specialist engagement has a significant positive impact on overcoming Cloud auditing challenges. However, a critical examination of the evidence revealed that auditors had had negative experiences when using the Cloud, pointing to potential shortcomings in experienced auditors' adaptability to evolving technological landscapes. However, while the methodological rigour of this study – including its use of structural equation modelling and advanced statistical tests – is acknowledged, its exclusive focus on a single professional association raises concerns about the generalisability of the findings. This limitation underscores the need for caution in applying these results to auditors in more developed economies, as in the current study. While the study provides insights into the development of Cloud auditing services and the importance of engagement, these findings must be seen in the broader context of the economic and financial challenges inherent in Cloud auditing which this thesis address. Future studies should prioritise more diverse samples to enhance the external validity of the conclusions – as in this research, which acknowledges all auditor levels (from junior to partner). The practical implications of the Cloud necessitate a nuanced approach that recognises the positive impact of engagement on job performance but also acknowledges the potential limitations tied to auditors' experience, urging organisations to carefully navigate these dynamics when promoting Cloud auditing initiatives.

With the outcomes of previous studies presenting discordant views, further investigation is required to resolve this complexity. This constituted the basis for the second research question in this thesis.

Section 2.4.3.3, which follows, moves onto the subject of deskilling and upskilling, with a focus on the replacement of staff.

2.4.3.3. Substituting Staff

LPT clarifies the implications of the deskilling phenomena for the division of labour in audit teams (Marx, 1967; Braverman, 1974). The integration of IT into organisational processes has been associated with the twin phenomena of redundancy and deskilling in the realm of audit tasks (Manson et al., 2001). This perspective is substantiated by the findings of Omoteso et al. (2010), Banker et al. (2002), and Wilson and Sangster (1992). A similar sentiment is expressed by Wilson and Sangster (1992) and Omoteso et al. (2010), who suggest that a greater degree of computerisation in an organisation's audit function corresponds with a reduced presence of non-professional staff and junior auditors, along with a greater presence of senior professional personnel. This trend reflects the division of labour between highly qualified professionals, entrusted with specialised tasks and intricate issues, and computerised support staff. The evolving labour landscape diminishes the demand for junior professionals equipped with fewer skills, as routine tasks such as auditing become increasingly automated (Hanlon, 1994). LPT helps to dissect this division of labour and assess its implications for the profession (Marx, 1967; Braverman, 1974).

Omoteso et al. (2010) undertook an exploratory study in the United Kingdom, investigating the impact of ICT tools and methodologies on various facets of audit tasks, auditors (both internal and external), and the encompassing organisational structures (e.g., the Big Four accounting firms, other accounting entities, public sector organisations, corporate entities). Their study employed a mixed methods approach, including both interviews and a questionnaire. The interviewee pool consisted of just 17 participants, which could be

considered a limitation of the study design. In response to this, the present study involves 29 participants representing various organisational levels.

A parallel vein of thought is espoused by Wilson and Sangster (1992), who conducted an examination of IT adoption in the Scottish accounting profession, with specific emphasis on the domain of auditing. Their empirical study was designed to elucidate the factors influencing the automation of accounting, focusing on various accounting cohorts (including members of the Institute of Chartered Accountants of Scotland and accountancy practitioners) and diverse work contexts. The data-collection mechanism was a postal survey. Nevertheless, it's important to note that while the survey data pertains to the 1990s, it encapsulated information dating back more than three decades, implying potential shifts and transformations in the interim period. Stressing the urge for further research in this era of time.

Banker et al. (2002) present similar insights, suggesting that automation and specialised audit software have led to the replacement of labour with ICT, constituting a form of deskilling. However, a nuanced distinction between the two investigations emerges: while Banker et al. (2002) do not differentiate between professional and clerical or administrative labour, Omoteso et al. (2010) do. Banker et al. (2002) conducted a mixed methods study exploring the impact of IT implementation on the operational efficacy of an international US public accounting firm. The firm had introduced new auditing software and groupware for knowledge sharing in 1998. The researchers employed field interviews to assess the influence of the IT at the individual-user, business-process, and workgroup levels. Given that data was gathered from a single firm, the context-specific nature of the study limits the extent to which its findings can be broadly extrapolated. However, the current thesis is intended to bridge this gap by including in-depth case studies of three audit firms.

The integration of IT into audit processes has not only led to redundancy and deskilling but has also redefined the labour division in audit teams, favouring highly qualified professionals and computerised support staff. LPT provides a valuable framework for understanding the changing roles, power dynamics, and skills required in the audit profession due to technological advances, such as the introduction of the Cloud. The following section (2.4.3.4.) discusses the topic of deskilling and upskilling, specifically addressing notions of skill replacement and transformation.

2.4.3.4. Supplanting and Changing Skills

The introduction of IT frequently raises concerns about the potential impact on employees due to the substitution of human expertise and judgement (Manson et al., 1998). For instance, there is often an apprehension that IT could supplant the need for certain skills, reducing the need for human input (Manson et al., 1998). LPT enables a critical examination of how the integration of IT alters the skills required of audit professionals and whether it results in a reduction in the demand for certain human competencies.

Examining the dynamics of audit automation, Manson et al. (2001) ascertained that the integration of IT prompted audit staff to increasingly rely on technological functionalities that incorporate the skills of audit professionals. This observation highlights the need for further research in this domain to delve into these shifting dynamics. LPT encourages exploration of the changing dynamics of skill formation in audit firms, particularly how IT-driven automation impacts the development and utilisation of skills among employees.

Another concern emanates from the insights gleaned from Adler (1987) and Manson et al. (1998). The latter contend that audit automation has spurred alterations in the skill requisites of staff in audit firms in both the United Kingdom and the United States. Adler (1987)

considered the technological, market, and strategic underpinnings of the changes in skill formation seen in significant US accounting firms. Adler's analysis exposed intriguing parallels and disparities between the dynamics of skill cultivation in this context and those inherent in traditional manufacturing environments. In the conventional industrial context, immediate cost-cutting pressures frequently take precedence over investment in rarefied skills, relegating the long-term imperative for skill development behind that of managing short-term requirements. While short-term demands also arise for professional service firms, these entities rely on skilled personnel to meet them. LPT allows a critical assessment of these changes in skill requirements and whether they align with the longer-term imperative for skill development or merely respond to short-term demands.

Addressing the evolving landscape of MISs, Azan and Bollecker (2011) shed light on the substantial influence on the competencies required of professionals, notably in the accounting and management control sphere. They applied the conceptual framework of technological contingency to clarify the evolution in the competencies of ERP controllers, vis-à-vis their traditional counterparts. Their findings demonstrate that technological progress had expanded the scope of the controllers' competencies, with ERP systems playing a pivotal intermediary role in facilitating this technology evolution. Furthermore, organisations of certain sizes are compelled to undergo ERP implementation, necessitating a recalibration of management controllers' skill sets. The implications of the study's findings extend to the managerial domain, revealing substantial shifts in interpersonal relations in business organisations. Integrated tools have altered communication paradigms, diminishing face-to-face interactions in favour of interactions pre-mediated by information systems. Furthermore, the researchers assert that the dissemination of economic, accounting, and financial knowledge is set to be transformed, as it becomes more overtly communicated. Crucially, Azan and Bollecker (2011)

underscore the transformative influence of ERP systems on the roles of management controllers, showing that IT skills have become integral due to the widespread utilisation of ERP functionalities.

Vardia et al. (2021) examined the claim that digitalisation has had a significant influence on auditing working methods and processes, evaluating the impact of specific digital trends such as Cloud Computing, the IoT, and AI. While acknowledging that the integration of technology has had notable effects, the study paradoxically contends that the use of technology in auditing has had no significant impact, demanding a more nuanced exploration of this assertion. The examination of chartered accountants' perceptions, facilitated by t-tests and chi-square tests alongside qualitative interviews with auditors, presents a multifaceted perspective. The contributions of the study are commendable in shedding light on the transformative impact of digitalisation on auditors' working methods, recognising the potential utility of the IoT in evidence gathering, and emphasising the need for audit teams to adeptly navigate innovative technologies. However, there are questions about the generalisability of the findings, with calls for a deeper interrogation of the variations in impacts of these digital trends. The practical implications outlined suggest a pervasive influence of digitalisation on audit processes, but the study acknowledges a range of perceptions among auditors, reflecting their demographics and prompting considerations of the heterogeneous nature of the professional landscape. In short, this critical analysis emphasises the need for cautious interpretation of digitalisation's impact on auditing, advocating for a more refined understanding of its multifaceted implications and the judicious adoption of innovative technologies in the audit profession.

Alkabbji et al. (2023) evaluated the impact of the digital revolution on auditors' efficiency, distributing a questionnaire to auditors and computerised program administrators. Despite an initial claim of a statistically significant positive impact, the findings reveal a notable

discrepancy between the views of the auditors and program administrators, ultimately challenging the claim of a positive influence. The study concludes that, in fact, the digital revolution has had no statistically significant impact on auditors' efficiency, raising concerns about the depth of auditors' engagement with crucial aspects of digital systems and the scrutinising of the powers of information systems developers. Emphasising the need for specialised auditing skills in the evaluation of computerised programs, the authors recommend further research and training in IT auditing to address the gaps in understanding. The practical implications include the need to scrutinise the powers of IT teams and developers to ensure compliance with laws and regulations and establish controls on the accuracy and reliability of financial information. This critical analysis challenges the optimism expressed elsewhere regarding the digital revolution's impact on auditors' efficiency, advocating for a more nuanced understanding and targeted-skills development to navigate the complexities of auditing in the digital era.

The application of LPT to examine IT's impact on employees in the realm of audit, accounting, and management control underscores the evolution of skill requirements, formation processes, and autonomy dynamics in response to technological advances. This approach highlights the complex interplay between technology and labour in these professional contexts.

The third problematic aspect found in the literature on the impact of IT on employees concerns the issue of autonomy. This is discussed in section 2.4.4.

2.4.4. Autonomy

2.4.4.1. The Driving Force of Technological Change

Since the final quarter of the 20th century, prominent audit firms have been actively seeking to maximise revenue by offering additional services, including assistance with tax avoidance and consultancy (Mitchell and Sikka, 2011; Sikka, 2009, 2016; Sikka and Willmott, 2013) and advising on the allocation of surplus value through the privatisation of former state assets (e.g., Arnold and Cooper, 1999). This shift may have reduced the commercial pressures on auditing, and as a result, it now constitutes a minority share of audit firms' total revenues (Arnold and Cooper, 1999, p. 130). Despite regulations limiting the value of non-audit services as a percentage of audit fees (Gardner and Bryson, 2021, p. 45), the trend towards generating more revenue from non-audit services for non-audit clients than from audits has persisted (Gardner and Bryson, 2021, p. 49). However, this does not rule out the possibility of partners in audit firms seeking an increased share of the revenue derived from auditing compared to what they allocate for the employment of junior auditors. This raises the question of whether their strategies align with the patterns of technological development suggested by Marx and LPT.

The parameters of accountants' regulatory framework are determined by "commercialisation" (Hanlon, 1994). This process of commercialisation exercises a transformative influence on the accounting profession by facilitating enhanced capital control, a foundational prerequisite of the "flexible accumulation regime" (Hanlon, 1994). According to Mayhew (2015, p. 54), in the *Oxford Dictionary of Geography*, the concept of flexible accumulation can be construed as follows:

"Flexible accumulation" pertains to the strategic utilisation of pioneering industrial technologies, adaptable inter-firm relationships, variable organisational structures, and dynamic patterns of consumption. This strategic manoeuvring is undertaken in response to competitive pressures emanating from newly industrialising and less

developed nations, alongside the backdrop of market saturation and fragmentation in more economically advanced countries.

In this context, the amalgamation of commercialisation and flexible accumulation provides a multidimensional framework that shapes the landscape in which accountants operate, manifesting in altered paradigms of capital management and market responsiveness. Applying LPT to this context allows a critical assessment of how these dynamics reshape the division of labour, control mechanisms, and the overall work environment in the audit profession. It also clarifies whether these changes enhance or restrict the autonomy of junior auditors in their labour process.

The next section (2.4.4.2) discusses autonomy in the context of LPT.

2.4.4.2. Labour Process Theory (LPT)

Braverman's LPT, as presented in 1974, advances the notion that the incorporation of machinery in the manufacturing sector fortifies managerial control over manual labour in the labour process. While this phenomenon is deeply rooted in the manufacturing domain, there have been theoretical explorations of its applicability to the service sector. Scholars such as Mandel, in the Marxist framework (cited in Allen, 1988), assert that the service sector mirrors manufacturing in terms of labour process dynamics, with capitalist control persisting, albeit in the form of service-oriented dominion (Hanlon, 1994). Consequently, a parallel shift in ownership dynamics akin to that observed in manufacturing has been posited in the service sector (Hanlon, 1994).

From the vantage point of Braverman's theory, a compelling argument emerges that the advent of audit automation could amplify management control over both the audit work processes and the audit personnel themselves (Manson et al., 2001).

The findings of the literature review pertaining to autonomy are elucidated in section 2.4.4.3.

2.4.4.3. Evidence in the Literature

The assertions made by Braverman find support in the analyses of Orlikowski (1991), Manson et al. (2001), and Hanlon (1994). Orlikowski (1991) explored the impact of IT deployment on work processes in the United States, focusing on alterations in control mechanisms and organisational configurations. The empirical study was conducted in a multinational software consulting firm, employing a contextualised interpretive approach and drawing on organisational ethnography techniques (Agar, 1980, 1986; Van Maanen, 1979, 1988). Data accumulation occurred over an eight-month period, incorporating diverse methods such as on-site observations, unstructured and semi-structured interviews, document analysis, and informal interactions. The study cohort ranged from junior consultants and programmers to senior project managers. Orlikowski (1991) found that the IT productivity tools adopted by the company transcended mere "tools", evolving into embodiments of human expertise and competencies, devised to enhance consistency and control and diminish reliance on professional personnel. This resonates with LPT, which emphasises how technology can be used to regulate and standardise work processes, potentially diminishing the autonomy of professionals.

Likewise, Manson et al. (2001) found that audit automation and the concurrent sharing of information yield heightened surveillance and management oversight. This phenomenon correlates with a transition towards a less hierarchical and more informal organisational

structure. Audit automation seems to encourage a dependence on IT among audit staff, with the software integrating the expertise of audit professionals. This process reduces the autonomy of audit staff, while bolstering managerial control. This shift aligns with LPT's focus on how changes in technology and work processes can lead to altered power dynamics and a more hierarchical or formal organisational structure. Manson et al. (2001) explored audit automation as a form of control in UK audit firms, extrapolating from a prior study involving in-depth interviews with audit staff across hierarchical tiers in two of the Big Four audit firms. However, while the generalisability of these results is limited to the specific context under examination – namely, two of the Big Four – the present study encompasses three.

In contrast, Hanlon (1994) scrutinised the labour process inherent to auditing, exploring the training and socialisation of professionals in the Big Four accounting firms. The investigation showed how the organisational dynamics, control mechanisms, and ideological paradigms of accountants have transformed in the wake of the new accumulation regime. Hanlon (1994) highlights that, under the capitalist framework, accountants assume primary control roles and, paradoxically, find themselves under tighter control than less “responsible” personnel. LPT emphasises the negotiation of control in the labour process, and Hanlon's study provides insights into how this negotiation plays out in the accounting context. Employing a mixed methods design, the study amassed qualitative data through semi-structured interviews with accountants across multiple strata (partners, directors or senior managers, assistant managers, and managers) in the Big Four, medium-sized practices, and industry. Furthermore, quantitative data was procured through two surveys: one completed by approximately 120 accountants based in Ireland and the other by 100 Irish accountants located overseas.

Hughes (2024) examines the contemporary effects of technology on workplace control and worker resistance. By revisiting and expanding upon Braverman's (1974) theories, Hughes

critiques and addresses gaps in Braverman's work through a detailed analysis of three contemporary work contexts: platform capitalism, Amazon, and manufacturing. The research reveals that while platforms and Amazon have used technology to significantly increase managerial control and work intensification, manufacturing workers have managed to retain a higher status and less intense management despite technological advancements. Through interviews with trade unionists and labour movement participants, the study identifies new forms of worker organization and resistance emerging in response to these changes.

Technology's role in increasing management control over staff, as indicated in the literature (Orlikowski, 1991; Manson et al., 2001; Hanlon, 1994; Hughes, 2024), raises questions about its implications for junior external auditors and their tasks. This unexplored terrain requires scholarly inquiry, aligning with LPT's emphasis on continually examining and critiquing the evolving labour process.

Section 2.4.4.4, which follows, considers autonomy in the context of Cloud Computing.

2.4.4.4. Autonomy in the Context of Cloud Computing

Cloud Computing has transformative capabilities. The labour process thesis argues that autonomy is denied when people find their actions increasingly regulated by technology. An illustration of this comes from the heightened accessibility of data (Weinman, 2012, as cited in Liu and Vasarhelyi, 2014). Specifically, Cloud Computing facilitates data accessibility, permitting users to seamlessly retrieve information from any location and at any time (Jordan, 2020). This shift in data availability influences the autonomy of junior auditors vis-à-vis their audit tasks, as their authority over data access is determined by the capabilities conferred by the Cloud.

Furthermore, the Cloud engenders transparency in operational processes (Jordan, 2020). Cloud-based systems incorporate features such as “time tracking software”, affording organisations a comprehensive view of how their workforce is allocating its time (Jordan, 2020). This enhanced transparency can restrict the autonomy of junior auditors regarding their tasks. The visibility of time allocation and task management facilitated by the Cloud can thus reshape the landscape of their responsibility for and autonomy over their audit engagements.

The introduction of Cloud Computing into auditing thus has the potential to reshape the autonomy and control dynamics of junior auditors. This aligns with the labour process thesis by highlighting how technology can influence the regulation of tasks and the exercise of autonomy in the profession. Further exploration and critical analysis of these dynamics are essential to understand the full impact of Cloud Computing on the labour process of junior auditors.

The fourth gap uncovered by the literature review is discussed in section 2.4.5 – namely, the impact of IT on auditing professionalism.

2.4.5. Audit Professionalism

2.4.5.1. Definition of Professionalism

Contemporary transformations in the realm of the accounting profession reflect a pronounced trajectory toward profit maximisation and commercial pursuits, as discussed by Hanlon (1994). This paradigm shift has heralded a significant transition in the domain of audit practices, moving from a foundation in social service-oriented professionalism to one characterised by commercialised professionalism (Hanlon, 1997). This aligns with LPT’s explanation of how labour processes can evolve in response to broader societal and economic changes. In this

context, the profession's shift reflects the influence of capitalist forces that prioritise profit maximisation and commercial interests. In consonance with this evolution, the Marxist perspective articulated by Terry Johnson (1972) conducts incisive and critical sociological examinations of professional domains, encapsulating professionalism as a mechanism of occupational governance wherein the consumer is relegated to a subservient position under the dominion of the producer (Anderson-Gough et al., 1998, p.17). This aligns with the critical lens of LPT, which can be applied to scrutinise power dynamics in labour processes. This conceptual framework introduces a dimension of critical reflection essential for comprehending the shifting dynamics in contemporary professions.

In section 2.4.5.2., a discussion of professional identity is presented.

2.4.5.2. Professional Identity

The evolution of the trainee's professional identity is a transformative journey, culminating in the maturation of a professional persona, as delineated by Hamilton (2013). At the crux of the professionalisation process lies its pivotal facet, the "jurisdiction (practice)", which renders professionalisation an intricately woven social construct (Hamilton, 2013). While members of accounting's professional bodies ostensibly inhabit professional roles, the trajectory of professionalisation is progressively sculpted by the contours of their employing organisation (Hamilton, 2013). This aligns with LPT's focus on how organisational structures and practices shape the labour process and, in this case, the formation of professional identity. This trajectory is further nuanced by the dynamism of practice, which is continually reshaping the contours of professional identity. This phenomenon has been the subject of multifarious studies. Wolf, Kuttner, Feldbauer-Durstmüller, and Mitter (2020), in a meticulous synthesis of 64 articles, scrutinised the shifting role of management accountants (MAs) from the vantage point of

identity. This comprehensive review reveals a web of external factors, including “professional associations and educational institutions as well as organisational and individual factors”, producing transformative forces that impinge on the identities of MAs and thereby catalyse change. The identities of MAs are closely intertwined with their public perceptions and organisational positioning, influencing and being influenced by escalating demands, discordant expectations, and the march of technological advancement (Wolf et al., 2020). This rigorous inquiry adhered to the methodological blueprint proposed by Tranfield et al. (2003) and Massaro et al. (2016), but the study is limited by its focus on a modest cohort of just 17 interviewees. Therefore, caution is warranted regarding the generalisability of the findings. The adoption of Cloud Computing can be seen as a transformative force that impacts the tasks and roles of junior auditors and, consequently, their professional identities.

Lee (2002) investigated the relationship between commercial pressures, time constraints, and irregular auditing among junior staff in auditing firms. The research challenged the assumption that irregular auditing reflected a casual disregard for audit protocol among junior auditors and used empirical evidence gathered from in-depth interviews. The study revealed that junior auditors primarily focused their efforts on areas in which material misstatements could occur, which aligned with the expectations of risk-based auditing. This reflected the view that irregularities in audit quality, when they occurred, were typically confined to non-material areas and could be sanctioned by senior staff. This research adds to the literature on professional socialisation in auditing and employs a qualitative methodology that allowed respondents to explain their actions in context. In a LPT framework, it can be argued that the commercial pressures faced by auditing firms, driven by client demands and market competition, influence how junior auditors perform their tasks. These pressures can lead to the adoption of risk-based auditing methods that emphasise efficiency and cost-effectiveness.

Brouard, Bujaki, Durocher, and Neilson (2017) delved into the intricate context of professional accountants' identity formation. Synthesising constructs from social identity theory and the sociology of professions – and amalgamating these with concepts from prior studies addressing “professional identity, image, and widely held stereotypes of accounting and accountants (the research presents a composite framework demystifying the process of professional accountants' identity construction. This interplay mirrors the complex relationships and power dynamics often discussed in LPT when examining how external forces influence labour processes. The findings uncover a labyrinth of interactions between disparate societal stakeholders and the accounting profession that culminate in the formulation of accountants' identity. Within this interplay, accounting associations and firms endeavour to navigate prevalent images and stereotypes, fostering both jurisdictional dominion and the definition of the accountant's essence (Brouard et al., 2017). Importantly, the research demonstrates that the individual accountant's identity is indelibly shaped by the group-level identities permeating professional associations, accounting firms, and other employers, encapsulating a complex interplay of dynamics in the transformative milieu (Brouard et al., 2017).

Hamilton (2013) studied the metamorphosis of the CA student's professional identity. Rooted in the narratives of 20 students in Scotland, this qualitative inquiry unveils professional identity as emerging through “membership of communities of practice (Wenger, 1998) in the training organisations”, rather than emanating solely from engagement with a professional body. Framed by the theoretical scaffolding of “communities of practice”, this study furnishes insights into the foundational dimensions underpinning the development of the aspirant professionals' identities. However, the literature lacks an investigation of the professional identities of junior auditors in the context of the Cloud, as viewed through the lens of LPT.

Low, Davey, and Davey (2012) applied an analytical lens to scrutinise the depiction of evolving professional identity in the New Zealand Institute of Chartered Accountants' annual reports. Drawing upon a content analysis of the archival records, this inquiry discerned the evolution of professional identity through textual expositions and visual imagery. Notably, it revealed a transformative trajectory, marked by the transition from the early reports – which project authenticity through singular visual imagery – to subsequent reports deploying an intricate array of visual images and mission or vision statements to effectively portray an identity of expertise, integrity, and global pertinence. This evolution can be seen as a response to societal changes, including globalisation and technological advances, which aligns with LPT's perspective on how labour processes adapt to changing contexts.

Vough (2012), in a qualitative case study, presents a mosaic of accounts from employees on their perceptions of their workgroup, organisational, and professional identities. Anchored in individual interviews with 31 members of a US architecture firm, this research identifies nine distinct frameworks employed by individuals to contextualise their identities, characterised by four logics of sensemaking: “similarity, familiarity, benefits, and investment”. Diverse explanations surface across these targets, unveiling a nexus of personal relationships and workgroup identification, while organisational identification often hinges on organisational ideologies, support mechanisms, prestige, and individual contributions. Conspicuously, professional identification unfolds through an amalgamation of professional archetypes, personal enjoyment of work, and adherence to professional norms. These findings underscore the nuanced tapestry of identity construction across multiple dimensions. This sensemaking process is crucial for understanding how individuals in the audit profession adapt to new technological landscapes, such as that produced by Cloud Computing.

This symphony of research converges upon the precipice of a transformative juncture in the accounting profession, elucidating the intricate weaving of identities amidst a landscape shaped by dynamic forces. While prior investigations have offered invaluable insights, the role of digital landscapes – epitomised by the arrival of the Cloud – remains an uncharted realm, warranting scholarly exploration.

The concept of autonomy in the sphere of professionalism is discussed further in section 2.4.2.3.

2.4.5.3. Autonomy

The accounting literature shows that professionalism is strategically used by managers and employers to control and motivate staff. LPT emphasises the role of management in shaping the labour process and controlling workers, and the strategic use of professionalism aligns with this. This requires the adept deployment of rhetorical resources and discursive tactics, often epitomised by specialised terminology (Anderson-Gough et al., 1998). A discernible shift is evident, acknowledging the strategic use of appeals to professionalism by managers and employers as mechanisms for staff motivation and control (Muzio and Tomlinson, 2012). This strategic manoeuvre seeks to realign individual identities with organisational imperatives including efficiency, responsibility, and client service (Anderson-Gough et al., 1998). This reorientation frequently entails the imposition of large workloads and a gradual erosion of professional autonomy, casting a shadow over the landscape (Muzio and Tomlinson, 2012). The erosion of professional autonomy due to technological advances and organisational changes resonates with LPT, which explains how labour processes can lead to a reduction in worker autonomy.

In response to a plethora of challenges, accounting firms have extensively reconfigured and reengineered their core audit services, capitalising on the advances in technology to furnish their clients with value-added offerings (Bamber and Iyer, 2002). Nonetheless, a chorus of critics have articulated concerns that these ongoing transformations jeopardise the bedrock of auditors' professionalism (Bamber and Iyer, 2002). Accounting firms, as crucibles of professionalisation processes, regulatory frameworks, and societal division of labour, wield substantial influence (Hanlon, 1994). It is in these echelons that professionalisation, with its connotations of self-identity, is meticulously forged (Anderson-Gough, Grey, and Robson, 1998). Cooper and Robson (2006) posit that there is an integral link between accounting firms and the construction of professional identity and regulatory frameworks. Their exploration of the multinationals – or “Big Four (in the professional service realm potentially enriched comprehension of professionalisation’s nuanced contours (Cooper and Robson, 2006). These conglomerates are arenas in which the standardisation and regulation of accounting practices converge; where professional identities undergo mediation, formation, and transformation; and where pivotal notions of personal, professional, corporate governance, and management are diffused (Cooper and Robson, 2006). Accounting firms, particularly the Big Four, are influential in the construction of professional identity and regulatory frameworks.

This thesis considers the ramifications of the Cloud for the professional identities of junior auditors in the Big Four accounting firms. This inquiry seeks to traverse uncharted terrain, exploring the intricate interplay between burgeoning digital landscapes and the very essence of professional identity.

Section 2.4.5.4, which follows, presents an examination of recent developments in professionalism.

2.4.5.4. Recent Changes

In the field of accounting, Hanlon (1999) explored the nature of professionalism in debates concerning the future landscape of the UK's social structure and state. His investigation identified transformative shifts and inherent tensions across diverse arenas. Hanlon (1999) expounds upon the phenomenon of "flexible accumulation". This paradigmatic shift, as delineated by Hanlon (1999), is defined by a heightened managerial impetus to exert control over the interplay between professionals and clients. A discernible trajectory emerges, with professionals now urged to employ their expertise to meet clients' commercial needs, rather than simply providing purely technical solutions (Hanlon, 1999). Hanlon (1996) explored the driving force of this shift and found that it was occurring in tandem with a metamorphosis in how large-scale capital orchestrates engagement with the labour force at both the macrocosmic (Hanlon, 1994) and microcosmic (Hanlon, 1999) levels.

The literature details the impact of commercialisation on the professional identities of auditors, especially in the context of accounting firms. Changes in documentation, technology adoption, and the diversification of services have all reshaped auditors' skills and client relationships. LPT focuses on how changes in the labour process can affect workers' identities and roles. This transformative is evident in audit practice, as elucidated by Barrett et al. (2005), whose study identified a discernible shift toward commercialisation, evidenced by alterations in documentation, adoptions of new technologies and methodologies, and the diversification of business advisory services that, in turn, necessitate novel skills and recalibrated client relationships. This seismic shift has elicited various responses from professionals, as described by Hanlon (1997). Broberg et al. (2018) traverse similar terrain, delving into the nexus between auditors' professional and organisational identities and the overarching trajectory towards commercialisation. Their comprehensive survey, completed by 374 members of FAR, a

professional association of accountants, auditors, and advisers in Sweden, uncovered a symbiotic relationship between commercialisation and the auditor's professional identity. This stands in contrast to the findings of previous studies, signifying a shift in the dynamics of professional identity amid the commercialisation of audit firms (Broberg et al., 2018).

Converging on a similar focal point, Anderson-Gough et al. (1998) undertook an interpretive qualitative inquiry into the professional socialisation of trainee chartered accountants in the United Kingdom. In an exploration of two major international accountancy firms' regional offices, the study encompassed 77 semi-structured interviews and delved into the profound transformation engendered in the ethos of audit firm culture. A common thread emerged, with trainees obliged to navigate the intricacies of this milieu to assimilate the tenets of professional identity (Anderson-Gough et al., 1998). LPT emphasises the role of organisations in shaping the labour process and the identities of those in it. In the context under study, trainees must navigate the changing culture to develop their professional identities.

The literature also discusses the shifting attitudes towards professional ideology and institutions due to commercialism. This shift from professionalism to a greater emphasis on commercial values challenges the traditional ideals of the profession. LPT's focus on how work practices and values are shaped by organisational dynamics is pertinent here. Suddaby, Gendron, and Lam (2009) investigated the nexus between the evolution of professional work, the shifting organisational context, and the resultant metamorphosis of attitudes toward professional ideology and institutions. Their study of Canadian chartered accountants revealed intriguing dynamics, with higher ranking accountants evincing an inclination towards "commercialistic values" (Suddaby et al., 2009). Similar explorations have been conducted in the United States. For example, Roberts (2001) dissects the paradoxes in the trajectory of the American public accounting profession. This analysis of professionalism's espoused

orientation and the escalating gravitation toward commercialism uncovered an intricate interplay emblematic of interactionist and functionalist paradigms (Roberts, 2001). This shift towards commercialism requires more critical study to clarify its consequences for professional auditors.

The realm of transnational regulatory emergence in professional services demands examination, a task undertaken by Suddaby, Cooper, and Greenwood (2007). Applying neo-institutional theory, their work concerns the transformation of structural boundaries and the enlisting of new actors, notably the Big Four accounting firms and non-governmental organisations, into the sphere of professional regulation. This paradigm shift extends to regulatory logics, where there have been historical efforts to delineate professional practice from commercial interests, a transformation embraced rather than suppressed (Suddaby et al., 2007). As corroborated by Berg (2004) in a content analysis, this gives rise to the adaptation of occupational identity.

Applying a semiotic lens, Picard, Durocher, and Gendron (2014) undertook a systematic analysis of the cultural transformation in the realm of the accounting professional. They dissected the promotional brochures produced by the *Ordre des comptables agréés du Québec* over four decades. This inquiry revealed a transition from rigorous professionalism to an emphasis on dynamic and versatile expertise intertwined with business consultancy, emblematic of the ascension of commercialism (Picard et al., 2014).

The broader tapestry of the accounting profession, particularly in the United Kingdom, emerges as a crucible for the intricacies of professional identity (Anderson-Gough, Grey, and Robson, 2002). This fragmented landscape, with its regulatory diversification and market dynamics, is meticulously explored through an interpretive qualitative study, shedding light on trainees'

experiential evolution and its resonance with professionalism's tenets (Anderson-Gough et al., 2002). The majority of these studies were carried out in Western contexts, leaving a gap in knowledge regarding the Middle East.

Malsch and Gendron (2013), drawing upon change theory and Bourdieusian sociology, offer a reimagining of a transformative institutional landscape in the public accounting domain. Focusing on the consolidation of commercial values in auditing, their insights unveil the interplay between economic capital and the burgeoning logic of commercialism (Malsch and Gendron, 2013). However, the literature lacks an exploration of this issue from the standpoint of LPT.

Lui, Ngo, and Tsang (2003) adopted a socialisation perspective to unravel the multifaceted dimensions of professionalism, asserting that it is a cumulative and career-long process that is more influenced by current employment conditions than early career socialisation (Lui et al., 2003). However, the current thesis addresses the previously unexplored aspects of the socialisation and professional development of junior auditors, filling a critical gap in the research.

Cooper and Robson (2006) explore the salience of institutional contexts, sites, and regulatory processes in shaping the contours of professionalisation. In an exploration of the Big Four, they argue that these multinational professional service firms are pivotal sites on which accounting practices, standards, identities, and conceptions of governance and management coalesce (Cooper and Robson, 2006). The Big Four accounting firms, as discussed by Cooper and Robson, serve as pivotal sites where accounting practices, standards, and identities converge, shaping the contours of professionalisation.

Overall, the literature highlights the move away from professionalism in the accounting field due to commercialisation and changes in organisational dynamics. These changes have had significant implications for the labour process, professional identities, and the relationships between professionals and management. LPT provides a critical lens through which to analyse these shifts and their impact on the audit profession.

In section 2.4.5.5, which follows, there is a discussion of professionalism and the associated behaviours, attitudes, and roles.

2.4.5.5. Behaviours, Attitudes, and Roles of Junior Auditors

The landscape of the audit profession has undergone substantial transformation, catalysed by the automation of information processes (Vasarhelyi, 1985). Indeed, the outcomes (or lack thereof) of automation are shaping the future trajectories of corporations (Vasarhelyi, Ph.D., 1985), redefining the role of the auditor (Vasarhelyi, 1984; Omoteso, 2013), and consequently influencing the attitudes of auditors (Omoteso, 2013). LPT is concerned with how changes in technology can affect the division of labour and the tasks assigned to workers. The introduction of technology is altering the traditional roles of auditors and accountants. This issue has garnered the attention of numerous scholars, resulting in an array of insightful investigations.

The literature suggests that the adoption of technology influences the behaviour and attitudes of auditors. This is supported by LPT, which explains that changes in the labour process can impact the attitudes and behaviour of workers. The integration of technology can lead to changes in how auditors perceive their work and their roles in auditing organisations. Omoteso et al. (2010), Lowe et al. (2017), and Munoko et al. (2020) all provide evidence for the transformative influence of ERP systems, ICT, IT, and AI on accountants' roles and competencies, auditors' functions and outputs, and the very fabric of auditing organisations.

These technological forces have shaped individuals' behaviours and attitudes, even allowing the complementing or replacement of specific professional roles. Consequently, the established dynamics of teams and human performance are fundamentally redefined by these technological advances.

Lowe et al. (2017) conducted a pilot study that delved into the utilisation of IT in auditing practices across firms of varying sizes. The study unravelled auditors' perceptions of the significance of IT adoption over the previous decade, capturing the evolution of the landscape of audit practices. The study findings highlight the need for further research into the implications of these technologies for the labour processes of junior auditors.

Munoko et al. (2020) explored the ethical and societal dimensions of the integration of AI into auditing processes, particularly in the context of the United States. This inquiry encompassed a meticulous analysis of previous studies on the deployment of technology in auditing firms. Their analysis concerned three tiers: the individual auditor, the audit firm, and the broader profession and wider society. This multifaceted exploration clarified the pervasive impact of AI across these tiers, potentially reshaping the very essence of the profession. This aligns with LPT's consideration of the broader social and ethical implications of changes in the labour process. The introduction of AI and other technologies can have far-reaching consequences for auditors and the auditing profession as a whole, and these need to be critically examined.

Manita et al. (2020) examined the influence of digitalisation on the audit landscape, focusing on its impact across five key levels of audit firms. Their findings indicate that digitalisation optimises the audit process, stimulates new service offerings, and enhances overall audit quality. The study identified a shift in the auditor role and profile, fostering innovation in firms. A qualitative study involving the five largest audit firms in France, the research involved semi-

structured interviews with 18 auditors. In its discussion of practical implications, the paper stresses the positive effects of digitalisation on audit relevance, extended service offerings, and improved governance, with a call for further research into the implications of Cloud technology for junior auditors. Despite its contributions, such as clarifying the importance of digital strategies for audit standards, the study has certain limitations, including its small sample size and lack of participatory qualitative methods.

Deniswara et al. (2022) applied the UTAUT model to evaluate auditors' perceptions of using Cloud Computing in the production of financial statement audits. The study, employing a quantitative approach with a sample of 72 external auditors, revealed that while performance expectancy, facilitating conditions, and perceived trust exerted a significant influence on behavioural intention, the absence of effects of effort expectancy and social influence raised questions about the broader applicability of certain UTAUT factors in this context. The study's contributions are acknowledged, particularly its insights into pre-COVID-19 digitalisation changes and the impact of the pandemic on financial reports and audit procedures. However, the study did not examine the implications of the Cloud for junior auditors' autonomy or skills. Overall, the paper's findings emphasise the complexity and contextual variability of auditors' responses to the implementation of Cloud Computing, highlighting the need for more research in practice.

Nathalia (2020) assesses the anticipated impact of AI on the work of external auditors in Big Four firms. The study posits that AI will have a moderate impact on auditors' roles, necessitating a recalibration towards data analysis and high-risk areas and leading to enhancements in audit quality and efficiency. The research underscores the need for auditors to cultivate advanced analytical skills, critical-thinking skills, and effective communication skills to adapt to an AI-driven future. The study scrutinises current audit innovation in the Big

Four firms, evaluates the potential for AI innovation in auditing through a literature review, and analyses predictions for the future of audit innovation. While acknowledging that AI will not completely replace auditors, the study highlights certain implications for the future of auditors' jobs. The practical implications include a moderate impact on the Big Four auditors' work, a reduced emphasis on manual tasks in favour of data analysis, and the augmentation of audit quality and efficiency. However, Cloud technology was not examined, which leaves a gap for this study to fill.

Dowling and Leech (2014) investigates how a Big 4 audit firm's implementation of an advanced audit support system influences auditor behavior and audit team dynamics. Utilising Adler and Borys's (1996) framework, the study analyses whether the system's features are perceived as enabling or coercive. Findings suggest that the system, designed to ensure compliance with auditing standards, generally enables auditors by enhancing task understanding and promoting a structured approach. However, it also highlights potential risks, such as overreliance on the system and reduced auditor independence due to increased interaction and monitoring facilitated by real-time connectivity. The study underscores the importance of balancing control features with flexibility to leverage auditors' professional judgment effectively. This critically reflects on the system's dual role in both empowering and constraining auditors, emphasising the need for audit firms to design support systems that maintain a balance between compliance and autonomy.

Umar et al. (2017) explores the impact of information technology and work-related pressures, such as time budget and task complexity, on dysfunctional audit behavior and fraud detection capabilities. Using Structural Equation Modeling (SEM) to analyse data from 81 auditors in Jakarta, the research finds that while time budget pressures and task complexity significantly contribute to dysfunctional behaviors, information technology does not directly influence

these behaviors. However, these dysfunctional behaviors negatively affect the auditors' ability to detect fraud. This study underscores the paradox where advanced IT tools intended to streamline auditing tasks fail to mitigate stress-induced dysfunctional behaviors, highlighting the need for balanced implementations that address the psychological stressors inherent in audit work. These findings call for audit firms to not only invest in technological solutions but also to consider organizational strategies that alleviate work pressure.

Overall, the literature highlights a profound impact of technology on the audit profession, affecting the roles, competencies, behaviour, and attitudes of auditors. These changes are hugely significant to the labour process, and LPT provides a critical framework for analysing how technology is reshaping the profession and its societal implications.

A chapter summary is presented next in section 2.5.

2.5. Summary

Marx's analysis centres on historical modes of production, with capitalism being the most recent. These modes involve processes generating value, where one class's control of the means of production enables its exploitation of another class reliant on the former for its employment and sustenance. In capitalist economies, the pivotal classes are the working-class (lacking ownership of the means of production) and the capitalist class (employing control of the means to realise exchange values exceeding their investment). Labour alone, according to Marxist theory, generates surplus value. Technology transfers part of its value to goods, but the profit rate hinges on the balance between labour (variable capital) and technology (constant capital). Technological advances can trigger a falling profit rate, discouraging investment and causing crises. The devaluation of technology often precedes new technological waves,

demanding fresh labour. Consequently, capitalist economies experience cyclic crises and technological shifts, as exemplified by the recent adoption of the Cloud.

Braverman's analytical framework is rooted in Marx's differentiation between labour and labour power. Although labour has the potential to generate wealth, its actualisation necessitates its transformation into labour power to unlock its capacity for value creation. However, the structure of work in capitalist economies often negates workers' innate creative inclinations, fostering resistance. Capital controllers' endeavours to harness the value-generating capacity of resistant labour led to a division of labour, fragmenting the labour process into minuscule segments. These fragmented segments were then allocated to individual workers, each of whom was obligated to repetitively perform their own specialised task. This interlinked process involved swift movement of production units among workers, overseen and coordinated by representatives of capital controllers.

Over time, this oversight and coordination evolved into novel technological iterations in various industries. Concurrently, the tendency toward task fractionation extended up the corporate hierarchies of burgeoning conglomerates. This resulted in middle-tier personnel experiencing the routinisation of their roles, ultimately leading to the proletarianisation of their positions. Braverman's analysis implies an emerging dichotomy: a burgeoning working-class and a diminishing capitalist class with dominion over the means of production. This dynamic foresees the polarisation of society between these two strata.

Carchedi (1975) introduced an analysis of a new middle-class. He acknowledges the intricate nature of value production and surplus extraction in complex societies, leading to scenarios in which these roles are not attributed to individuals. He defines the "collective worker" as those contributing to value production and identifies individuals aiding in surplus value extraction

and realisation as performing global functions of capital, irrespective of ownership. This gives rise to a new middle-class, as Carchedi terms it. Armstrong (1987) expands on Carchedi's concepts by breaking down global capital functions into three tasks: extraction, realisation, and allocation of surplus value. Importantly, some members of the middle-class contribute to both collective worker tasks and global capital functions. For instance, a junior auditor conducting a stock-take might engage in both ensuring ongoing production materials and influencing surplus-value realisation processes. Critically, auditors and others in the new middle-class have the potential to either create value or facilitate surplus-value allocation. This perspective underscores the intricate roles of this emerging class in the socio-economic landscape. In short, Carchedi's and Armstrong's analyses offer a complex view of societal dynamics, emphasising the intertwined nature of labour, value creation, and surplus-value distribution in the evolving middle-class paradigm. (Chapter Four provides an exposition of this in the Saudi context.)

This chapter examined the existing body of literature concerning auditing, with a specific focus on Cloud Computing. This literature review has brought to light four critical issues that warrant further investigation. The first issue pertains to the transformation of auditing practices following the implementation of IT (i.e., Cloud Computing), including the extent and nature of this transformation. Consequently, the first research question emerges as follows:

1) How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed?

The second issue identified in the literature review concerns the phenomena of deskilling and upskilling, particularly in relation to the influence of Cloud Computing on employees. This concern leads to the formulation of the second research question:

2) How has the introduction of Cloud Computing affected the physical and mental effort , manipulative and general skills, education, and experience required of junior external auditors?

The third aspect uncovered in the literature pertains to the notion of autonomy in the context of the audit profession and how this is affected by the Cloud. This issue prompts the third research question:

3) How is the Cloud affecting the autonomy of junior external auditors and their audit tasks?

Finally, this literature review has highlighted a gap in understanding of the impact of IT, specifically Cloud Computing, on the professional identities of audit practitioners. This gap gives rise to the fourth and final research question:

4) How has Cloud Computing affected the professional identities of junior external auditors (i.e., their behaviours, attitudes, and roles)?

For this scholarly endeavour, the theoretical framework of LPT has been chosen as an analytical vantage point. Drawing upon the insights provided by LPT, the forthcoming chapter will provide an in-depth exploration of the theoretical framework itself. This will broaden the scope of the discourse, contributing a unique perspective to the academic dialogue.

Chapter Three: The Saudi Context

3.1. Introduction

This dissertation examines the ramifications of Cloud Computing for the work, roles, and experiences of junior external auditors in three of the big four audit firms in Saudi Arabia. This research endeavours to clarify how Cloud Computing can reconfigure the autonomy, skills, and professional identities of juniors. Consequently, this chapter begins with an introduction to the Big Four audit firms in the Saudi context, elucidating the rationale behind its selection. This chapter offers an exploration of the context in relation to accounting, auditing, and the adoption of IT and Cloud Computing.

The multifaceted landscape of Saudi Arabia presents a captivating backdrop for this analysis. Section 3.2 discusses the economic and political landscape of Saudi Arabia, examining its oil-based economy, global integration, political dynamics, cultural intersections, and increasing employment of IT. Section 3.3 critically analyses the evolution of accounting and auditing in Saudi Arabia, investigating the recognition, regulation, expansion, and implications of accounting and auditing practices. Section 3.4 explains the dominance of large audit firms and the influence of IT on auditing practices, emphasising IT integration and its impact on professional identity. Section 3.5 then explores digital transformation in Saudi Arabia, including its implications and transformative potential across sectors. Shifting focus to Cloud Computing, section 3.6 reviews Cloud adoption in Saudi Arabia, evaluating its implications for various domains. Section 3.7 describes the rethinking of auditing in the era of IT, probing the recalibration of auditing practices in response to digital advances. Section 3.8 then provides a chapter summary.

3.2. The Economic and Political Landscape of Saudi Arabia

This analysis employs LPT to the context of the Kingdom of Saudi Arabia, emphasising its economic structure, political system, and distinctive cultural environment in relation to labour and employment dynamics.

3.2.1. Saudi Arabia's Oil-Based Economy

Saudi Arabia's economy relies heavily on oil, with the country possessing the world's largest petroleum reserves, accounting for 26% of the global total (Abu-Musa, 2008). This oil-rich nation plays a significant role in the global petroleum market and is a leading member of OPEC (Abu-Musa, 2008). To reduce its dependency on oil, Saudi Arabia has initiated a series of economic reforms aimed at diversification, positioning itself for integration into the World Trade Organization, signalling its intent to become one of the world's leading economies (Abu-Musa, 2008). Seen in the context of LPT, Saudi Arabia's oil-based economy shows how economic structure can shape labour relations and dynamics, with the economy's reliance on oil resources and ongoing diversification efforts reflecting key elements of labour processes in the country.

3.2.2. The Political Landscape of Saudi Arabia

Saudi Arabia is an Islamic monarchy, with Islam influencing all aspects of civil, cultural, economic, legal, political, and social life (Al-Twajjry et al., 2003). The King governs the nation with the support of the Council of Ministers. While there are no political parties or unions, the Majlis al-Shura allows some sections of the population to participate in formulating foreign and domestic policies by expressing their views to the government (Al-Twajjry et al., 2003). Seen under the framework of LPT, the political landscape of Saudi Arabia, characterised by its

Islamic monarchy and unique governance structure, plays a pivotal role in shaping the labour processes and dynamics in the country, impacting various aspects of civil, economic, and social life and influencing the participation of different sections of the population in policy formulation, reflecting the intricate interplay between political power and labour relations.

3.2.3. Cultural Intersection

The Saudi Arabian context presents a unique blend of traditional culture and modern economic realities, creating a distinctive cultural environment for research implementation (Abu-Musa, 2006a). This interplay between tradition and modernity is crucial to the dynamics of the economic and business practices in the country for the following reasons.

1. *Cultural Significance:* Saudi Arabia's rich cultural heritage and adherence to Islamic traditions have deep-rooted implications for business practices. The influence of tradition can be observed in areas such as social norms, gender roles, and the importance of personal relationships in business dealings. Modernity, on the other hand, introduces global business standards and practices, often necessitating a delicate balance between preserving cultural values and embracing contemporary business approaches.

2. *Legal and Regulatory Frameworks:* The legal and regulatory frameworks in Saudi Arabia reflect the dual influences of tradition and modernity. Sharia, based on Islamic principles, plays a substantial role in business contracts and financial transactions. However, the government has also introduced modern regulatory reforms to align with global business standards. This interplay requires businesses to navigate between traditional legal considerations and modern regulatory requirements.

3. *Workforce Dynamics*: The Saudi workforce comprises individuals with varying degrees of exposure to modern education and international business practices. As traditional values intersect with modern education and work experiences, businesses must adapt their management and human resource practices to accommodate diverse expectations and skill sets.

4. *Technology Adoption*: The adoption of modern technologies, including e-commerce and digital tools such as Cloud Computing, is transforming business practices in Saudi Arabia. However, these advances must be implemented in ways that respect cultural and societal norms, striking a balance between technological innovation and traditional values.

5. *Globalisation*: When Saudi Arabia engages in global trade and partnerships, the interplay between tradition and modernity is evident in its negotiations, business protocols, and cross-cultural interactions. Businesses must navigate the complexities of this interplay to establish successful international relationships.

LPT provides a critical lens for understanding how the interplay between traditional culture and modern economic realities shapes various aspects of economic and business practices in the country, including culturally significant factors, legal and regulatory frameworks, workforce dynamics, technology adoption, and globalisation, all of which have profound implications for labour processes and relations and work processes.

Section 3.2.4, which follows, considers the increasing importance of IT in the Saudi Arabian context.

3.2.4. The Growing Importance of Information Technology (IT) in Saudi Arabia

In the Saudi business landscape, there is widespread recognition of the indispensable role of IT (Abu-Musa, 2008). Organisations in the country increasingly rely on IT to enhance their

operational performance, cater to customer needs, and optimise costs while maintaining service quality. The integration of IT into a multitude of sectors demonstrates Saudi Arabia's commitment to embracing modern technological advances (Abu-Musa, 2008). From the perspective of LPT, the discussion highlights the growing significance of IT in Saudi Arabia's business landscape, emphasising its pivotal role in enhancing operational efficiency, customer service, cost optimisation, and the country's commitment to adopting modern technological advances, which is essential for understanding the evolving dynamics of labour processes and employment in the region.

An analysis of the development of accounting and auditing in Saudi Arabia is presented in section 3.3.

3.3. The Evolution of Accounting and Auditing in Saudi Arabia

This analysis explores the historical development of accounting and auditing in Saudi Arabia, incorporating the insights provided by LPT to understand the evolution of labour relations and practices in this context.

3.3.1. Recognition and Regulation of the Accounting and Audit Profession

The landmark 1965 Companies Act represented a pivotal moment in Saudi Arabia's accounting landscape, as the Act officially acknowledged the accounting profession and mandated companies to produce audited financial statements for shareholders (Al-Twajjry et al., 2003). The 1974 Law of Certified Accountants was then the first legislation to regulate the auditing profession, establishing conditions for individuals to register with the Ministry of Commerce as external auditors (Al-Twajjry et al., 2003).

The inception of the auditing profession in Saudi Arabia can be traced back to 1965, when Royal Decree No. M/6 mandated companies to subject their financial statements to scrutiny by CPAs (SOCPA, 2020). As a result, financial reporting became subject to governmental regulation, and both the accounting and auditing professions came under state control (Zakari, 2013). SOCPA emerged in 1992 as the designated body authorised by the Saudi Ministry of Commerce to issue accounting and auditing standards and to confer recognition upon CPAs (Zakari, 2013). However, recent research by Hudaib and Haniffa (2020) indicates that there is an ongoing debate concerning SOCPA's promotion of Western capitalism among auditors. The authors describe the need for more critical exploration of the current and future roles of auditing, particularly in light of the rapid changes unfolding in the Kingdom's social and economic landscape.

In Saudi Arabia, the Saudi Organization for Certified Public Accountants (SOCPA) functions both as a professional and regulatory body, unlike bodies such as ICAEW or ACCA in the UK. Established by Royal Decree in 1992, SOCPA is responsible for issuing standards, recognizing CPAs, and ensuring compliance with legal requirements. Professional education and training in Saudi Arabia, governed by SOCPA, involve rigorous academic preparation, practical experience, and professional examinations tailored to align with both international best practices and local regulations.

The concept of a "Royal Charter" in Saudi Arabia involves Royal Decrees, which confer legal authority and status upon professional bodies, reflecting the central role of the monarchy in governance. This dual role of SOCPA ensures that the auditing profession aligns with national interests and cultural norms, highlighting the unique interplay between professional, regulatory, and royal influences in Saudi Arabia.

This argument aligns with Marxists' critical perspective on professional bodies, discussed in the previous chapter, as it suggests that these bodies emerge with the objective of promoting collective social mobility. In this context, professionalism is not solely about the technical and social functions performed by professional employees. Instead, it is a strategic mechanism for controlling a profession through solidarity and closure. In this way, professional bodies can effectively manage the supply of professional workers to the market and provide a foundation for dominant institutions, organisations, and other professions associated with it to exert control (Parry and Parry, 1977, p. 118). This perspective sheds light on the role played by professional bodies in Saudi in shaping the dynamics of the labour market and the broader socio-economic landscape. It highlights the interplay between professionalisation, control, and power structures in the audit profession.

However, it is essential to explore how the power wielded by these professionals aligns or contrasts with other forms of power prevalent in Saudi society, such as religious authority, royal patronage, and the control of oil resources. In the context of Saudi power structures, the power held by audit professionals can be seen as part of a multifaceted network of influence. While professionals in the audit sector possess expertise and authority in their domain, their power is nested within a broader framework in which various other forms of power coexist:

1. Religious Authority: In Saudi Arabia, religious institutions and clerics exert significant influence over various aspects of society, imposing moral and ethical guidelines that may impact business practices. The power of religious authorities can intersect with the professional sphere, particularly in matters related to ethical conduct and adherence to Islamic financial principles.

2. *Royal Patronage*: The Saudi monarchy wields immense political and economic power. Royal patronage and endorsements can have a substantial impact on business ventures and professional appointments. The relationship between audit professionals and the monarchy can influence access to opportunities and resources.

3. *Oil Ownership*: Saudi Arabia's vast oil reserves are a source of immense economic power, and the state controls the oil industry. Economic decisions related to oil production, pricing, and revenue allocation are vital determinants of the country's economic landscape.

In this complex tapestry of power structures, audit professionals operate in the economic sphere, contributing to financial integrity and accountability. However, they are also subject to and potentially influenced by other power centres. An analytical viewpoint is thus crucial for understanding the complex relationships between professional bodies, the labour market, and societal dynamics. The application of LPT to examine the regulation of the accounting and audit profession in Saudi Arabia illuminates how the dynamics of professionalisation, control mechanisms, and power structures are intricately intertwined – shaping both the labour market and the broader socio-economic landscape – and highlighting the multifaceted nature of power in Saudi society.

3.3.2. Expansion and Growth in the 1970s

The 1970s was a significant period in Saudi Arabia, with surging oil demand and prices leading to substantial growth in the nation's gross national product and increased government spending. Consequently, the number of companies grew rapidly (Al-Twajry et al., 2003). This growth highlights how changes in economic conditions and market dynamics can impact labour processes and employment patterns.

3.3.3. Accounting and Auditing Conferences

To address the accounting and auditing challenges arising from the economic expansion, King Saud University hosted two conferences (in 1982 and 1983) focusing on these issues (Al-Twajry et al., 2003). A subsequent report presented to the Ministry of Commerce outlined the problem areas and proposed a roadmap for the development of accounting and external auditing standards (Al-Twajry et al., 2003).

The historical journey of accounting and auditing in Saudi Arabia included various crucial milestones, from the regulation of the accounting profession to the establishment of SOCPA. However, while external auditing and accounting standards have been developed, the analysis of external auditing remains underexplored. This underscores the importance of continued research and initiatives to strengthen the external auditing landscape in Saudi Arabia. The accounting and auditing conferences in 1982 and 1983 – and subsequent report – exemplify how academic and industry responses to economic expansion can influence labour processes and standards in the accounting and auditing professions, emphasising the need for ongoing research and initiatives to further enhance external auditing practices in Saudi Arabia.

3.3.4. Regulation and Oversight by the Saudi Organisation for Certified Public Accountants (SOCPA)

The establishment of SOCPA as the governing body for the auditing profession in Saudi Arabia was a significant milestone in ensuring the credibility and reliability of financial reporting. As an autonomous organisation authorised by the Saudi government, SOCPA plays a pivotal role in promulgating accounting and auditing standards that align with international best practices. By setting such standards, the organisation aims to enhance the transparency and comparability of financial statements, bolstering investor confidence and fostering a positive business

environment. Moreover, SOCPA's authority to recognise CPAs through a rigorous certification process is fundamental to upholding professional competence and ethical conduct in the auditing fraternity. This ensures that auditors possess the necessary knowledge, skills, and ethical acumen to carry out their duties effectively and independently. However, the extent to which SOCPA's recognition process might inadvertently promote Western capitalist values, as suggested by Hudaib and Haniffa (2020), merits a careful examination to ensure that a cultural and ideological balance can be maintained while adhering to global auditing norms.

3.3.5. Implications for the Auditing Profession

Hudaib and Haniffa (2020) revealed that ideology and legal structure in the Saudi environment significantly impact the audit perceptions\ expectation gap, concluding that policymakers must address these factors to align the auditing profession with its desired role and objectives in Saudi Arabia. Liggio (1974) introduced the term "audit expectation gap" to describe the difference between auditors' performance levels and users' perceptions of that performance. The findings of their survey raise pertinent questions regarding the broader implications of SOCPA's role in shaping the auditing profession's trajectory in Saudi Arabia. The promotion of Western capitalism could influence auditors' perspectives and methodologies, causing them to favour practices better-aligned with Western corporate governance models. Such an influence may necessitate a critical evaluation of the extent to which Western practices resonate with Saudi Arabia's unique cultural, economic, and legal context.

Moreover, the rapidly evolving social and economic landscape in the Kingdom also poses considerable challenges and opportunities for the auditing profession. With technological advances, changes in business models, and emerging regulatory demands, auditors must adapt to new paradigms and adopt innovative approaches to meet evolving expectations. This

requires a proactive debate on how the auditing profession can align with the Kingdom's developmental aspirations while preserving its own cultural identity and independence.

Taken together, these implications underscore the impact of ideology, legal structures, and regulatory bodies such as SOCPA on shaping auditors' perspectives and practices in Saudi Arabia. They highlight the need for policymakers to address these factors to ensure the profession is aligned with its objectives and emphasise the importance of adapting to the evolving socio-economic landscape and technological advances, while preserving cultural identity and independence in auditing processes.

3.3.6. Future Directions for Auditing in Saudi Arabia

Given the dynamic nature of the Kingdom's economic and social transformation, there is a need for constructive discourse on the future role of auditing in Saudi Arabia. This debate should incorporate considerations of cultural sensitivities, the integration of technology-driven audit methodologies, and the reinforcement of ethical principles in the profession.

In summary, the history and regulation of the auditing profession in Saudi Arabia, as overseen by SOCPA, reflect the country's commitment to financial transparency and accountability. However, the recent concerns raised regarding the promotion of Western capitalism among auditors warrant a critical examination of the profession's present and future roles. As the Kingdom forges ahead with unprecedented societal and economic changes, auditors must navigate the shifting landscape and deliberate on innovative approaches that harmonise global best practices with Saudi Arabia's unique values and aspirations. The discussion regarding future directions for auditing in Saudi Arabia highlights the need for constructive discourse on the profession's evolving role – incorporating considerations of culture, technology, and ethical

principles and underscoring the need to balance global best practices with the Kingdom's distinctive values and aspirations in the context of labour processes and employment dynamics.

An in-depth analysis is provided in the following section, focusing on auditing practices and the implications of IT.

3.4. The Dominance of Large Audit Firms in Saudi Arabia

Since the 1990s, audit firms have experienced increasing globalisation (Arnold and Cooper, 1999, p. 131; Barratt et al., 2005), mirroring the increasingly global operations of their corporate clients (Carchedi and Roberts, 2013). Previous studies (Barratt et al., 2005; Hanlon, 1994; Lee, 2002) have outlined the division of labour in large audit firms as follows. Engagement partners define the scope of work, including which areas of a client's accounts to review, materiality thresholds, assurance levels, and the tests to be performed. Local partners or managers may adapt this design to local conditions. Senior and junior auditors conduct tests of varying difficulty levels, under the supervision of the supervisors and managers who review their work. Partners then formulate the audit opinion, while exploring opportunities to offer additional services to clients.

The audit profession in Saudi Arabia is characterised by the prominence of the Big Four audit firms – namely, Deloitte, PricewaterhouseCoopers (PwC), EY, and KPMG, with branches in the major cities of Riyadh, Jeddah, and Al Khobar. While the firms offer a range of services, including accountancy, tax advice, and management consulting, auditing remains the primary operation of all four (Adler, 1987; Wilson and Sangster, 1992; Grey, 1994).

The dominance of the Big Four audit firms in Saudi Arabia provides an intriguing opportunity to examine power and control dynamics in the auditing profession, highlighting the intersection

of social, political, and economic factors that influence these firms' operations and their impact on labour processes.

3.4.1. Establishment and Operations of the Big Four Audit Firms in Saudi Arabia

The Big Four audit firms are deeply rooted in Saudi Arabia's economic landscape. EY and PwC were early entrants, with EY establishing its presence in Riyadh in 1974 (Zawya, 2017), followed by PwC in 1979 (Zawya, 2018). KPMG entered the Saudi market through its member firm, KPMG Al Fozan & Partners, and has been operating in the Kingdom since 1992 (KPMG c, n.d.). Deloitte, a veteran in the industry, has over half a century of history (Deloitte, n.d.). While offering diverse services, these firms prioritise auditing as their primary operation, emphasising its critical role in ensuring financial transparency and accountability for their clients. The historical development of these firms in the Saudi economic landscape – and the focus of these firms on auditing as a core operation – has shaped the labour processes and employment dynamics in the profession.

3.4.2. IT Integration in Auditing Practices

Hanlon (1994, p. 91 et seq.) notes that computerisation was being introduced into audit firms, albeit at a limited level, and it has continued at a rapid pace ever since (Gardner and Bryson, 2021). Hanlon argues that there are both knowledge-based and reputational reasons why junior audit staff were not deskilled when the new technology was initially introduced. While not specifically concerned with computerisation, Barratt et al. (2005) also provide evidence that deskilling did not extend up the auditing hierarchy with the introduction of standard programs in a global context, as local knowledge was necessary to apply them to national contexts.

The advent of IT-driven audit methodologies has facilitated the extraction, analysis, and interpretation of vast datasets, leading to more efficient and accurate audit procedures (Manson et al., 2001). By embracing advanced IT solutions, firms can gain a competitive advantage in delivering comprehensive and reliable audit services. However, questions remain as to the implications of these technologies for audit practice, particularly in terms of the work and experiences of junior auditors. The integration of IT into auditing practices has shown how technological advances can impact labour processes, with a particular focus on the experiences of junior auditors in Saudi Arabia, highlighting the evolving nature of work and the utilisation of digital tools in the profession.

3.4.3. Professional Identity and the Social Construction of Audit Firms

The Big Four audit firms play a crucial role in shaping the professional identities of auditors and thus influencing broader perceptions of the auditing profession. Accountancy firms' notion of professionalism distinguishes them from other commercial organisations, contributing to the construction of their distinct professional image (Edgley et al., 2016). This is especially pertinent to the current study, given its focus on the evolving professional identities of junior auditors. The dominance and market influence of the Big Four enable these firms to shape the professional landscape, reflecting a complex interplay of social, political, and economic logic.

Overall, the dominance of the Big Four audit firms in Saudi Arabia and their extensive adoption of IT underscore the critical role of these firms in shaping auditing practices in the country. The interplay between social, political, and economic logic in their operations provides an opportunity to analyse the power dynamics in the auditing profession. Moreover, the firms' influence on the construction of professional identity adds another layer of complexity to this exploration of junior auditors' changing roles. As the profession continues to evolve amidst

the transformative influence of IT and the broader societal changes, understanding of the dynamics in these firms becomes crucial for comprehending the intricacies of the auditing landscape in Saudi Arabia. Thus, this thesis provides an analytical exploration of the digital transformation occurring in the context of Saudi Arabia.

The influence of the Big Four audit firms in Saudi Arabia allows these firms to shape the professional identities of auditors and contribute to broader perceptions of the auditing profession. This highlights the complex interplay of social, political, and economic factors in the profession – an understanding of which is crucial for comprehending the evolving roles of junior auditors and the impact of digital transformation in the Saudi auditing landscape.

3.5. Digital Transformation in Saudi Arabia

Digital transformation is a significant and widely discussed topic across the globe, including in the context of Saudi Arabia (Al-Ruithe et al., 2018). Technology has assumed a pivotal role in realising the objectives outlined in the ambitious “Saudi Vision 2030” (Rasooldeen, 2016). The Saudi Vision 2030 serves as a comprehensive blueprint for guiding the development of the Saudi Arabian economy, encompassing a range of strategic initiatives and objectives aimed at transforming various sectors and aspects of the nation’s economic landscape. The Saudi government heavily influences the business landscape through its five-year development plans, as highlighted by Al-Twajjry et al. (2003). These plans play a vital role in shaping both the economy and individual business sectors, fostering growth and steering the country’s economic trajectory (Al-Twajjry et al., 2003).

The Vision 2030 programme for the Public Investment Fund (PIF) aims to promote a thriving and diversified economy by growing the PIF’s assets and role as an economic growth engine (PIF Program). A crucial aspect of this objective is the localisation of cutting-edge technology

and knowledge to promote innovation and enhance the Kingdom's global position (PIF Program). In 2017, NEOM formulated its strategic plan; and in 2019, the company was established on the shores of the Red Sea (PIF Program). The core of NEOM's strategy is the development of 16 distinct sectors, with technology being a key focus area (PIF Program).

The Elm Information Security Company was founded in June 1988 and subsequently underwent a transformation into a joint-stock company, with ownership transferred to PIF in November 2007 (PIF Program). This company offers a comprehensive range of technological solutions, e-products, and consulting services, alongside digital outsourcing solutions, and it takes pride in offering specialised training courses to clients in both the public and private sectors (PIF Program). In 2020, Elm entered into a significant share purchase agreement, acquiring Tadawul, a move aimed at creating a national champion in the IT services sector (PIF Program). This strategic initiative exemplifies the PIF's steadfast dedication to fostering the growth of its portfolio companies by forging strong partnerships and unlocking economic growth opportunities (PIF Program). Consequently, this transaction will enable the seamless integration of logistics services in a comprehensive technological framework, aligning with the objectives of the PIF Program, which is focused on advancing digital transformation and fortifying technology infrastructures in line with the Vision 2030 agenda (PIF Program). Moreover, PIF is the major investor in SoftBank Vision Fund, with a \$45 billion commitment (PIF Program). The fund invests in various technology sectors, including IoT, AI, health-tech, and fin-tech (PIF Program).

Vision 2030 aims to foster the development of a robust financial sector that bolsters the national economy, diversifies Saudi income sources, and stimulates savings, finance, and investment (Vision 2030). As Saudi Arabia transitions towards a more open and dynamic economy, its adoption of the International Financial Reporting Standards (IFRS) and the resultant

technological advances have significantly contributed to economic growth (Omitogun et al., 2019). This blend of economic progress and technological evolution in the Saudi context presents an intriguing and unexplored arena for study, particularly as previous research has not focused on this region. Thus, the current thesis seeks to address this research gap.

Saudi Arabia's commitment to digital transformation, as evident in Vision 2030, reflects the nation's aspiration to reach the forefront of technological advances while charting a course towards economic diversification and sustainable growth. The strategic emphasis on digitalisation has implications for the financial sector and various other industries and societal aspects. By embracing the IFRS, Saudi Arabia has aligned its financial reporting practices with international standards, thus facilitating transparency, comparability, and credibility in the global marketplace (Omitogun et al., 2019). This harmonisation has also encouraged greater foreign investment, as international stakeholders find reassurance in standardised financial reporting.

Saudi Arabia's digital transformation has included a commitment to adopting advanced technology, with implications for various sectors and the socio-economic landscape as a whole. As a result, there is a clear need for critical analysis of the transformation's effects on auditing, audit practices, and junior external auditors, acknowledging the unique geographical context and thus contributing to the broader literature on digital transformation in diverse global contexts.

A scholarly analysis of Cloud adoption in the Kingdom of Saudi Arabia is presented in section 3.6.

3.6. Cloud Adoption in the Kingdom of Saudi Arabia

The rapid advances in Cloud Computing have sparked intense debate among academics and industry experts, driving extensive research into the related technologies (Al-Ruithe et al., 2018). As Cloud solutions revolutionise industry, it becomes imperative to study how their implementation can affect labour processes and employment dynamics on both the national scale and the individual level.

3.6.1. Digital Transformation and Cloud Computing

Digital transformation is reshaping the global landscape through technological and digital innovations (Al-Ruithe et al., 2018). Cloud Computing has emerged as a key enabler of this transformation, facilitating agility, scalability, and cost-effectiveness for businesses (Al-Ruithe et al., 2018). In the context of Saudi Arabia, Cloud adoption is a critical component of the digital transformation journey (Al-Ruithe et al., 2018), shaping the broader transformation of labour processes and business operations in the country.

3.6.2. Implications for Government, Academia, and Industry

As digital advances reshape the global landscape, it is essential for governments, academia, and industry stakeholders in Saudi Arabia to anticipate and study these changes (Al-Ruithe et al., 2018). This includes investigating the implications of Cloud Computing for junior external auditors' work and experiences.

In the following section (3.7), the discussion shifts to an exploration of auditing in the IT era.

3.7. Rethinking Auditing in the Era of Information Technology (IT)

IT is crucial in auditing for designing, implementing, and maintaining controls over an organisation's business processes (Abu-Musa, 2008). When designing audit procedures, auditors must consider risk significance, materiality of misstatements, transaction characteristics, and the nature of specific controls, including IT usage, as well as the effectiveness of these controls in detecting and preventing material misstatements (Abu-Musa, 2008).

The International Standard on Auditing 401 highlights the dynamic changes induced in auditing processes by globalisation, technological advances, demands for value-added audits, and the organisational structure of computerised information systems in a client's organisation (Abu-Musa, 2008). However, studies on IT adoption in this field have primarily focused on corporations in North America and Europe (Razi and Madani, 2013).

Auditing is an investigative and regulatory process for detecting fraud, unethical practices, and deviations from standard accounting procedures (Razi and Madani, 2013). IT-based auditing and audit software is used extensively in developed countries and is an emerging trend in other regions (Razi and Madani, 2013).

The critical role of IT in auditing means that auditors must consider IT-related factors during audit-procedure design – including the evolving nature of the processes under the influence of global trends, technological advances, and the structure of computerised information systems. This section notes that auditing studies on the topic of IT adoption have tended to focus on North America and Europe, despite IT-based auditing being a growing trend worldwide. As a result, there is a limited body of research exploring this phenomenon in the Middle East.

Section 3.8, which follows, provides a summary of this chapter.

3.8. Summary

This chapter lays the groundwork for this study, providing an analysis of the Saudi context in relation to the audit profession and the transformative impact of IT. It began by exploring the economic and political landscape of Saudi Arabia, including its oil-based economy, global integration, political dynamics, cultural intersections, and the growing employment of IT. The chapter then moved onto the evolution of accounting and auditing in Saudi Arabia, analysing the profession's recognition and expansion in the 1970s, its regulatory oversight by SOCPA, and the implications for the future. It also scrutinised the dominance of the Big Four audit firms, their IT integration, and the construction of professional identity in this sector. This chapter investigated digital transformation in Saudi Arabia, highlighting its impact on governmental bodies, academia, and industry stakeholders. It addressed the need to rethink auditing practices in the era of information technology and to examine the challenges and opportunities arising from digital advances. Applying a critical lens, this chapter elucidated the implications of these contextual elements for the audit profession in the Kingdom, setting the stage for this thesis.

The following chapter describes and justifies the research methodology employed in this study.

Chapter Four: Methodology

4.1. Introduction

This study explores how Cloud Computing affects junior external auditors in three of the Big Four audit firms in Saudi, shedding light on the resulting changes in juniors' roles, autonomy, skills, and professional identities. This methodology chapter explains how the research was conducted, describing its research design, data-collection method, and analysis strategy. It explains and justifies the adopted research philosophy and critically analyses the epistemological and ontological foundations. Additionally, the chapter elucidates the thesis's application of the abductive approach and case-study strategy. The subsequent sections address the evolution of empirical research in the management and accounting domain, the cross-sectional time horizon, the method selection, and the processes of data collection and analysis. To conclude, section 4.10 provides a comprehensive summary of the chapter's key points.

4.2. Research Philosophy

Burrell and Morgan (1979) propose four distinct paradigms that govern philosophical assumptions in the realm of management and accounting research. However, debates surrounding the merits and appropriateness of these paradigms continue (Saunders et al., 2023). To clarify the methodological choices in the current study, this chapter addresses the crucial epistemological and ontological issues at the core of these paradigms. Given the unique application of LPT and the case-study method in this research, understanding the research philosophy becomes vital to identify potential challenges.

4.2.1. Epistemological Considerations

A primary epistemological question in the social sciences is how knowledge can be created by different research approaches. The natural sciences often employ positivism as a key epistemological assumption, wherein researchers utilise theory to develop testable hypotheses (Saunders et al., 2023). In contrast, interpretivist epistemology emphasises the need for researchers to understand the differences between individuals as social actors (Saunders et al., 2023). This perspective has two aspects: objectivism, which posits that social entities exist externally to social actors, and subjectivism, which asserts that social phenomena are created from the perceptions and actions of social actors (Saunders et al., 2023). The current research adopts an interpretivist perspective – namely, the subjectivist approach (Saunders et al., 2023). This is justified for several reasons. First, auditing is a complex field that involves human judgement, decision-making, and interactions with various stakeholders. The subjective experiences, perceptions, and interpretations of junior auditors are integral to understanding how Cloud Computing affects their work. The subjectivist approach allows the research to explore these nuances and capture the intricate human-centric aspects of the audit process. Second, interpretivism places a strong emphasis on understanding phenomena in their specific contexts. Cloud Computing’s impact on junior auditors is context-dependent and will vary across organisations and situations. A subjectivist approach enables this study to explore this contextual variation and gain insights into the unique challenges and opportunities faced by junior auditors in different settings. Third, junior auditors’ experiences and perceptions are best captured by qualitative data-collection – such as the semi-structured interview method used in this research. The subjectivist approach aligns well with qualitative research methods, allowing the study to collect rich, detailed data for a holistic view of how junior auditors are navigating their evolving landscape. Fourth, junior auditors come from diverse backgrounds, possess

different levels of expertise, and have varying degrees of exposure to the technologies. The subjectivist approach accommodates this diversity by acknowledging that each individual's perspective is valuable and contributes to a comprehensive understanding of the topic.

The adoption of this interpretivist perspective also aligns with LPT and the recognition of “objective” changes in reality in the following ways. First, LPT, which can explain how work is organised and controlled, particularly in capitalist contexts, is often employed in collaboration with interpretivist and subjectivist approaches. These approaches clarify how workers' experiences, perceptions, and interpretations shape their interactions with technology and organisational processes. This study's adoption of the subjectivist approach aligns with LPT because it acknowledges the importance of understanding how junior auditors subjectively experience and interpret the changes in their work. It allows them to explore the nuances of their interactions with technology and how it impacts their labour processes. Second, this choice of interpretivism does not disregard the possibility of objective changes in reality. Instead, it acknowledges that these objective changes can be understood and studied through the subjective experiences and interpretations of individuals. By adopting the subjectivist approach, the research is able to show how junior auditors perceive and navigate the objective changes. This approach captures the real, tangible shifts in the work environment and practices. Third, this thesis involves the study of different firms and interviews with auditors at various levels, recognising the diversity of organisational contexts and professional experiences. Interpretivism, and the subjectivist approach in particular, is well-suited to such diversity. This allows the study to explore how auditors' interpretations of the same objective changes may vary depending on the auditors' respective firms and levels of expertise. This approach acknowledges the role of context and individual perspectives in shaping responses to the changes.

The research's ontological considerations are explained in section 4.2.2.

4.2.2. Ontological Considerations

Ontology concerns the researchers' assumptions about the functioning of the world (Saunders et al., 2023). In management research, Burrell and Morgan (1979) identify four paradigms: interpretivism (subjectivism-regulation), radical humanism (subjectivism-change), functionalism (objectivism-regulation), and radical structuralism (objectivism-change). In the accounting field, Hopper and Powell (1985) expand on this and propose three philosophical method categories: functionalist (objectivism and regulation), interpretive (subjectivism and regulation), and radical (objectivism-subjectivism and change). Realist ontology, on the other hand, employs scientific assumptions to build knowledge (Saunders et al., 2023). The current study subscribes to a realist ontological standpoint. It acknowledges that different levels of reality exhibit varying degrees of permanence, with certain aspects being inherently stable and others constructed in the confines imposed by the overarching reality. As Llewellyn (2007) articulates, there exists a hierarchy of permanence and reality. At one end of this spectrum, some decisions – such as the allocation of specific audit tasks to junior auditors – may indeed appear to be temporary constructs, reflecting a degree of constructivism. However, when exploring deeper into the intricacies of these decisions, it becomes evident that they are subject to a more profound set of constraints. For instance, the control and structuring of audit tests in the broader audit program are bound by more substantial and enduring limitations, rendering them significantly more “real” in their impact. Expanding this perspective to encompass the organisational structure of a capitalist economy and the relentless pursuit of profit or an increased share of rent, one encounters significant constraints. These constraints exert a profound and tangible influence on what individuals can construct or undertake. In practical

terms, this means that a junior auditor cannot simply enter a firm and unilaterally decide to conduct an audit in a manner of their choosing.

These types of constraints, combined with the fundamental organisation of the economy and the firm, align with the multifaceted dimensions of reality described by Llewellyn (2007). In the words of Marx, individuals may indeed shape their own history, but they do so under circumstances not of their own choosing. They inherit a pre-existing reality that, as this study contends, encompasses various levels of permanence and influence, with some aspects exerting more substantial and enduring effects than others. This understanding of reality's stratification and the constraints it imposes underpins the analytical framework of this thesis.

4.2.3. Alignment with Interpretivist Philosophy

The current research adopts the Burrell and Morgan (1979) model and the interpretivist paradigm, which is consistent with previous work in critical management studies. Some branches of LPT are economically and technologically deterministic. LPT, which is concerned with the intricate interplay between production dynamics, control mechanisms, autonomy implications, and consent dynamics in the workplace, emerges as an invaluable asset (Gandini, 2019). LPT enhances the prevailing critical narratives of digitally facilitated and digitally driven labour (Gandini, 2019). These narratives, in isolation, fall short of encapsulating the multifaceted dimensions of this phenomenon (Gandini, 2019). The incorporation of LPT contributes a layer of analysis that elevates our understanding (Gandini, 2019), rendering LPT an indispensable adjunct to the existing critical discourse (Gandini, 2019).

Case-study research, being versatile, can be grounded in either interpretivism or positivism (Walsham, 1995). The interpretive philosophy was chosen for this qualitative study to address the meanings of "organisational life" (Saunders et al., 2023).

By critically examining the epistemological and ontological foundations of management and accounting research, this chapter has provided insights into the philosophical underpinnings of the current study. The application of the interpretivist paradigm justifies the choice of LPT and the case-study method to attain a more comprehensive understanding of the issues under study. This approach has the power to enrich the knowledge and insights gained in the field of management and accounting.

In section 4.3, which follows, the research approach will be presented and discussed.

4.3. Research Approach

In the realm of scientific research, there are three fundamental approaches: deductive, inductive, and abductive. The deductive approach involves the formulation of hypotheses followed by empirical testing against an established theory (Creswell, 2009). In contrast, the inductive method entails the construction of a theory through the careful analysis of gathered data (Creswell, 2009). Abduction, the third approach, centres on the researcher's unearthing of innovative concepts, ideas, and explanations by uncovering unexpected phenomena, data patterns, or events that challenge established knowledge (Kennedy, 2018).

Applying the 'Montgomery framework' of Montgomery et al. (1989), Meyer and Lunnay (2013) emphasise the pivotal role of abductive inference in theory-driven research, with theoretical foundations serving as the bedrock. This anchoring allows abductive inference to function as a pivotal instrument for exploring findings in the context of pre-existing theories and enriching the theoretical fabric through novel insights. The abductive research strategy takes the shape of a dynamic process, characterised by the researcher's cyclical immersion in both the "relevant social world" and the "world of theoretical research". This immersion culminates in phases of reflection, transcription, and analysis (Blaikie, 2010, p. 156). This

approach forges a synergistic relationship between theory and research, setting forth a dialectical research trajectory that contributes to theory and enables active engagement with data and analysis (Mason, 2002).

The abductive approach adopted here aligns with the qualitative nature of the investigation. This approach empowers the researcher to engage in an innovative process, evaluating whether the collected data support the established hypotheses or necessitate adaptations in existing frameworks (Thornberg, 2012, as cited in Kennedy, 2018). Moreover, the abductive stance empowers the researcher to transcend the confines of available data and establish theoretical understanding, enabling the adaptation, augmentation, or even rejection of existing theories (Kennedy, 2018). It allows for the amalgamation of novel combinations of pre-existing ideas to comprehensively dissect, comprehend, and elucidate the collected data.

The use of an abductive approach allows the interconnection between the research questions and the data obtained from semi-structured interviews can be effectively bridged to the underlying theories, such as LPT. Abduction paves the way for the development of patterns and of synergies between the empirical data and theoretical frameworks, facilitating a deeper and more nuanced comprehension of the research subject.

The following section (4.4) will unravel and dissect the research strategy employed in this investigation.

4.4. Research Strategy

Previous studies in the field of technological change research have employed a diverse range of methodologies. For instance, Munoko et al. (2020) examined prior research. Orlikowski (1991) adopted an interpretive method, employing organisational ethnographic techniques,

while Ma et al. (2021) conducted a qualitative study. Anderson-Gough et al. (1998) was the only study to use the case-study method. Most studies have employed either a mixed methods approach (Hanlon, 1994; Banker et al., 2002; Omoteso et al., 2010) or a survey instrument (Wilson and Sangster, 1992; Manson et al., 1998; Manson et al., 1997; Manson et al., 2001). However, all of these approaches either fail to produce an in-depth investigation or overlook the perspectives of the actors involved.

To circumvent these limitations, the current research applies the case-study method, which is considered a robust approach for holistic and in-depth investigations (Zainal, 2007). This method allows the researcher to go beyond quantitative statistical results and explore the behavioural conditions of the actors involved. Case-study research has been widely conducted in various accounting areas, including managerial accounting, auditing, and financial accounting (Cooper and Morgan, 2008; Lee and Humphrey, 2017). This approach has contributed significantly to the development of accounting theory, generating new knowledge (Yin, 2018; Cooper and Morgan, 2008). The case-study methodology enables the research to effectively apply the theoretical concepts of LPT, offering a nuanced and original understanding of the complex issues faced by junior auditors in their real-life context. Furthermore, it facilitates the articulation and exploration of the research themes, such as autonomy, deskilling and upskilling, and audit professionalism.

Literature on the case-study method often neglects to acknowledge the inherent diversity in case studies, a perspective emphasised by Llewellyn (2007). Rather, there is a prevailing assumption that a case is only representative of a solitary reality or entity (Llewellyn, 2007). Llewellyn (2007) contends that to accurately evaluate the significance of a case study, it is imperative to recognise that it does not explore a singular, unified phenomenon, but rather encompasses several divergent realities. Furthermore, these divergent realities possess

substantial variations in their intrinsic nature (Llewellyn, 2007). Archer (2003, p. 35) succinctly encapsulates this notion by stating, “Reality itself is not homogeneous; rather it is made up of entities whose own constituents are radically different from each other”. Marx (1848–1852) eloquently captures this process:

Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past.

Embracing this ontological perspective, which views reality as inherently differentiated, the case study in this thesis scrutinises various dimensions of the reality of the external-audit domain after the adoption of Cloud technology, as seen from the perspective of juniors, seniors, managers, and partners. The focus of these case studies is the implications of Cloud Computing for the work and experiences of junior auditors, with an emphasis on their interconnectedness. Consequently, this research undertakes what Llewellyn (2007) terms “differentiated realities”, denoting distinct facets of the world (p. 54). As a result, a plurality of ontologies comes into play (Llewellyn, 2007).

With organisational research in the form of case studies, the intention is to gain insights into various dimensions of the physical world – including structural contexts, human agency, conceptual frameworks, and individuals’ perceptions of these aspects (Llewellyn, 2007). The trajectory of the inquiry is guided by the research question (Llewellyn, 2007). A single case study in the field of accounting and management can potentially integrate elements from the physical, structural, agential, cultural and mental worlds (Llewellyn, 2007). For instance, in the context of this study, focusing on external auditing practices in Saudi Arabia, the objective is to extract the perspectives of juniors, seniors, managers, and partners concerning the influence

of Cloud Computing on the roles and experiences of junior auditors. This endeavour involves an examination of several key facets. It concerns juniors' autonomy, skills, and professional identities, as well as the dynamics of audit practices. Moreover, the study aims to pinpoint the structural nuances of audit responsibilities and regulations. Notably, the exploration extends to situating audit regimes in the tangible dimensions of time and space.

In a broader context, the contention posited here underscores the critical significance of investigating and comprehending the intricate delineations through which the world manifests as a multitude of differentiated realities (Llewellyn, 2007). These realities span the physical, structural, agential, cultural, and mental spheres, each exhibiting distinct modes of existence (Llewellyn, 2007). This understanding is vital for qualitative researchers operating in the realms of management and accounting disciplines, as their pursuits traverse the borders of natural, social, organisational, and personal dimensions (Llewellyn, 2007). Such an analytical exploration not only has the potential to illuminate the essence of research inquiries, it also provides a platform for validating research methodologies (Llewellyn, 2007). This conceptual framework also challenges the foundational tenets of two prevailing propositions pertaining to a singular reality (Llewellyn, 2007). It counters the theory of an objective world, advocated by social positivists and interrogates the subjective world proposed by social constructivists (Llewellyn, 2007). By embracing this notion of plural ontologies, this research navigates the intricate interplay between varied realities, enriching investigations into complex socio-organisational domains. The evolution of distinct realities in the scope of this inquiry is intricately entwined with the technological landscape of the Cloud. Concurrently, it interfaces with the regulatory frameworks operative in three of the Big Four audit firms, along with methodological approaches that ascertain variables encompassing stratified levels, materiality considerations of audit tests. The execution modalities of these tests and the comprehensive

audit evaluation process are subject to shaping and construction by the auditors' perceptions of diverse realities, as conceived across various echelons of the firm.

In section 4.5, which follows, a comprehensive exposition and critical analysis of the research design of this study will be provided.

4.5. Research Design

Over the past two decades, the disciplines of management and accounting have witnessed noteworthy shifts in the types of empirical research being conducted (Llewelyn, 2003). While quantitative research grounded in positivist methodologies has traditionally dominated the fields, there has been an increase in qualitative work informed by interpretivism (Llewelyn, 2003). This shift has brought about changes in research designs, with case studies gaining prominence over surveys and interviews supplanting structured questionnaires (Llewelyn, 2003). The growing popularity of qualitative studies is not limited to management but extends to various social science fields, including management research (Alvesson and Deetz, 2001).

This preference for qualitative research can be attributed, in part, to the limitations of quantitative approaches, which include a lack of depth in the data, an orientation towards control, and concerns regarding the relevance of findings (Alvesson and Deetz, 2001). Qualitative research offers significant value by providing detailed descriptions of human interactions and the meanings and processes found in real-life organisational settings (Gephart, 2004, p. 455). Moreover, qualitative inquiry allows for insights into the operationalisation of broad concepts and theories in specific cases (Gephart, 2004). These features render qualitative research particularly advantageous for exploring the complexities and nuances of organisational phenomena.

In the accounting and auditing research field, quantitative methodologies remain dominant, leading to calls for greater adoption of qualitative approaches (Lee and Humphrey, 2017). This thesis responds to these calls, recognising the need to employ qualitative research methods to address the intricacies and contextual intricacies of auditing phenomena.

Section 4.6 will provide a detailed clarification of the research time horizons.

4.6. Time Horizons

In a research project, the time horizon is a critical aspect and can be either cross-sectional or longitudinal (Creswell and Creswell, 2023). Cross-sectional projects involve the examination of a specific phenomenon at a particular point in time, akin to taking a snapshot of the subject under study. In contrast, longitudinal projects investigate phenomena characterised by dynamic changes over extended periods (Creswell and Creswell, 2023). The choice of time horizon for a research project is heavily influenced by the research questions or objectives at hand (Creswell and Creswell, 2023).

For this thesis, the data is collected within a specified timeframe. However, due to the practical constraints, a decision was made to adopt a cross-sectional time horizon. This choice allows for a focused investigation of the phenomenon at a particular juncture to capture a snapshot of the subject, enabling the research to obtain valuable insights and address the research questions effectively, while acknowledging the limitations of a longitudinal study.

In section 4.7, an explanation of the chosen research method will be presented.

4.7. Chosen Method

Interviews are categorised into three types: structured, semi-structured, and unstructured or in-depth (Creswell and Creswell, 2023). In this study, a one-to-one semi-structured interview method is employed, with a checklist of themes and associated prompts prepared beforehand (Cassell, 2015). There were several key reasons for the selection of this method. First, semi-structured interviews suit the exploratory nature of the research, which adopts an interpretive approach (Creswell and Creswell, 2023). Second, these interviews facilitate a more comprehensive exploration, generating rich and detailed data, which is particularly advantageous when combined with the case-study method for producing in-depth investigation (Creswell and Creswell, 2023). Third, the semi-structured interview format encourages open discussion, enabling the research subjects to express themselves freely and fostering an environment conducive to trust and rapport between the researcher and participants (Anderson-Gough et al., 1998). Such an approach is well-suited to this interpretive investigation, where the interviewees' understanding of events is considered to socially construct their reality.

Attempts were made to include all of the Big Four audit firms in Saudi Arabia. In the initial stages, all four firms expressed an interest in the research initiative. However, regrettably, one of the firms was unable to allocate the necessary time during the designated fieldwork phase. Twenty-nine interviews were conducted – one firm contributing nine and the other two furnishing 10 each – between March and December 2022. Recruiting participants from three of the Big Four audit firms in Saudi Arabia is challenged by their tight schedules, strict confidentiality policies, and complex bureaucratic approval processes. These firms prioritise client commitments and regulatory compliance, often making it difficult to allocate time and resources for external studies.

The organisational hierarchy in the examined firms' offices shared similarities with the structural framework described by Hanlon (1994). In the social sciences, a "structural framework" can refer to the underlying social, economic, or political structures that shape and influence a society. It encompasses concepts such as social hierarchies, economic systems, and institutional arrangements that impact the behaviour and interactions of individuals and groups.

For a comprehensive view of the transformative processes, research participants were recruited from all strata of the firms' hierarchies. They included senior auditors, managers, and partners, whose insights were instrumental in affording an overview of the issues under study. Junior auditors were also interviewed regarding their professional engagements. Table 2 below offers an overview of the hierarchical distribution of the participants.

Table 2. Overview of the Hierarchical distribution of the participants

Position	Firm A	Firm B	Firm C	Total
Partner	1	1	3	5
Manager	1	2	1	4
Senior	4	2	2	8
Junior	4	4	4	12
Total	10	9	10	29

Given the challenges of recruiting interviewees for this type of study, the researcher requested a letter from the Saudi Embassy in London to share with potential interviewees, clarifying the nature of the research.

The interviews were conducted virtually, using Zoom. Each interview lasted 30–50 minutes. Codes were assigned, corresponding to the participants, as follows: a primary code indicating the firm, a secondary code referring to technology, and a tertiary code indicating the participant's level of seniority. The respondents were granted the options of having their interviews conducted in either English or Arabic, as the interviewees and the researcher all spoke Arabic as their primary language. The ease of the participants in conveying their thoughts in the interviews was of paramount importance. Therefore, providing these language options significantly enhanced the research's credibility and the profundity of the insights garnered. Interestingly, all but two of the interviews were conducted in the English language, as this was the choice of the majority of the interviewees. Two junior participants at Firm C requested Arabic interviews, citing their limited English proficiency. Given the researcher's role in formulating the interview questions and conducting the interviews, it was logical for the researcher to also complete the translation of these interviews. Translation involves a process of sensemaking, and in my capacity as a researcher engaged in translation, I found myself in a unique position, with no external intermediary introducing a sensemaking framework that could potentially deviate from the perspectives of either the research participant or myself (Xian and Meng-Lewis, 2018). This absence of a third-party filter allowed for a more direct and aligned approach to the act of translation. Consequently, I undertook the translation of these two interviews into English before the analysis stage. This course of action was intended to uphold the research's internal validity and ensure transparency in the translation.

The interviews were transcribed by the researchers both in real-time during fieldwork and subsequently. When the transcription was complete, there was a thorough review process and necessary edits were made to guarantee the concealment of the participants' identities. Following the translation process, a colleague conducted a meticulous review of the translation

to authenticate its accuracy. This procedural step underscores a commitment to maintaining the integrity and fidelity of the original content. Furthermore, to adhere to ethical standards, all potential interviewees were provided with a guarantee of anonymity, in accordance with the ethical approval guidelines set forth by the University of Sheffield. This measure ensured the confidentiality and protection of participants' identities throughout the research process.

Section 4.8 will offer a comprehensive exposition of the data-collection process.

4.8. Data Collection

4.8.1. Access to the Audit Firms and Initial Contacts

I employed my social contacts to establish communication with partners and managers affiliated with the prominent audit firms in Saudi Arabia. This strategic approach was undertaken to gain access to these firms and obtain permission to conduct the research.

4.8.2. Methods of Data Collection

In the initial stage of this research, potential participants engaged in auditing tasks in a Cloud Computing environment were identified. Each potential participant received an information sheet that outlined the project details and highlighted the guarantee of privacy, anonymity, and confidentiality, as well as underscoring the participants' right to withdraw from the study at any time. A comprehensive explanation of the research project was provided, and any queries raised by the participants were addressed. Following this, the participants were invited to express their willingness to partake in the study. Those who chose to participate were required to sign a consent form, formally indicating their agreement.

The data was primarily collected from one-to-one semi-structured interviews, which were audio recorded for comprehensive documentation and analysis purposes. Due to the constraints posed by the COVID-19 pandemic, the interviews were conducted via Zoom, with this particular software selected on the basis of the participants' preferences and convenience. This allowed for the continuation of the research while ensuring adherence to the health protocols and minimising the risks associated with face-to-face interactions.

4.8.2. The Interview Schedule

The interview schedule was designed to systematically address the core research questions. This comprised various subject areas, as follows:

1. Technological evolution and Cloud introduction: An exploration of the trajectory of the technological advances, leading up to the introduction of the Cloud.
2. Pre-Cloud audit design: An examination of the design principles and audit procedures in place before Cloud Computing.
3. Post-Cloud audit design: An analysis of the recalibration of audit methodologies subsequent to the adoption of Cloud Computing.
4. Perceptions of Cloud-induced changes: A clarification of prevailing perceptions regarding the transformative impact of Cloud Computing.
5. Junior auditors' roles before and after the technological shifts: An investigation into the roles of junior auditors, both preceding and subsequent to the incorporation of Cloud Computing.
6. Autonomy of junior auditors: An examination of whether juniors' autonomy has changed since the introduction of the Cloud.

7. Physical and mental efforts: An assessment of the physical and mental efforts required of juniors in their tasks.

8. Manipulative and conceptual skill utilisation: A delineation of the manipulative and conceptual skills used by juniors in their audit sphere.

9. Education and training levels: An examination of the educational and training backgrounds of junior auditors.

10. Positive and negative experiences: An exploration of the positive and adverse experiences characterising the roles of junior auditors.

This interview schedule was devised to facilitate a holistic and structured approach to gathering data and insights, allowing a nuanced analysis of the various aspects. Table 3 below provides a list of the prepared interview questions.

Table 3. List of Interview Questions

Context	Factor	Questions	Purpose
	Auditing	<ol style="list-style-type: none"> 1. How was auditing in your firm performed by junior auditors before the introduction of the Cloud? 2. What audit tasks did junior auditors perform before the introduction of the Cloud, and how did they perform them? 	<ul style="list-style-type: none"> ▪ To articulate the changes in auditing, particularly the tasks of key individuals.

General	Cloud Computing	<ol style="list-style-type: none"> 1. Do you support the adoption of Cloud Computing in your firm, and why? 2. What audit tasks do junior auditors perform in a Cloud Computing environment? 3. What are the general implications for junior auditors of performing in a Cloud Computing environment? How do you deal with them? 	<ul style="list-style-type: none"> ▪ To understand the perspectives of Cloud Computing amongst key individuals. ▪ To study the implications of Cloud Computing from the perspectives of key individuals and gather recommendations for solving any identified problems. ▪ To understand the roles of key individuals in audit tasks performed in the Cloud.
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	Individual Autonomy	<ol style="list-style-type: none"> 1. Does Cloud Computing increase or decrease junior auditors' autonomy while performing an audit task? How and why? 2. What are the effects (negative or positive)? 3. If there are negative effects, what – in your view – are the solutions to these? 4. Who benefits from the positive changes? 5. Do you have any other ideas or suggestions in this regard? 	<ul style="list-style-type: none"> ▪ To identify whether autonomy is increased or decreased by Cloud Computing. ▪ To identify the implications. ▪ To gather solutions, suggestions, and ideas for managing or avoiding any negative effects. ▪ To obtain a deep understanding of this factor from the perspectives of key individuals.
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<p>Organisational and Technological Context</p>	<p>Task Autonomy</p>	<ol style="list-style-type: none"> 1. Does Cloud Computing increase or decrease junior auditors' autonomy over the tasks they are performing? How and why ? 2. What are the effects (negative or positive)? 3. If there are negative effects, what – in your view – are the solutions to these? 4. If there are positive effects, how might these benefits be enhanced further? 5. Do you have any other ideas or suggestions in this regard? 	
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	Physical Effort	<ol style="list-style-type: none"> 1. Does Cloud Computing require different physical efforts from junior auditors performing audit tasks? How and why? 2. What are the effects (negative or positive)? 3. If there are negative effects, what – in your view – are the solutions to these? 4. If there are positive effects, how might these benefits be enhanced further? 5. Do you have any other ideas or suggestions in this regard? 	<ul style="list-style-type: none"> ▪ To identify the effect and implications. ▪ To gather solutions, suggestions, and ideas for managing or avoiding any negative effects. ▪ To obtain a deep understanding of these factors from the perspectives of key individuals.
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Individual Context	Mental Effort	<ol style="list-style-type: none">1. Does Cloud Computing require different mental efforts from junior auditors' performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, how might these benefits be enhanced further?5. Do you have any other ideas or suggestions in this regard?	
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	Manipulative skills	<ol style="list-style-type: none">1. Does Cloud Computing require junior auditors to have different manipulative skills for performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, how might these benefits be enhanced further?5. Do you have any other ideas or suggestions in this regard?	
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	General skills	<ol style="list-style-type: none">1. Does Cloud Computing require junior auditors to have different general skills for performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, how might these benefits be enhanced further?5. Do you have any other ideas or suggestions in this regard?	
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	Education	<ol style="list-style-type: none">1. Does Cloud Computing require junior auditors to have different education for performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, how are you changing the types of education and training to prepare junior auditors for their changed role?5. Do you have any other ideas or suggestions in this regard?	
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	Experience	<ol style="list-style-type: none">1. Does Cloud Computing require junior auditors to have different experience for performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, how are you changing your provisions to prepare junior auditors for the changed experience and are you doing anything to enhance those experiences further?5. Do you have any other ideas or suggestions in this regard?	
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Professional Identity	Behaviours	<ol style="list-style-type: none"> 1. Does Cloud Computing change junior auditors' behaviours in relation to performing audit tasks? How and why? 2. What are the effects (negative or positive)? 3. If there are negative effects, what – in your view – are the solutions to these? 4. If there are positive effects, are you seeking to enhance the benefits of those effects further? 5. Do you have any other ideas or suggestions in this regard? 	<ul style="list-style-type: none"> ▪ To study whether junior external auditors' professional identity is changed and reshaped by Cloud Computing. ▪ To find out what implications arise. ▪ To find out solutions, suggestions, ideas for dealing with or avoiding any negative effects. ▪ To obtain a deep understanding of the factors that shape professional identity, as seen by the key people.
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	Attitudes	<ol style="list-style-type: none">1. Does Cloud Computing change junior auditors' attitudes towards performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, are you making any further changes to enhance those effects.5. Do you have any other ideas or suggestions in this regard?	
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	Roles	<ol style="list-style-type: none">1. Does Cloud Computing change junior auditors' roles in relation to performing audit tasks? How and why?2. What are the effects (negative or positive)?3. If there are negative effects, what – in your view – are the solutions to these?4. If there are positive effects, are you doing anything further to improve junior auditors' role in the new environment?5. Do you have any other ideas or suggestions in this regard?	
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4.8.4. Research Focus

The Saudi Arabian offices of three of the Big Four audit firms.

4.8.5. Ethical Considerations

Throughout the course of this research, strict adherence to ethical guidelines was paramount to protect the participants from any potential adverse consequences arising from their involvement in the study. The ethical considerations included critical concerns about privacy, deception, anonymity, accuracy, and confidentiality (Saunders et al., 2023). By diligently upholding these ethical principles, the research protected the welfare and rights of the participants, ensuring the integrity and validity of the findings and fostering trust and transparency in the research process.

In section 5.9, an analytical explanation of the data analysis process will be presented.

4.9. Data Analysis

The data analysis in this research is guided by the application LPT and a case-study methodology. The analytical process was methodically structured, commencing with a comprehensive description of the data in line with the case-study strategy. The primary theoretical proposition driving this research is the potential impact of Cloud Computing on the autonomy, skills, and professional identities of junior external auditors, and this served as a guiding framework for the data analysis. In line with the “explanation building” strategy proposed by Yin (2018), the data derived from the case study was subjected to analysis to construct an explanation of the phenomenon under investigation (Yin, 2018, p. 141). This explanation entailed delineating presumed causal links and elucidating the mechanisms underlying the changes observed.

Additionally, the theoretical concepts of LPT were integrated into the analysis. Drawing upon the concepts of labourer or producer, the means of production, and the non-labourer or non-producer, the analysis elucidated how Cloud Computing could influence the autonomy, skills, behaviours, attitudes, and roles of junior external auditors.

The analytical process comprised a series of stages. In the initial stages, a thematic template was crafted (see Appendix 3). This template was designed to encapsulate and organise the central themes and prior concepts emerging from the body of literature. The template comprises four distinct themes, each one aligning with one of the four research questions guiding this study:

1. *Auditing before and after the introduction of Cloud Computing*: This theme corresponds to the first research question and provides a foundation for comprehending the changes that have occurred in the audit profession between the pre-Cloud and post-Cloud eras.
2. *Deskilling and upskilling*: The second theme is closely linked to the second research question, which explores the efforts, skills, educational pursuits, and experiences of junior auditors. This theme examines the dynamic interplay between deskilling and upskilling for junior auditors in the context of Cloud Computing adoption.
3. *Autonomy*: The third theme relates to the third research question, investigating the impact of Cloud Computing on the autonomy levels of junior auditors. It examines how this technological shift has influenced their independence and decision-making capabilities.
4. *Professional Identity*: The fourth theme is intricately tied to the fourth research question, which examines the roles, attitudes, and behaviours of junior auditors that shape their professional identities, following the implementation of Cloud Computing.

This theme concerns the broader exploration of how professional identity in the auditing domain has evolved in response to technological change.

By structuring its analysis around these four thematic domains, the study provides an understanding of the multifaceted implications of Cloud Computing for the junior auditing profession, considering its effects on skills, autonomy, and professional identity.

The responses from the interviewees were categorised according to this template and then organised according to the respective firms. This strategic approach was applied to discern whether there were notable disparities between the various firms in terms of the aforementioned research areas.

Scrutinising of this categorisation revealed certain minor variations, such as discrepancies in job titles. However, the content shared by the research participants from different firms remained remarkably uniform concerning the aspects addressed in this study. Consequently, this research leverages the congruence in information shared by participants from different strata of the audit ecosystem to address four of the research questions: (I) How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed? (II) How has the introduction of Cloud Computing affected the physical and mental effort, manipulative and general skills, education, and experience required of junior external auditors? (III) How is the Cloud affecting the autonomy of junior external auditors and their audit tasks? (IV) How has Cloud Computing affected the professional identities of junior external auditors (i.e., their behaviours, attitudes, and roles)?

By methodically addressing these inquiries, the study is able to analyse the insights provided by the research participants, who represent different levels of the audit hierarchy. This comprehensive approach not only ensures a nuanced understanding of the dynamics brought

about by Cloud Computing, it also establishes a coherent analytical narrative, aligning with the central tenets of this investigation.

Finally, a summary of this methodology chapter is presented next in section 4.10.

4.10. Summary

The chapter commenced with the research philosophy embraced in this study. To reiterate, an interpretivist epistemology has been adopted, diverging from the dominant positivist stance frequently observed in contemporary management research. This study embraces a realist perspective, recognising that different aspects of reality vary in terms of their permanence. Some aspects – such as the task allocation to junior auditors – may seem fleeting but are influenced by enduring constraints. This perspective extends to the constraints imposed by the structure of a capitalist economy, shaping what individuals can do. These constraints align with the dimensions of reality described by Llewellyn (2007) and underpin the analytical framework of this thesis, echoing Marx's idea that individuals shape their history in inherited realities of varying permanence and influence. By integrating LPT and the case-study approach, this thesis aligns with an interpretive research paradigm, as conceptualised by Burrell and Morgan (1979). This methodological orientation enables a comprehensive exploration of the interactions and dynamics shaping the research context.

This chapter also discussed the chosen abductive research approach. This approach is well-suited to the study, as it allows for a creative and exploratory investigation, able to discern the interplay between existing theories and new empirical evidence. It also facilitates the refining or extending of theoretical constructs in response to the observed data. In addition, the case-study method was chosen, providing the means for in-depth examination of the issues.

The adoption of a qualitative design was also justified, elucidating the advantages of qualitative approaches over quantitative for capturing rich and in-depth data. Revealing the subjective experiences and perspectives of the research participants, the qualitative design aligns with the interpretivist epistemology and constructivist ontological stance upheld in this study.

Finally, the chapter described the data-collection and -analysis processes, outlining the systematic approach to be employed. The chosen methods allow for a comprehensive exploration of the research questions and objectives, enabling the researcher to unveil the underlying mechanisms and dynamics. By adhering to the interpretivist paradigm and employing a robust qualitative design, this research will shed light on the complex realities of the junior external auditors' work and experiences in the evolving landscape.

Following this is the first empirical chapter, presenting the data analysis relating to the first research question and theme, discussing the practice of auditing before and after the introduction of the Cloud.

Chapter Five: Auditing Before and Since the Introduction of Cloud Computing

5.1. Introduction

This study examines the influence of Cloud Computing on junior external auditors in three of the Big Four audit firms in Saudi, enhancing understanding of how the technology has reshaped their autonomy, skills, and professional identities. A thematic analysis is presented in this chapter. To gather knowledge of how auditing occurred the introduction of Cloud Computing and how things have changed in the period since, partners, managers, and senior and junior external auditors were interviewed. The objective was to answer the first research question: “How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed? ”

To address this question, the trajectory of technological development is first explained. As will be discussed, there have been significant changes in how auditing is performed by junior auditors since the introduction of the Cloud. The findings reveal substantial changes in the “pyramid of auditing” following the implementation of Cloud technology. The research findings are then interpreted through the lens of LPT.

The first part of this chapter discusses auditing before the introduction of Cloud Computing (section 5.2). The second part (section 5.3) describes the trajectory of technological development, while section 5.4 discusses auditing since the introduction of the Cloud. Section 5.5 considers the changes in the pyramid of auditing. Finally, a chapter summary is presented in section 5.6.

5.2. Auditing Before the Introduction of Cloud Computing

Traditional auditing, as described by Gray (2008), is a process in which the work of individuals or entities is scrutinised to assess their adherence to established policies, procedures, and practices. This evaluation is predominantly reliant on the collection and examination of evidence. Various governing bodies and financial intermediaries mandate organisations to subject their financial statements to audits under specific conditions (Gray, 2008). In this context, there are two internal auditors and external auditors (Gray, 2008). Internal auditors are individuals employed by the organisation being audited, tasked with evaluating and ensuring the organisation's internal processes and controls. In contrast, external auditors are employed by independent audit firms, typically contracted by an organisation for a specific duration and purpose to conduct impartial audits and provide an objective assessment of the organisation's financial statements (Gray, 2008).

Before the modern era, auditing processes were primarily completed manually, without the use of technological tools. One manager from Firm C explained that radical changes had occurred in the previous decade:

It has been a bit of a transformation, I'd say, in the last ten years. So, if you go a bit back, say for example, a decade ago the audits were done rather manually. 100%. So, there were no tools at all. (Manager, Firm C).

The transformation from manual to technologically driven auditing reflects a significant shift in the audit profession, emphasizing the need for auditors to develop new technical skills. This change raises concerns about the potential loss of traditional auditing skills and the increased dependency on technology, which could impact the overall audit process.

The following section will discuss the auditing practices of three of the big four audit firms in Saudi before the widespread adoption of Cloud technology.

5.2.1. Auditing Before the Cloud: Findings From Three of the Big Four Audit Firms

Alshamaila et al. (2013) have called for research to explore the adoption of Cloud Computing in diverse sectors and countries, employing both qualitative and quantitative methodologies. This qualitative thesis responds to this call, examining the implications of Cloud adoption for the work and experiences of junior auditors across three of the big four audit firms in Saudi.

The Saudi government has been proactive in reshaping the structures and operational systems of audit firms in response to the economic changes experienced by the country since the 1980s (Al-Wabil, 1998). These reforms trace back to the enactment of the CPA Law in 1991 (SOCPA, 1994a, as cited in Al-Angari and Sherer, 2002). The core objective of these reforms has been to modify the “interpretive schemes”, “design archetypes”, and “sub-systems” of CPAs’ organisations operating in Saudi Arabia (Al-Angari and Sherer, 2002). The 1991 CPA Law mandated the establishment of SOCPA, a quasi-self-regulatory accounting body (Al-Angari and Sherer, 2002). SOCPA’s main responsibilities are to organise, regulate, monitor, and advance the accounting profession and audit firms in Saudi Arabia (Al-Angari and Sherer, 2002).

The findings regarding auditing practices prior to the introduction of the Cloud exhibit remarkable similarities between the three audit firms. A consensus prevailed that auditing had been predominantly a manual endeavour before the adoption of Cloud technology. This was true of both the documentation and the actual audit procedures, as described by a partner from Firm A:

When I started with the firm in Karachi in 96, I think that obviously there was a lot more manual work being done. Things have changed a lot. At that time, I think most of the files were manual. We used computers, but that was relatively limited. Obviously nowadays it's not possible to imagine doing an audit without having a laptop. In addition to that, there's a lot of things that we used to do manually, not just the documentation but also the actual audit procedures, they used to be done completely manually. (Partner, Firm A)

This evolution necessitates a critical examination of the potential risks associated with technological dependency, such as data security vulnerabilities and the potential dilution of auditors' analytical rigor and professional judgment.

A participant from Firm B concurred, stating,

Everything was done manually before the Cloud – the preparation of the documents and all audit procedures. They also had to save everything manually in one place. (Junior Auditor, Firm B)

However, this phenomenon was only true of Firm B, as Firms A and C had already explored the utilisation of laptop computers and implemented an intranet. Therefore, it is important to note that developments were occurring in the different firms at various times prior to the advent of the Cloud.

Manual auditing entailed the utilisation of hard copies and voluminous audit files, as explained by a senior auditor from Firm A:

Juniors used hard copies and huge files (like Google Files) that they had to audit for journal entries. (Senior Auditor, Firm A)

The reliance on hard copies and large physical audit files, as described by the senior auditor from Firm A, illustrates the labor-intensive nature of traditional auditing. While the shift to digital auditing tools has streamlined these processes, reducing labour.

The manual audit process meant that junior auditors were responsible for manually collecting evidence, a laborious and time-consuming task. A junior auditor from Firm A shared the insights of their manager:

My manager was telling me about the years that they were doing the audit manually. They used to write every piece of evidence by hand. They took a lot of time, which was crazy. Now, I just review the client's work. Sometimes I use the client's wording and their spreadsheet, so I don't have to do it all over again. No, it's already done. I just must add a couple of columns just for my own work. This is a saver. It's easier. It saves time. So, it's better. (Junior Auditor, Firm A)

In summary, Firm B employed manual auditing methods. This approach was characterised by the use of hard copies, substantial paper documentation, and time-intensive evidence collection. However, Firms A and C utilised portable or laptop computers and an intranet. The perspectives of the participants at different organisational levels corroborated these findings.

5.2.2. Auditing Before the Cloud: Views of Partners, Managers, and Senior and Junior Auditors

The organisational hierarchy of external auditors comprises various levels, with partners and managers occupying the top tier, followed by senior and then junior auditors. In large firms, junior auditors often commence their training contracts by assisting others with tests (Lee, 2002). As they progress, they begin to audit the more tangible components of the balance sheets

– such as cash, bank transactions, salaries, and fixed assets – primarily because there is hard or third-party evidence of these accounts that mitigates the need for judgement (Lee, 2002). In their third year, junior auditors typically begin to undertake more complex tasks – auditing parts of the profit and loss accounts, including items such as potentially obsolete stock and debtors with instances of non-payment, which entail greater inherent risks (Lee, 2002). The research findings for all three firms reveal that, prior to the integration of Cloud technology, there was a strong presence of junior auditors in the audit teams and a substantial junior workforce.

A consensus emerged across all participant levels, with all participants affirming that manual auditing procedures were the norm before the Cloud era. Moreover, they emphasised that this manual approach significantly impacted communication. For example, a partner from Firm B explained:

A lot of things used to be done manually. I would also say that the communication has been impacted too much, the communications between us and the juniors, and the client and between the juniors and the executives on the engagement. (Partner, Firm B)

The manual auditing process entailed an extensive amount of paperwork, leading to difficulties in maintaining control, as noted by a junior auditor from Firm C:

I think there was more paperwork and it was hard to control. So, I think the Cloud is saving the control. (Junior, Firm C)

The extensive paperwork associated with manual auditing, as highlighted by the junior auditor, underscores the challenges in maintaining effective control and oversight. While the transition

to Cloud-based systems enhances control and organization, it also demands a critical assessment of new risks such as data security, potential over-reliance on technology, and the need for continuous digital skills development among auditors.

Furthermore, participants at all levels concurred that manual auditing was time-consuming, with a senior auditor from Firm A elaborating:

Well, before, it used to be a very difficult process. If you wanted to do a simple task, it would take time to complete it. If you wanted to combine all the work from the team members, it would take a lot of time. (Senior Auditor, Firm A)

One significant aspect of the manual auditing was the need for extensive preparation of manual files, as mentioned by a manager from Firm B:

Before the Cloud, it was – you could say – a bit more time-consuming because they had to spend a lot of time preparing the manual files. (Manager, Firm B)

Participants across all levels emphasised that the manual approach necessitated a considerable amount of time for junior auditors to complete their tasks. For instance, a junior auditor from Firm A recounted that stock counts used to require 6–8 hours to complete:

I heard from my colleagues in the firm. They said it was hard because most of the work was done manually. They said it usually took 6 to 8 hours to do the stock count. (Junior Auditor, Firm A)

The shift to Cloud technology was said to have introduced a transformation of the auditing practices. The participants reported a stark contrast between the pre-Cloud era and the present day. A junior auditor from Firm A explained:

There is a huge difference between before and now. I worked before in a local office, a local audit firm. They did not have any Cloud or IT systems or any of the tools they have here. They were basically using the Microsoft Office packages like Excel and Word and so on. But here, we have the tools needed to make the audit smooth. (Junior Auditor, Firm A)

Another participant from Firm C summarised the contrast as follows:

Everything was done by paper. No technology at all. (Junior, Firm C)

Several participants shared their experiences of the differences in their auditing practices before and since the introduction of the Cloud. For instance, a junior auditor from Firm B remarked:

I did not work as an auditor before the introduction of the Cloud, but I heard that when I was studying. Actually, I have seen the vast differences between what we are doing now and how much easier it is now. (Junior Auditor, Firm B)

The junior auditor's observation highlights the generational shift in auditing practices, emphasizing the perceived ease brought by the Cloud compared to traditional methods. However, this reliance on newer technologies necessitates a critical evaluation of the potential loss of foundational auditing skills and the implications for auditor training and professional development.

A senior auditor from Firm B provided insights into how basic the practices were before the Cloud era:

Okay, so it was basic. it was Excel on the desktop. No Cloud – no one had access to it really. And it was problematic because no one could review your work unless you were done with it. (Senior Auditor, Firm B)

A junior respondent also elaborated on their experience, describing the manual methods that they had employed in the past – including email communication and the absence of dedicated systems:

So basically, we gathered the data by email. There was no system to upload the data from the client side. We checked everything ourselves. There were no tools for checking the samples, only Excel and the formula. When we compare that with the here and now, we have tools for everything – for picking the samples, for sending the confirmation, for uploading the data, and so on. (Junior Auditor, Firm A)

In terms of responsibilities, junior auditors in the pre-Cloud era typically handled simpler and more basic tasks. Some of these tasks were not directly related to auditing – such as reviewing financial statements for English errors, which was mentioned by a partner from Firm A:

When I was a junior, everything had to be done by the junior. All the basic stuff – that includes reading the financial statements and checking for English errors. Anything from that downwards. (Partner, Firm A)

Many participants expressed grievances regarding the burden of carrying physical audit files, highlighting the risk of losing paper documents. Additionally, the review process necessitated in-person interactions and the manual transfer of information, as explained by a partner from Firm C:

Before the Cloud, we used to work on paper, and the files were difficult to carry. It meant moving them from place to place and making copies. A lot of the file might be lost somewhere. The information could get lost over time. It was difficult to archive the documents. It needed a lot of space to keep them in a room or wherever, and the office is archiving. It was quite difficult to do. The review process meant that you needed to be there in person and transfer all the information from place to place.

(Partner, Firm C)

In summary, there was a consensus across all firms and participant levels that junior auditors had played a significant role in the audit process before the adoption of the Cloud. Junior auditors often began their training by assisting senior auditors with various tests and routine tasks, such as verifying financial data. As they gained experience, they were tasked with auditing more tangible components of the balance sheets, such as the cash, bank transactions, salaries, and fixed assets. These areas require hard or third-party evidence, reducing the need for judgement. In their third year or as they progressed, junior auditors would take on more complex tasks. This included auditing parts of the profit and loss accounts, which often involved items such as potentially obsolete stock and debtors with instances of non-payment. These tasks typically carried greater inherent risks, demanding a more advanced level of expertise.

Auditing in the pre-Cloud era involved manual documentation and procedures, consuming extensive amounts of time. The participants cited examples such as stock counts requiring 6–8 hours to complete. The pre-Cloud era was characterised by a heavy reliance on paper-based processes, and participants described a lack of technology and tools, with Excel being one of the few digital resources used. Communication and team interactions were primarily face-to-face, enhancing the richness of junior auditors' experiences. Furthermore, the participants

expressed that juniors' responsibilities in the pre-Cloud era had primarily encompassed basic tasks. Junior auditors were heavily involved in manual tasks, such as preparing manual files and correcting language errors in financial statements. The need to carry physical audit files was cited as burdensome and increasing the risk of document loss. The review processes required in-person interactions and manual information-transfer. The introduction of Cloud technology brought about a significant transformation in auditing practices, streamlining processes, enhancing communication, and enabling more efficient and effective audit procedures.

5.3. The Trajectory of Technological Development

The early stage of technological evolution, as identified by Andersen (1998), is characterised by a gradual expansion into diverse technological domains and multiple waves of progress. During the initial technological epoch, spanning from the early 1900s to the post-war era, there was clear differentiation between technological groups, leading to the establishment of specialised engineering and science-based fields. This phase saw a transformation in the organisation of labour, with greater specialisation and distinct skill requirements.

The subsequent era, which continues to the present, has witnessed a widening gap between science-based technologies (such as chemicals and electrical or electronic) and engineering-based technologies (specifically mechanical and transport), along with non-industrial technologies. However, this gap is growing at a slower pace than in the previous era (Andersen, 1998). LPT explains that these shifts in technological domains are intrinsically connected to changes in the organisation of labour: as technology advances, so do the labour processes, impacting how work is organised and changing the skills demanded from the workforce.

With the advent of microcomputers, network systems, and the internet in the late 1960s, the field of IT auditing underwent significant transformation. Notably, the introduction of the first commercial laptop, the “Osborne 1”, in April 1981, was a pivotal moment in technological history. This progression is underscored by the definition of a laptop: “a computer that is small enough to be carried around easily and is flat when closed” (Cambridge Dictionary).

Managers at Firm C recalled the gradual transition from manual procedures to electronic tools and the emergence of the server-based systems that facilitated data storage and access. This transformation predated the Cloud era and allowed for more efficient collaboration and information-sharing among team members. Tim Berners-Lee’s invention of the world’s first web server in 1990 laid the foundation for intranets and shared servers, facilitating improved access to audit files and collaboration among team members.

Around 2000, the Cloud emerged, becoming a technological milestone. The Cloud distinguished itself by enabling remote work and data transformation, revolutionising the way in which auditing and data management were conducted (Senyo et al., 2018). This technological journey has led to interplay between technology, labour processes, and the organic composition of capital, with changes in technology shaping the evolution of the audit profession.

5.4. Auditing Since the Introduction of Cloud Computing

The arrival of e-commerce has had a substantial impact on the traditional audit trail, resulting in significant changes to auditing practices (Braun and Davis, 2003, Betti and Sarens 2021). The introduction of SAS No. 94 marked a shift away from the traditional approach of “auditing around the computer” (Braun and Davis, 2003). Instead, auditors were compelled to employ cutting-edge software in their audit processes (Braun and Davis, 2003, Betti and Sarens 2021).

This facilitated a move toward a more paperless audit environment (Braun and Davis, 2003, Betti and Sarens 2021). Moreover, it enhanced the efficiency of the audit process, allowing auditors to conduct traditional examinations with an expanded scope, often at a marginal cost (Braun and Davis, 2003, Betti and Sarens 2021).

A landmark advance in computing history was the emergence of Cloud Computing, which has garnered significant attention in both commercial and academic spheres (Marston, Li, Bandyopadhyay, and Ghalsasi, 2011). Marston et al. (2011) define Cloud Computing as an information technology service model in which computing services – encompassing both hardware and software – are delivered on-demand to customers, over a network, in a self-service manner, irrespective of device or location. The resources required to ensure the desired service levels are shared, dynamically scalable, rapidly provisioned, virtualised, and released with minimal service-provider interaction. Users are billed for these services as operating expenses, avoiding significant initial capital expenditures, with Cloud services typically employing a metering system that divides computing resources into appropriate blocks.

The following section discusses the auditing landscapes in the three audit firms since the arrival of the Cloud.

5.4.1. Auditing Since the Introduction of the Cloud: Findings From Three of the Big Four Audit Firms

In capitalist societies, NGOs such as firms, households, and markets play a crucial role in resource-ownership and -allocation (Alchian et al., 1972). These organisations enhance productivity through specialisation, leading to the need for economic entities that facilitate cooperation (Alchian et al., 1972). Audit firms in the financial sector exemplify this concept,

with the rapid advancement of technology resulting in significant cost-savings and reduced market-transaction costs (Bednarova and Serpeninova, 2023).

The introduction of Cloud Computing revolutionised audit practices, with juniors now extracting information from client documents received online via email, thereby significantly streamlining their tasks. This transition to a digital environment has had a positive impact on junior auditors, making their work easier and more efficient.

Cloud Computing has facilitated direct communication between team members, providing a platform for real-time collaboration and updates on work progress. Juniors benefit from this direct connectivity, enabling them to access the most up-to-date information and making teamwork more efficient. Moreover, Cloud Computing has become an integral part of audit work across all levels. It streamlines tasks, allows the sharing of guidance, and enhances understanding of audit processes. Many juniors now complete all of their work in the Cloud, benefiting from automation to improve their planning and overall processes.

In summary, the adoption of Cloud Computing in the audit sector has transformed traditional practices, making them more efficient and streamlined. This shift can be explained by concepts from LPT, as firms are seeking to fragment tasks to save costs and increase efficiency. The Cloud facilitates this fragmentation, ultimately improving the audit process and changing the roles of junior auditors.

5.4.2. Auditing Since the Introduction of the Cloud: Views of Partners, Managers, and Senior and Junior Auditors

The Cloud has emerged as a valuable tool for auditors, particularly benefiting junior auditors responsible for supporting others in their early years of the profession (Lee, 2002). A common

theme emerged among the participants: the Cloud provides a range of tools to streamline the auditing process. For instance, clients can upload and link their documentation to the Cloud, eliminating the need for physical visits by auditors and significantly expediting the review process (Junior Auditor, Firm A). Importantly, the Cloud has greatly reduced the workload of junior auditors, automating many previously manual tasks (Partner, Firm B). One striking example is the Cloud's role in inventory verification. Previously, this process required significant manual effort, but with the Cloud, it has become more efficient and less labour-intensive (Junior Auditor, Firm A). The Cloud has also revolutionised the way in which auditors extract samples and assess risk. It allows auditors to identify high-risk areas and extract samples accordingly, thereby streamlining the testing process (Junior, Firm C). A partner at Firm B said that the Cloud had eliminated almost 90% of the manual procedures, underscoring its transformative impact (Partner, Firm B). In addition, the Cloud facilitates communication and collaboration within the audit teams. Team members can access and review work on the Cloud in real time, enhancing quality control and making the process more efficient (Manager, Firm B).

However, while the Cloud has numerous advantages, the ease that it provides may inadvertently reduce the autonomy and skill-building of junior auditors. The guidance provided by the Cloud may lessen the junior auditor's need to independently navigate the intricacies of auditing (Junior Auditor, Firm B). Interestingly, some juniors actually reported increased tasks and responsibilities since the Cloud's adoption, as it became easier for managers to assign tasks directly to them (Senior Auditor, Firm B). This is an example of evolving roles and responsibilities in auditing teams. Moreover, the Cloud has enabled timely reviews among team members, improving overall audit quality control (Manager, Firm B). It is worth noting that many auditors now prefer to work online through the Cloud, and management encourages this

practice (Junior Auditor, Firm B). This preference is a testament to the benefits the Cloud offers in terms of accessibility and efficiency.

In summary, the findings across all firms and participant levels show that auditing practices underwent significant changes with the advent of Cloud technology. Auditing tasks became more streamlined, and the use of Cloud-based tools and platforms allowed for more efficient data analysis and collaboration (Partner, Firm A). The junior auditor's role is often less important to the audit team than it used to be (Senior Auditor, Firm B). The responsibilities of junior auditors' have changed, with Cloud-based audit software and platforms now used for data analysis, the automation of routine procedures, and real-time collaboration with team members. The Cloud allows junior auditors to access data remotely and utilise advanced analytical tools (Manager, Firm C). As a result, it has enhanced audit efficiency and diminished the need for manual data entry, thus reducing the need for a junior workforce, providing cost savings in the labour processes, and maximising capital (Marx, 1967; Braverman, 1974).

The adoption of Cloud Computing has significantly reshaped the auditing landscape and the roles of junior auditors. It has reduced the time and effort required for various audit tasks by providing tools for automation and efficiency. The Cloud's capabilities – including online storage, real-time accessibility, and automation – support the growing emphasis on efficiency and effectiveness in auditing practices (Braun and Davis, 2003). However, this also raises questions about the potential deskilling of junior auditors and the changing dynamics of task allocation in audit teams, with implications for communication in audit teams.

5.5. Changes in the Pyramid of Auditing

The hierarchical structure in audit firms, resembling a pyramid with distinct levels of commercial responsibility (Lee, 2002), has traditionally placed partners at the apex, followed

by various levels of managers in larger firms. The mid-tier positions are typically held by qualified staff, while the base consists of unqualified or partially qualified junior auditors (Lee, 2002). This pyramid structure has long characterised the auditing profession. However, the introduction of Cloud Computing triggered a transformation in this traditional structure, in particular due to the dwindling numbers of junior auditors. The research findings highlight this shift across the three audit firms, prompting further examination of this evolving landscape.

This transformation is likely to have significant implications for audit teams, workload distribution, and the changing dynamics of auditing roles. The following section considers this shift and its ramifications for the audit profession.

5.5.1. Changes in the Pyramid of Auditing: Findings From Three of the Big Four Audit Firms

The contemporary landscape is characterised by the rapid emergence of novel technologies, as highlighted by Bednarova and Serpeninova (2023). One such technological innovation is Cloud Computing, which has ushered in transformative changes across various dimensions of organisational operations, increasing cost efficiency and leading to the restructuring of functions such as management, marketing, and human resources (Bednarova and Serpeninova, 2023). This transformation has been underscored by a discernible shift in the auditing paradigm, as evidenced in the research findings. This shift is pervasive across the three audit firms under study, and it has been primarily catalysed by the strategic deployment of Cloud Computing, which is used to store and manage the vast corpus of data used in these organisations. This technological advance has led to a marked reduction in the number of routine tasks traditionally entrusted to junior auditors. This was elucidated by a partner at Firm A, who described the outsourcing of mundane tasks to various global back-office centres. As a result, these firms can leverage cost advantages by accessing cheaper labour markets.

The consequence of this is a fundamental reconfiguration of the organisational pyramid, with fewer junior auditors now required for menial tasks. This restructuring reflects two pivotal concepts in LPT: the “control imperative” and “restructuring work”. The former underscores the conversion of labour power into profit, while the latter pertains to the economisation of production processes.

The research findings reveal that all three audit firms are now outsourcing a substantial proportion of their respective workloads, tapping into talent pools in India, Pakistan, Lebanon, and Jordan. In contrast, personnel in Saudi Arabia are predominantly engaged in fieldwork-related tasks. This distribution of responsibilities was described by a manager at Firm C, who explained that outsourced team members were engaged in information gathering and evaluation and the preparation of work papers, with the Cloud system playing a central role in facilitating these activities. The senior professionals at Firm A were in agreement that the implementation of Cloud Computing had led to a reduction in the junior workforce, attributing this to the system’s ability to streamline and automate non-essential tasks. However, they emphasised that junior auditors’ roles had evolved to incorporate more substantive and engaging activities, thus enhancing their motivation and job satisfaction. At Firm B, managerial and senior-level responses were characterised by divergent perspectives. While the managers did not perceive the Cloud as a replacement for junior auditors, they acknowledged the technology’s role in reallocating simple and rudimentary tasks, thereby affording juniors the opportunity to focus on more meaningful audit activities. However, the viewpoints expressed by junior auditors at Firm B were in stark contrast to those of their senior counterparts. From their vantage point, the advent of Cloud Computing had diminished their role and reduced their numbers, prompting questions about the future of their positions in the era of automation.

In summary, the research findings highlight an evolution in the pyramid of auditing across the three firms. Firm A has significantly reduced its junior-auditor recruitment, facilitated by the outsourcing of basic tasks to global back offices. This shift is poised to impact the rate of surplus-value extraction. In contrast, Firm B's management and senior professionals do not perceive the Cloud as a complete replacement for junior auditors but recognise its role in simplifying basic tasks. Junior auditors at Firm B, however, expressed concerns about the potential obsolescence of their roles. The findings regarding Firm C reflect a transformation in the auditing hierarchy, as acknowledged by top management, most senior auditors, and a proportion of the junior workforce. The differing strategies across Firms A, B, and C reveal varied impacts of Cloud integration on auditing. Firm A's outsourcing risks eroding foundational training for junior auditors, potentially compromising long-term skills, while Firm B's balanced approach preserves essential human expertise alongside technological efficiencies.

The following section will discuss the variation between participant levels in terms of their respective views on this topic.

5.5.2. Changes in the Pyramid of Auditing: Views of Partners, Managers, and Senior and Junior Auditors

Cloud Computing's potential benefits are typically discussed in terms of financial savings and resource-management considerations (Lin and Chen, 2012). The research findings here illuminate a transformation of resource-management practices among trainees following the adoption of Cloud technology, resulting in a decrease in the number of junior auditors. The viewpoints of partners, managers, and senior and junior auditors on this matter engendered a

spirited debate. However, the majority of interviewees – at all hierarchical levels – acknowledged a discernible shift in the traditional pyramid of auditing.

Both managerial and senior-level professionals at Firm A articulated that this transformation was evident in their firm. A manager at Firm A said that juniors now assume more significant responsibilities and engage in more complex tasks, owing to the Cloud's integration into the auditing process. Certain departments now handled the routine tasks traditionally delegated to juniors – such as financial-statement reviews, casting, and voucher checks. Consequently, the number of juniors engaged in audit activities had diminished. However, an intriguing viewpoint posits that nearly half of the junior auditors were no longer required, with Cloud technology and other tools assuming responsibility for a substantial proportion of their roles. This perspective, supported by a senior auditor at Firm A, explains that technology-driven automation has redefined the division of labour, with technology complementing the roles of human auditors. Three juniors at Firm A also supported this argument, while a fourth dissenting, asserting that complete replacement of junior auditors was not imminent. Furthermore, the prevailing sentiment among respondents at Firm A was that, while the Cloud may not entirely supplant junior auditors, it was unequivocally reducing their numbers, primarily for the sake of cost efficiency. The view was that a more efficient and technology-aided audit process could achieve the same outcomes with a leaner team. The dissenting voice among the juniors argued that certain tasks, such as vouching invoices, could not be entrusted to the Cloud, suggesting that technology could facilitate but not entirely replicate certain functions. Nevertheless, junior auditors' roles have evolved to incorporate more complex tasks, including some previously reserved for senior auditors.

In contrast, Firm B's partners, managers, and senior auditors presented a different narrative. At this firm, top management and senior professionals firmly believed that Cloud Computing

could not replace junior auditors, despite acknowledging that juniors were increasingly being assigned to more intricate tasks, as their routine responsibilities were offshored via the firm's Cloud system. One senior auditor at Firm B even posited that the development of new technologies could increase the demand for junior auditors. However, the perspectives of the junior auditors at the same firm diverged significantly. They unanimously asserted that their numbers were dwindling and that the traditional pyramid of auditing was undergoing a transformation. The sentiment among these juniors was that the Cloud's implementation had decreased their ranks, necessitating an enhanced skill set that included proficiency in automation and adapting to evolving audit methodologies. One junior auditor at Firm B highlighted the divergence between their own experience as a junior auditor and that of their partner and manager. They contended that, while the junior auditor's role remained unchanged, their tasks had evolved in response to technological advances.

At Firm C, the findings echo the broader pattern, with many junior tasks being outsourced to overseas back offices, thereby empowering juniors to take on more complex responsibilities. A partner at Firm C emphasised the dual nature of this phenomenon, acknowledging that it had both positive and negative implications. While some perceived this shift as an opportunity for juniors to focus on critical areas and enhance their skills, others were concerned that junior auditors could miss out on foundational learning experiences. Most senior auditors at Firm C concurred that the pyramid of auditing was changing, resulting in fewer junior members in audit teams. They argued that this shift was not only driven by cost-saving measures but also by a desire to equip juniors with more advanced skills earlier in their careers, thereby enhancing their professional development. In contrast, the junior auditors at Firm C expressed more mixed perspectives, with some acknowledging the changing pyramid and others dissenting, citing the changing audit-engagement requirements as a determinant of junior numbers.

In summation, the research findings shed light on how the adoption of Cloud Computing has transformed the pyramid of auditing. While there was a divergence of opinion on this issue, the prevailing sentiment was that the numbers of junior auditors are diminishing post-Cloud integration, with routine tasks now being automated or outsourced. This reflects the cost-saving initiatives undertaken by audit firms and a desire to equip juniors with more advanced skills, but the implications of this transformation for the learning curve and skill development of junior auditors are subjects of ongoing debate. The reduction in junior auditor roles due to Cloud integration, while cost-effective, raises concerns about the adequacy of their skill development and learning opportunities. This shift towards automation and outsourcing may streamline operations but risks undermining the comprehensive training and hands-on experience essential for cultivating future audit professionals.

5.6. Summary

This chapter presented an analysis of the findings pertaining to the first research question, based on insights from 29 semi-structured interviews with external auditors from various hierarchical levels of three Saudi audit firms. The structured interview protocol served as the foundational framework for this thematic analysis, facilitating an exploration of the shifts since the integration of Cloud technology. The examination also included the resultant alterations in the auditing pyramid.

The research findings unveiled noteworthy changes in the nature of the work of junior auditors since the adoption of the Cloud. Prior to the Cloud era, a significant proportion of their tasks relied on manual processes, necessitating substantial time investments for routine assignments. However, in the contemporary landscape, junior auditors have witnessed a fundamental transition, with a substantial proportion of their responsibilities – including documentation and

actual audit procedures – now being executed by Cloud-based tools. Consequently, the integration of Cloud technology has reduced the time allocated to traditional audit tasks and improved efficiency (Junior Auditor, Firm B). These findings were consistent across all participant levels. Most notably, this shift in the pyramid structure has been accompanied by a decline in the numbers of junior auditors.

In summation and aligning with the objectives of the first research question, the analytical insights gleaned from this investigation underscore the substantial impact exerted by the Cloud on junior auditors' modus operandi. This transformation extends beyond the operational realm and into the restructuring of the auditing pyramid.

This chapter lays the foundation for the examination of the second research question presented next, further elucidating the implications of the Cloud's integration into the auditing landscape.

Chapter Six: Junior Auditors' Efforts, Skills, Education, and Experience

6.1. Introduction

This study examines three of the Big Four audit firms in Saudi, focusing on how Cloud Computing impacts junior external auditors' autonomy, skills and professional identities. This chapter presents a thematic analysis of the second research question – namely, “How has the introduction of Cloud Computing affected the physical and mental effort, manipulative and general skills, education, and experiences of junior external auditors?”.

The findings presented here will show that the Cloud has significantly influenced the physical and mental efforts, manipulative and general skills, education, and experiences of juniors. The research findings are interpreted through the lens of LPT, as described in Chapter Two.

The chapter is organised as follows. The main research themes are presented in the first six sections. The sub-themes are then explained and participant views are shared. Finally, the chapter summary is presented in section 6.3.

6.2. Sub-Theme (2.1): The Physical Effort Required of Juniors

6.2.1. Physical Effort: Findings from the Three Audit Firms

A consensus emerged among the participants at Firm A regarding the reduction in physical effort required following the implementation of Cloud Computing. This sentiment was articulated by a manager at the firm as follows:

Now, for example, you can perform the quartier review for a public entity from the office. No need to visit the client. Everything is online. They can share all the information that we need through email. So, even with the file, we can create it online, especially after COVID, when we had to work remotely. (Manager, Firm A)

The manager's observation highlights how Cloud Computing has significantly reduced the physical demands of auditing, facilitating remote work and online file management. However, this shift may have potential drawbacks, such as diminished face-to-face client interactions, which can impact relationship building and the auditor's ability to gather nuanced, qualitative information.

The same trend was seen in Firm B, where participants at various organisational levels shared this sentiment. A manager at Firm B shared a vivid illustration of the changes in the physical effort required since the adoption of the Cloud:

I'll give you one example of how this changed. I used to work for an insurance company. It was a listed company. I used to carry, like, at minimum, five hard copies, black files. The files and the books. At that time, I didn't have a car. So, imagine me holding all those five books and files, waiting for a taxi in the street. So, all of that is gone now. Right now, we have a zero-paper policy in the office. And we are trying to convince even customers to... or clients to accept this because, since COVID, things have started to change. Everything is on the Cloud and even the report sign off is done electronically. So, we are trying our best to avoid printing and avoid sharing hard copies. And we are discussing this with our clients, telling them, "Okay, this is accepted". Why would you need the hard-copy financial-statement text photocopy with the E- Signed report and that's it. (Manager, Firm B)

Likewise, almost all of the Firm C participants concurred that the introduction of the Cloud had substantially diminished the physical exertion required in their audit work. However, one junior auditor raised a concern about this, noting that conducting audits remotely could elevate the risk of missing inspections and detections:

In fact, sometimes visiting the client is beneficial for an audit. When you inspect, you can detect errors that you wouldn't see when working remotely.

In summary, the findings from all three firms indicate a marked decrease in the level of physical effort required for audit work following the integration of Cloud Computing. For instance, external auditors can now execute quarterly reviews for public entities without physically visiting the client, as all necessary data and information are accessible online. Additionally, the shift towards a zero-paper policy in audit offices has resulted in all audit-related documents being stored on the Cloud, with audit reports now signed-off electronically. The integration of Cloud Computing and the adoption of a zero-paper policy in audit offices have streamlined processes and reduced physical effort. However, this transition raises critical concerns about maintaining audit quality and thoroughness, as reliance on digital data may overlook the benefits of on-site visits and the detailed scrutiny that physical documentation once provided.

However, amidst the numerous advantages of Cloud Computing, there remains a potential drawback: an increased risk of missing critical errors and discrepancies. The findings suggest that physical visits to clients still hold value, as they enable auditors to identify and rectify errors that may go unnoticed when working exclusively through the Cloud. Furthermore, auditors may still need to visit client firms for a range of reasons, including to minimise risk by verifying that what they see online actually exists and to build relationships for selling other services. Therefore, it is evident that although the integration of Cloud Computing has

streamlined audit processes, it has also introduced new considerations and challenges in maintaining audit quality.

The findings presented here exhibit a clear connection to labour process theory, specifically within the context of junior physical effort across the three audit firms. The implementation of Cloud Computing in these firms had a profound impact on the nature of physical labour involved in the audit process. This transformation is in line with the principle of labour process theory, which posits a reduction in physical effort following the introduction of technology (Braverman, 1974).

6.2.1. Physical Effort: Views of Partners, Managers, and Senior and Junior Auditors

Across all three firms, the partners and managers unanimously reported a significant reduction in the physical effort required since the adoption of Cloud technology. A partner at Firm B offered a critical insight into the impact of the Cloud on junior staff:

While there has been a decrease in the physical effort required of the juniors, it is essential to recognise that certain manual tasks, such as file management and folder creation, still demand attention. The most significant shift is in the time allocation for the audit process itself. Historically and even presently, there has not been a substantial reduction in overall time. Technology and the Cloud can be used to streamline procedural tasks, but this has led to more time being dedicated to analysing outcomes and engaging in face-to-face discussions with clients. This analysis of new sets of data and information made accessible by the Cloud introduces fresh dimensions to auditing and accounting practices, thereby creating additional areas of concern and methods. At the same time, the composition of the audit teams has evolved. In the past, audit teams might have comprised three juniors, one senior, one manager, and

one partner. Now, for instance, it may consist of two seniors, one manager, and occasionally a partner. However, this transformation has been offset by increased costs, resulting in a shift from a pyramid-shaped structure to a more diversified pillar-like configuration. Additional support services, such as expanded IT teams and evaluation consultants, are now required, along with specialised tax teams. These support functions are gradually supplanting junior-level tasks, which are increasingly susceptible to automation. This transformation is predominantly driven by cost-saving initiatives and profit generation. The rapid advancement of emerging technologies has accelerated cost reduction and reshaped various facets of organisational operations, including management, marketing, and human resources. (Partner, Firm B)

The partner points out that while physical effort has decreased, overall audit time hasn't reduced because the focus has shifted to analysis and client interaction enabled by Cloud technology. This shift to a senior-heavy team structure with specialized support services reflects efforts to improve efficiency and manage costs through automation and technological advancements.

In the literature, Cloud Computing is commonly extolled for its advantages, including its robust computational capabilities and potential to reduce business expenses (Lin and Chen, 2012). The inherent elasticity of Cloud services offers enhanced resource-management flexibility, potentially yielding cost efficiencies (Lin and Chen, 2012). Similarly, across all three firms, senior staff unanimously concurred that junior auditors' physical efforts had significantly diminished with the advent of the Cloud. Traditional hard copies had been largely supplanted by digital alternatives stored in the Cloud, as articulated by a senior auditor at Firm A:

Yes, junior auditors' physical efforts have decreased significantly. Nowadays, you'll see them carrying a laptop and a mouse in their bags. Although we occasionally request substantial document volumes, these are now typically shared through the Cloud. Gone are the days of lugging around files; everything is now managed in the Cloud. (Senior Auditor, Firm A)

However, not all tasks can be automated. Certain audit procedures, such as vouching, ticking, bashing, checking, rechecking, and footing, still require manual execution. In this context, "ticking and bashing" refers to administrative work involving the verification of process adherence (Butcher, 2019), while "footing" denotes the calculation of a total balance by summing up debits and credits in accounting (Footings Definition, 2023).

Yes, the physical effort has decreased, but it has not been completely eliminated. I would estimate that there has been more than a 70% reduction in junior auditors' physical efforts because we no longer need to transport physical files. However, when it comes to tasks like vouching, the Cloud is not equipped to handle them. Ticking and bashing, checking, rechecking, and footing are all still done manually. (Senior Auditor, Firm A)

Despite the reduction in physical effort from Cloud integration, the need for manual tasks like vouching and footing remains, revealing technology's limitations in fully automating audits. This underscores the ongoing necessity for human intervention to maintain thoroughness and accuracy in audit procedures.

Similarly, junior auditors across all three firms were in consensus about this reduction in physical effort. A junior auditor at Firm A also highlighted the substantial time savings achieved:

It's so much easier now. I wouldn't say that physical effort has vanished entirely, but in our firm, there's only one task that still requires manual handling. Just two years ago, when I worked at a different company, it was a different story. I remember tasks that took me three hours to complete – now, I can finish them in just half an hour. The Cloud and digital platforms have made our work significantly more efficient. (Junior Auditor, Firm A)

However, some juniors did contend that physical effort remained at a similar level to the pre-Cloud era:

We still exert physical effort. I wouldn't say it has decreased to zero. We haven't reached a stage where everything is fully computerised. (Junior Auditor, Firm A)

Additionally, the findings underscore that the level of physical effort may vary depending on the client's practices:

Yes, physical effort has decreased substantially due to the implementation of Cloud Computing, but it also depends on the client. If the client provides documents manually, we must collect them manually. (Junior Auditor, Firm B)

Conversely, a junior at Firm C expressed dissatisfaction with the extended hours of desk work that had resulted from Cloud utilisation:

It's really tough; we're constantly sitting in front of our laptops. Physical effort has decreased significantly. (Junior Auditor, Firm C)

In summary, the findings reveal near unanimity among the participants regarding the reduction in physical effort required of junior auditors following the introduction of Cloud technology.

However, they also show that approximately 30% of the tasks continue to necessitate physical effort. These tasks include vouching, ticking, bashing, checking, rechecking, and footing. Furthermore, the level of physical effort exerted by junior auditors is contingent on both the firm's practices and the client's preferences.

These findings provide empirical evidence for the key LPT principles, demonstrating how the introduction of Cloud technology has transformed the nature of work for junior auditors, reducing physical effort while introducing new dynamics and considerations into the audit process.

The analysis in the following section concerns the mental effort exerted by junior auditors.

6.3. Sub-Theme (2.2): The Mental Effort Required of Juniors

6.2.1. Mental Effort: Findings from the Three Audit Firms

Divergent perspectives emerged among participants at Firm A concerning the mental effort exerted by junior auditors in the context of Cloud adoption. Approximately half of the respondents contended that technology had a numbing effect, resulting in reduced mental effort on the part of junior auditors. The rationale for this viewpoint was that the Cloud encourages a structured and guided approach, eliminating the need for continuous decision-making and judgement. As expressed by a partner at Firm A:

I do agree with this to some extent. In the past, when we were doing the audit, there was more judgement involved. The person involved had to make decisions and consult more often. Now, what's happening is because things have become very automated, with audit procedures, databases, and other software in place, when a junior auditor needs to perform a task, there is a predefined procedure. This is the same for all tests

that are conducted. They simply check a box, and specific procedures unfold in response to that action. The guidance they need immediately appears on their laptop screen. So yes, it is somewhat easier, and relatively speaking, they may not need to exercise as much judgement as before. (Partner, Firm A)

The partner's observation reveals a critical issue with Cloud adoption: while automation reduces the need for continuous decision-making, it also diminishes opportunities for junior auditors to develop essential judgment skills. This structured, guided approach risks creating a reliance on predefined procedures, potentially stunting the growth of critical thinking and professional skepticism necessary for high-quality audits.

In short, the Cloud's features – including its resource pooling and elasticity – result in the reassignment of resources from one user to another (Grobauer et al., 2011). Many juniors explained that they were able to easily transfer work completed by their peers or seniors during previous audit engagements. With this information readily accessible on the Cloud, they could replicate previous procedures without the need for significant mental effort.

In contrast, different perspectives emerged from the Firm B participants, with some asserting that the need for mental effort had decreased due to the preparedness of Cloud-based templates, reducing the need for extensive deliberation:

Mental effort has decreased slightly because the forms are ready-made. There's not much need for deep thinking; you just fill in the details and upload them. (Junior Auditor, Firm B)

However, a majority of participants at Firm B held an opposing view, contending that junior auditors' mental effort had in fact increased following the introduction of the Cloud. A manager

at Firm C argued that auditors face heightened demands for responsiveness, reactivity, and proactivity, which had amplified their mental workload:

The need for mental effort has definitely increased. The way we work has evolved, and auditors are now expected to be more receptive, reactive, and proactive. While the mental effort has increased, the focus and nature of that effort have shifted. For instance, a decade ago, when manual processes dominated, auditors' efforts were primarily directed towards verifying data accuracy and population consistency. It was crucial to cross-check physical receipts and verify ledger entries. Today, with the availability of electronic records, auditors can leverage data analytics to ensure data completeness. They can easily match records against the entire transaction history, which streamlines the process. (Manager, Firm C)

The evidence from junior auditors substantiated this claim, as the juniors reported engaging in these practices and having immediate access to them from the outset.

In summary, Firms A and B yielded contrasting findings regarding the impact of the Cloud on the mental effort required of junior auditors. Some participants contended that the demand for mental effort had decreased due to the prescriptive nature of Cloud-based procedures, which offered step-by-step guidance and comprehensive support for audit tasks. This perspective suggested that junior auditors had become intermediaries between the Cloud and the tasks, with reduced opportunities for learning, critical thinking, judgement, and analysis. Conversely, other respondents reported that the mental effort required of junior auditors had increased, primarily because the Cloud had automated routine tasks, allowing the auditors to tackle more complex and challenging assignments. Most participants at Firm C shared the view that the demand for mental effort had grown. Additionally, the findings indicated that auditors' responsibilities had

expanded in response to various new governmental requirements, regulations, and local laws, necessitating a heightened level of responsiveness, reactivity, and proactivity. Consequently, the mental effort required of auditors had also increased.

These findings provide support for LPT in various ways. The contrasting findings between Firms A and B reflect the fact that the introduction of technology can have varying effects on different workers. The debate surrounding whether mental effort increased or decreased illustrates that technological changes can lead to diverse impacts on workers. The stance that the Cloud has reduced the demand for mental effort due to its prescriptive nature and automation of routine tasks is in line with LPT (Braverman, 1974). Technology often automates repetitive, low-level cognitive tasks, allowing workers to focus on more complex assignments, and this was observed in this context (Manson et al., 2001). However, most participants at Firm C agreed that the demand on junior auditors for mental effort had risen. As technology and regulations evolve, workers often experience expanded sets of responsibilities that demand higher levels of responsiveness, reactivity, and proactivity. This, in turn, necessitates increased mental effort.

The concept of “deskilling” is a key area of discussion in relation to LPT (Braverman, 1974). This refers to the process by which certain tasks or job roles become less skill-dependent as a result of technological advances or changes in the organisation of work (Marx, 1967; Braverman, 1974). Deskilling implies a reduction in the complexity of tasks, leading to a potential decrease in the need for specialised skills and expertise (Marx, 1967; Braverman, 1974). In this context, junior auditors are becoming intermediaries between the Cloud and the audit task, which can be seen as a form of deskilling. The concern is that, as technology takes over certain aspects of the audit process, junior auditors may have fewer opportunities to develop and apply critical thinking, judgement, and analytical skills, which are traditionally

essential components of their roles. In LPT, deskilling is typically associated with a shift in the division of labour, with certain tasks automated or made more routine, leading to a reduction in the cognitive demands placed on workers (Marx, 1967; Braverman, 1974).

These research findings reveal a distinction between the firms, with Firm C having seen an increase in required mental effort, rather than this deskilling trend. This variation introduces an interesting dimension to the deskilling concept, as it suggests that while technology may streamline some aspects of the audit process, it can also introduce new cognitive demands that challenge junior auditors in different ways. While deskilling in the context of automation and technology has been explored in the broader field of LPT, the specific scenario may be relatively novel. This nuanced perspective on how technology can both simplify and complicate work roles, affecting the cognitive demands placed on employees, could represent a unique contribution to the LPT theory. It highlights the need to consider not only the reduction of skills but also the potential reshaping of skills and knowledge in contemporary work environments influenced by technology.

6.2.2. Mental Effort: Views of Partners, Managers, and Senior and Junior Auditors

Diverse perspectives emerged from the participants at different levels of management at Firm A, regarding the impact of Cloud adoption on the mental effort required of junior auditors. All participants at the managerial level concurred that the need for mental effort was decreasing. In contrast, among seniors and juniors, there was a division, with half asserting a decrease in mental effort due to technology making individuals “numb”. A senior auditor at Firm A expressed this viewpoint succinctly:

Yes, I agree that technology makes us numb. Consequently, junior auditors’ mental effort is decreasing significantly. (Senior Auditor, Firm A)

The other half of the participants, both seniors and juniors, argued that the need for mental effort had actually increased. One junior auditor at Firm A elaborated on this, emphasising that technology helped with storing data but fell short in the analytical domain:

No, technology is not inherently smart; it excels at storing and recalling information but not at analysis. I feel it challenges our mental effort, encouraging us to think and analyse more. With technology, there's an abundance of data, but the data alone cannot produce insights. We need to apply our analytical thinking and mental effort to enhance the data quality and generate meaningful outputs. (Junior Auditor, Firm A)

At Firm B, the managerial-level participants had differing opinions on this question. While one manager said that junior mental effort had increased, a partner contended that the focus was less on junior auditors' mental effort and more on their project management and data-analytics skills:

I wouldn't say it's about increased mental effort. Instead, enhanced project-management skills and greater proficiency in data analytics are required now. Auditors now need a more diverse skill set, including knowledge of audit practices, data analytics, and information technology. Handling large datasets and data analysis is crucial. Some auditors may struggle to understand and effectively work with the outcomes generated from Big Data analysis. (Partner, Firm B)

The partner's emphasis on the need for enhanced project management and data analytics skills among auditors at Firm B reflects a shift in the profession towards more complex, technology-driven competencies. This evolution indicates that while traditional mental efforts may have decreased, the demand for a broader, more specialized skill set has increased, posing challenges

for auditors in keeping pace with technological advancements and effectively integrating diverse knowledge areas.

There were divergent views among the senior staff at Firm B, with two seniors saying that junior mental effort had increased and the other two reporting a decrease. One senior highlighted the mental demands of working on the Cloud, including the need for focus and the risk of introducing errors that could disrupt the workflow. Additionally, concerns were raised about the potential negative effects on junior auditors' mental health due to prolonged working hours:

Working with Cloud Computing demands more mental effort because juniors must maintain focus and avoid errors that could impact the interconnected workflow. The Cloud's accessibility, allowing work at any hour, can lead to longer working hours, potentially affecting workflow and junior auditors' mental well-being. (Senior Auditor, Firm B)

When asked whether the Cloud had eliminated the need for mental effort during auditing, another senior auditor had a surprising response:

Exactly. I only need to access the Cloud, and it guides me through each step. It tells me what I must fill in, and I fill it in. The working papers and tests that juniors complete are also uploaded to the Cloud. I review their work periodically, but this streamlines the process. (Senior Auditor, Firm B)

Similarly, the views of junior staff at Firm B were varied. While most believed that their mental effort had increased due to the Cloud exposing them to more complex tasks, this challenge could be viewed as beneficial:

With Cloud Computing and technological advances in general, we are tasked with more complex responsibilities. Repetitive and straightforward tasks have been automated, allowing us to focus on more challenging aspects. This is the positive side of it, and I find it beneficial. (Junior Auditor, Firm B)

However, there was a consensus that the convenience of remote access could lead to greater demands and increased mental stress:

I believe mental effort has increased. While I appreciate many aspects of this change, such as increased efficiency, it's also introduced a demand to work during unconventional hours. With everything accessible remotely, there is an expectation to work outside regular office hours. This elevated pressure can affect mental health negatively. (Junior Auditor, Firm B)

At Firm C, the opinions of managerial-level participants diverged. One manager contended that junior auditors' mental effort had increased due to changes in the audit environment. However, a partner suggested that the focus had actually shifted more toward efficient resource-utilisation and greater access to sources of information:

I think it's mentally linked to physical effort. When individuals reduce their physical effort, they have more energy and focus to allocate to mental tasks. The convenience of immediate access to files and data enables auditors to engage more deeply in their work. This has a positive impact on their mental effort, as they can seamlessly access various resources. (Partner, Firm C)

Notably, across Firm C, senior auditors and the majority of junior auditors were aligned in the belief that mental effort had increased. The participants emphasised the need for enhanced technical skills in areas such as data analytics and information technology:

Junior mental effort is increasing. With Cloud Computing, auditors require additional skills beyond traditional auditing, including proficiency in computer programs, cyber security, and data analysis. (Senior Auditor, Firm C)

In conclusion, the findings from the three firms were varied. While all participants at the managerial level of Firm A argued that the demand for mental effort was decreasing, the participants – on the senior and junior levels – argued that it was actually increasing. There was a similar divergence in the findings from Firm B’s managerial and senior levels: while half reported that mental effort had increased, the other half said that it had decreased. However, most of the juniors at Firm B argued that the demand for mental effort was rising. The findings at Firm C were similar to those at Firm B. This variation highlights the complexity of technology’s impact on workers and has implications for LPT. This shows that the impact of technology is not uniform across different organisational levels. Technology can streamline routine tasks and create opportunities for more complex assignments, leading to varying perceptions of mental effort. The fact that most junior auditors at Firm B and most participants at Firm C agreed that the demand for mental effort was increasing indicates that technology’s impact can be contingent on the tasks and roles of the worker, which also has implications for LPT. Junior auditors may have more direct experience with certain tasks, influencing their perspective.

The following section presents an analysis of the findings regarding the demand for manipulative skills among junior auditors.

6.4. Sub-Theme (2.3): The Manipulative Skills Required of Juniors

6.4.1. Manipulative Skills: Findings from the Three Audit Firms

In labour process theory, manipulative skills refer to the strategic abilities used by workers to navigate, resist, or influence workplace conditions and management control. The findings from Firm B regarding changes in the demand for manipulative skills were mixed. Some participants suggested a decline in the demand for these skills among juniors, while others contended that demand had actually increased.

Furthermore, one junior participant asserted that there had been an improvement in their manipulative skills. This unique perspective may be attributed to the participant's self-identification as a proficient technology enthusiast:

I believe it has increased significantly. I cannot speak for others, but I consider myself to have become a Cloud wizard due to my penchant for exploration and understanding of technology. Consequently, I can work adeptly with the Cloud, understanding its functions, its limitations, and the troubleshooting methods. As a result, I am often the go-to person in my group for Cloud-related issues. But it is worth noting that my strong interest in technology and prior coursework in the field might make my experience distinct from that of others. So, I am uncertain if this applies universally.

(Junior Auditor, Firm B)

Conversely, the majority of junior auditors at Firm B perceived a diminishment in their manipulative skills. Interestingly, some did not perceive any correlation between the Cloud and manipulative skills, arguing that the Cloud primarily improved the team's ability to oversee projects:

I do not discern any direct correlation here. In my view, this development has augmented the team's capacity to oversee projects effectively. (Manager, Firm B)

Similarly, at Firm C, there were divergent opinions regarding junior auditors' manipulative skills. Some argued that the Cloud was eroding these skills, while others contended the opposite:

I do not concur. I believe the junior auditors still wield control over the audit task itself. The information may be presented differently, but the audit procedures remain consistent. Thus, I do not believe this significantly impacts their manipulative skills. (Manager, Firm C)

The manager's assertion that junior auditors maintain control over audit tasks despite Cloud integration suggests that traditional skills remain relevant. However, this perspective may overlook how the automation of routine tasks could potentially diminish hands-on experience, potentially impacting the development of nuanced, practical auditing skills over time.

In summary, the findings from Firms B and C reveal a divergence of views regarding the impact of the Cloud's adoption on junior auditors' manipulative skills. Some maintained that juniors' autonomy over their audit tasks had remained intact, yielding no significant alteration in their manipulative skills. Conversely, an opposing viewpoint emerged, positing that the utilisation of the Cloud had enhanced juniors' autonomy, consequently boosting their manipulative skills. An additional perspective, supported by a majority of the juniors at Firms B and C, proposed that the Cloud had eroded juniors' autonomy, compelling them to adhere to predefined processes. This aligns with the observations of Dowling and Leech (2014) concerning the challenge faced by audit firms in balancing system functionalities that ensure compliance with those that foster autonomy among auditors, while minimising dependency on the system.

The differing viewpoints underscore the complexities of technology's impact on work processes and have an implication for LPT. The fact that some believed that juniors' autonomy had remained intact, while others argued that the Cloud either enhanced or eroded their autonomy demonstrates how technology can influence the level of control and decision-making authority in the workplace. The perspective that the Cloud enhanced juniors' autonomy, potentially boosting their manipulative skills, reflects another significant implication for LPT: technology as a tool to empower workers. In some cases, technology can enable workers to exercise more control and creativity in their tasks. The view that the Cloud had eroded juniors' autonomy and compelled them to adhere to predefined processes resonates with LPT's focus on the balance between system functionalities and autonomy.

The following section will move onto the views of participants from various hierarchical levels (partners, managers, and senior and junior auditors) regarding the manipulative skills of junior auditors.

6.4.2. Manipulative Skills: Views of Partners, Managers, and Senior and Junior Auditors

At Firm B, managerial-level perspectives on the impact of the Cloud on manipulative skills varied considerably. One manager made a fascinating observation, contending that junior auditors were displaying reduced critical thinking abilities as a consequence of adhering to the Cloud's predefined steps and audit procedures, rendering them more mechanistic in their approaches:

Indeed, the implementation of the Cloud system has resulted in increased automation.

While this can be viewed as advantageous, it also has its downsides. It appears that individuals' critical thinking, personal reasoning, and understanding have diminished.

For instance, in each specific area, such as cash and bank, there are 10 prescribed

forms to follow. Each form includes inquiries about the client's opinions and responses. Consequently, individuals tend to become more mechanised in their workflow, strictly adhering to a predetermined sequence of tasks. They become more controlled, one might even say robotic. (Manager, Firm B)

This observation is intriguing and aligns with Braverman's deskilling thesis, which describes a process of separating conception from execution, marking a shift towards more routine and automated tasks. Similarly, in Firm B, senior auditors expressed divergent viewpoints. One senior auditor reported that the Cloud was exerting control over junior auditors, dictating their actions, while senior auditors were able to assert their authority by directing the Cloud according to their requirements:

No, I believe the Cloud exerts control over junior auditors, effectively instructing them on what to do. However, for us senior auditors, it's a different scenario. We command the Cloud, conveying our expectations from the engagement. It's a different experience. (Senior Auditor, Firm B)

In stark contrast, many junior auditors at Firm B believed that the Cloud was diminishing their manipulative skills:

Yes, I think we have lost control of the Cloud. (Junior Auditor, Firm B)

It seems like the Cloud is steering the audit, not us. (Junior Auditor, Firm B)

I feel the Cloud is managing all aspects, and our manipulative skills are dwindling.
(Junior Auditor, Firm B)

Similarly, findings from Firm C unveiled a spectrum of opinions. While managerial-level perspectives differed, there were also variations among the senior auditors. However, a consensus emerged among junior auditors, with the majority contending that the Cloud was eroding their autonomy over audit tasks and consequently diminishing their manipulative skills. One junior auditor shared a personal experience:

This is indeed happening. I vividly recall an encounter with a client where I was essentially going through the motions, entering data into screens without truly understanding the nature of the client's business. It felt as though I was merely filling in forms and exiting. Without exaggeration, I can attest to the erosion of my manipulative skills. (Junior Auditor, Firm C)

To summarise, the findings concerning the manipulative skills of junior auditors at Firms B and Firm C were diverse. Importantly, while participants at the managerial and senior levels shared varying perspectives, the prevailing sentiment among junior auditors was that they were losing their manipulative skills to the Cloud. This loss was primarily attributed to the automation of numerous processes. For instance, junior auditors now simply complete electronic forms in the Cloud, relying on the hints and suggestions provided by the system to do so. This automation was perceived as undermining their ability to manipulate and exercise critical judgement. This phenomenon was underscored by an account from a junior auditor who described feeling like a robotic executor, lacking a deeper understanding of the audit engagements. This raises critical questions about the extent to which this technology is shaping the professional development of junior auditors and potentially diminishing their analytical capacities.

The perception among junior auditors that they are losing their manipulative skills due to automation of audit processes directly relates to the concept of deskilling in LPT. Deskilling occurs when technology takes over tasks that were previously performed by workers, potentially diminishing their capabilities and job satisfaction (Marx, 1967; Braverman, 1974; Carchedi, 1975). In this case, the automation of audit-engagement processes is leading to a sense of deskilling among junior auditors, which aligns with the theory's focus on technological impact (Marx, 1967; Braverman, 1974; Carchedi, 1975).

The diverse perspectives at the managerial, senior, and junior levels underscore the importance of considering worker experiences and perceptions in the context of technology's impact on labour processes. LPT highlights that different workers may have different views on how technology influences their roles, and this was evident in the varying perspectives of the auditors in these firms. It emphasises the evolving nature of work and how technology can reshape the skills and knowledge required for a particular profession (Marx, 1967; Braverman, 1974; Carchedi, 1975). The observation that junior auditors feel like “robotic executors” and perceive a lack of deeper understanding of their audit engagements raises important questions about the impact of technology on their professional development and analytical capacities.

The following section will move onto an analysis of the demand for general skills among junior auditors.

6.5. Sub-Theme (2.4): The General Skills Required of Juniors

6.5.1. General Skills: Findings from the Three Audit Firms

At Firm A, the findings indicate a perceived decline in social and communication skills among junior auditors, attributed to the shift towards Cloud-based auditing practices. In short, this

technological transformation has limited the need for face-to-face interactions with clients, leading to reduced communication:

The transition to Cloud-based auditing has undoubtedly impacted our communication skills. When auditing manually, we would visit clients and engage in direct communication, fostering a closer client-auditor relationship. However, with the shift to online audits, particularly during the COVID-19 pandemic, our interactions have predominantly occurred through emails and digital channels. Consequently, the decrease in face-to-face communication has led to a decline in our communication skills. (Junior Auditor, Firm A)

The shift to Cloud-based auditing, reduces face-to-face interactions, potentially weakening communication skills and client-auditor relationships. This reliance on digital communication raises concerns about the long-term impact on audit quality and essential interpersonal skills.

Several participants noted that the COVID-19 pandemic had played a significant role in this transformation, as remote work became more prevalent. A partner at Firm A acknowledged this broader societal shift:

I believe this transformation is not solely about IT. It is closely tied to the impact of events like COVID-19. The shift to remote work and reliance on the Cloud have allowed individuals to perform their tasks from home, reducing the need for in-person client meetings and office interactions. Our company embraces remote work, and this flexibility has undoubtedly influenced the level of interpersonal interaction. So, yes, I concur that this shift has negative implications for communication and social skills. (Partner, Firm A)

Similarly, at Firm B, the Cloud's influence on social and communication skills was observed. One manager expressed concerns about this, emphasising the negative consequences of the new work style:

From my perspective, the most detrimental effect of this new work style has been on communication and social skills. Junior auditors now find themselves behind screens, relying on email communication. This is in stark contrast to the past, when audits were conducted face-to-face, encouraging personal growth in communication skills – for communicating both with clients and in the team. (Manager, Firm B)

In contrast, a manager at Firm B concluded that, while social skills had declined, analytical and technical skills had actually increased due to the Cloud:

Analytical and technical skills have certainly seen improvements. With the Cloud, we can perform complex data analysis more efficiently using tools like Excel. This has enhanced our technical prowess. However, social skills have taken a hit. In the past, we worked closely together in the same room, fostering face-to-face communication. Now, interactions are virtual, making it challenging to accurately gauge a person's feelings or reactions. (Manager, Firm B)

The manager's observation highlights a trade-off in Cloud-based auditing: while it enhances analytical and technical skills through efficient data analysis, it simultaneously diminishes social skills due to reduced face-to-face interactions.

The findings at Firm C mirrored those at Firms A and B, with two key themes emerging: a decline in communication and social skills and a potential increase in technical skills due to

Cloud adoption. A senior at Firm C highlighted the distinction between written and spoken communication skills:

Regarding communication skills, I've noticed that junior auditors have become stronger in their written communication. However, their spoken communication skills, especially in client interactions, have diminished. Communication was predominantly face-to-face in the past, but juniors are now less likely to engage directly with clients due to the changed dynamics. (Senior, Firm C)

There was some variation in the responses from Firm C regarding analytical, problem-solving, thinking, and critical skills. Some believed these skills had been compromised by the Cloud-facilitated automation, while others argued that they had improved because the Cloud had eliminated routine tasks, allowing juniors to focus on more complex analyses:

Analytical skills have been influenced, but not replaced, by the Cloud. The Cloud provides guidance and structure, but we still need to conduct the actual analysis and engage with clients. The Cloud streamlines tasks, saving our time and energy for more meaningful work. (Junior, Firm C)

However, another junior had a contrasting view, asserting that their analytical and problem-solving skills had actually improved, as they were now responsible for more autonomous decision-making:

I believe these skills have increased with the Cloud. For instance, during the planning stage, I take on more responsibility and make independent decisions. The Cloud offers guidance, but it doesn't replace our analytical thinking. So, I find that I'm enhancing my analytical and problem-solving skills. (Junior, Firm C)

In summary, across all three firms, the prevailing trend was a perceived decrease in social and communication skills among junior auditors due to the transition to Cloud-based auditing. The primary reason cited was the reduced need for face-to-face interactions, driven by the shift to online audit practices. Additionally, the COVID-19 pandemic played a significant role in accelerating this shift towards remote work. While there were different views regarding the impact on analytical, problem-solving, thinking, and critical skills, there was a consensus that technical and computer skills had increased. The Cloud's automation of routine tasks was seen as a contributing factor to this enhancement. However, the influence of the Cloud on communication and social skills remains a central concern in the evolving landscape of audit practices.

The perceived decrease in social and communication skills among junior auditors aligns with LPT's recognition of how technology can alter the social aspects of work (Braverman, 1974). The changing nature of interpersonal communication in the workplace is a fundamental concern of LPT (Braverman, 1974). The observation that technical and computer skills have increased due to the Cloud's automation of routine tasks has an important implication for LPT to consider, emphasising how technology can influence skill development. Technology often reshapes the skill set required for a particular profession, and in this case that includes enhanced technical proficiency. The role of the COVID-19 pandemic in accelerating the shift towards remote work provides an example of external factors influencing the labour process. The divergent views among the participants regarding the impact on analytical, problem-solving, thinking, and critical skills highlights the complexity of technology's impact on the different dimensions of work. This shows that LPT should consider the multifaceted nature of skill development and its interaction with technology.

6.5.2. General Skills: Views of Partners, Managers, and Senior and Junior Auditors

At Firm A, most seniors and a significant proportion of the juniors agreed that general skills, particularly social and communication skills, have been in decline since the implementation of Cloud-based auditing practices. A senior auditor articulated an intriguing perspective, comparing the social and communication skills of the “old school” with those of the newer generation. This participant highlighted a difference in the two generations’ respective social intelligence and interaction styles:

It is my belief that the social and communication skills of juniors are diminishing. I can’t say whether it’s a generational change, but when I observe the older generation, people of my age or parents in my generation, their interactions with clients and different individuals, especially on client premises, seemed to involve a level of social intelligence that appears to be missing in the new juniors. It seems that they rely heavily on the Cloud for communication. (Senior Auditor, Firm A)

This was seconded by a junior auditor, who acknowledged a decrease in confidence, particularly when transitioning from face-to-face to online communication:

I agree with that assessment. (Junior Auditor, Firm A)

However, the participants differed in their assessments of how analytical, critical, and thinking skills had changed. While one senior argued that these skills had been enhanced, citing the efficiency of Cloud-based tools, another senior suggested that juniors’ reliance on technology was eroding their problem-solving and critical thinking abilities:

I believe that juniors’ analytical, critical, and thinking skills are on the rise. The Cloud has streamlined our work, making tasks such as comparing figures and calculating

percentages more accessible and efficient. It simplifies our jobs. (Senior Auditor, Firm A)

Conversely, a senior auditor at Firm B argued that juniors now relied heavily on technology and this had led to a decline in problem-solving and critical thinking:

However, the only downside, in my opinion, is that juniors now have poorer problem-solving skills because of the Cloud and other technologies, as they are relying on them to solve all the problems. So, they do less thinking. (Senior Auditor, Firm B)

At Firm B, there was widespread consensus across all levels, with nearly all participants concurring that social and communication skills had diminished. In contrast, a notable increase in critical thinking and technical skills had been observed:

I think the Cloud has played a significant role in involving juniors in tasks they were not engaged in previously, enhancing their critical thinking. They are more closely monitored by seniors, which fosters judgemental thinking. However, in terms of communication skills, especially vocal skills, the move to digital communication has had a negative impact. Skills reliant on human interaction have undoubtedly decreased. (Junior Auditor, Firm B)

Notably, a junior auditor at Firm B expressed a more overarching concern, asserting that general communication and social skills were declining:

Working remotely without physical communication with the client will reduce our general skills, of course. (Junior Auditor, Firm B)

At Firm C, the managerial level expressed divergent opinions on juniors' social and communication skills. Similarly, a split view emerged among seniors and juniors, with approximately half stating that these skills had decreased, and the other half perceiving an increase. Importantly, some participants emphasised the growing importance of critical analysis in the digitised audit environment:

General skills, such as communication, are crucial for articulating points and addressing challenges effectively. Project management and time management are also key. Moreover, a strong foundation in IT is vital in understanding Cloud environments. The abundance of data available necessitates critical analysis, utilising interrogation software for a more profound interpretation of results. These are the skills that junior auditors must develop in the future. (Manager, Firm C)

In summary, the findings from all three firms indicate a prevailing sentiment that social and communication skills have been negatively impacted by the adoption of Cloud Computing in auditing. This decline is attributed to the online and remote working environment facilitated by the Cloud, which has led to reduced face-to-face interactions with clients and team members. The participants had observed a decrease in the confidence and social intelligence of junior auditors. While there was disagreement regarding the impact on analytical, critical, and thinking skills, it was generally agreed that the use of the Cloud had enhanced technical and computer skills.

However, concerns remain about the impact of Cloud Computing on the overall skill set of junior auditors. The increasing reliance on technology is seen as a potential threat to problem-solving, critical thinking, and other skills that require human interaction and decision-making.

These findings provide an illustration of the evolving landscape of audit practices and the need for continued attention to the development of a balanced skill set in junior auditors.

The perceived decline in social and communication skills aligns with LPT's recognition that technology can reshape the social aspects of work. Reduced face-to-face interactions due to the online and remote work environment directly affect how individuals communicate and collaborate in the workplace. The consensus that the Cloud enhances technical and computer skills should be considered by LPT focusing on the evolving skill set required for contemporary work. Technology often fosters the development of crucial technical proficiencies. The debate regarding analytical, critical, and thinking skills highlights the intricate interplay between technology and various skill dimensions. The concerns raised about the potential impact of Cloud Computing on problem-solving, critical thinking, and other skills that require human interaction and decision-making raise importance for LPT to recognise both the positive and potentially detrimental consequences of technology in the workplace.

6.6. Sub-Theme (2.5): The Education Required of Juniors

6.6.1. Education: Findings From the Three Audit Firms

At Firm A, the participants predominantly felt that customised training – rather than a complete overhaul of traditional education – was the ideal approach to prepare junior auditors for Cloud-based auditing practices. A manager at Firm A emphasised the significance of practical application over theoretical knowledge:

I think these things take time. It's one thing to have read something in a book. It's another thing to try to apply this practically and to be able to use professional scepticism when you're in the field and try to identify areas where things don't seem

right. And then you start using your judgement and experience to see if this is right or wrong. (Manager, Firm A)

The manager's comment emphasizes the gap between theoretical knowledge and practical application in auditing, underscoring the importance of hands-on experience in developing professional skepticism and judgment. This observation calls for a critical evaluation of current training methodologies, suggesting that reliance on technology should not overshadow the need for experiential learning to cultivate essential audit skills.

Similarly, at Firm B, participants across all hierarchical levels agreed that there should be an emphasis on training, rather than making any radical changes in education:

I don't think it's about education because the fundamentals of accounting and auditing have not changed. The fundamentals are the same. So, education only, I should say like some IT skills are required – very basic IT skills. Not much. (Manager, Firm B)

This belief in the importance of training over education is consistent with the notion that many large firms choose candidates with prior educational backgrounds and then reform them through training (Lee and Brooks, 1999).

In contrast, at Firm C, most participants agreed that changes were needed in the educational systems, particularly at the university level. The participants advocated for adaptations to university curricula to incorporate new knowledge and training skills that align with the technologies employed in audit practice:

There needs to be a change in the university curriculums. They need to add new audit knowledge and training skills. Such as IT, Cloud, and so on. (Senior, Firm C)

In summary, while the findings from Firms A and B were largely in sync, with participants favouring training as the key component for preparing junior auditors for Cloud-based auditing, Firm C presented a different perspective. At Firm C, the prevailing sentiment was that universities should adapt their curricula to include knowledge and training skills in harmony with the changing landscape of digitised audit practices. In short, there is a need for potential modifications to the educational approaches to ensure they align with the demands of modern technology.

6.6.2. Education: Views of Partners, Managers, and Senior and Junior Auditors

At Firm A, participants at all hierarchical levels felt that there was little need to overhaul the education of junior auditors, believing such changes would have limited impact. Instead, the emphasis was on continuous training, particularly for familiarising juniors with the firm's specific Cloud system. A senior auditor at the firm expressed this viewpoint:

I think it doesn't matter because at the university they teach the basic knowledge for using a computer, so you can understand it. So, we don't go deeply into computer-based solutions. For example, we have an IT team and the IT team will do that job for us. (Senior Auditor, Firm A)

The senior auditor's reliance on an IT team for computer-based solutions indicates a potential gap in comprehensive digital literacy among auditors, which could hinder their ability to independently address technological challenges. This reliance on specialised IT support may also limit auditors' holistic understanding of the systems they audit, potentially impacting the depth and effectiveness of their assessments.

The inclusion of different aspects of computerised auditing facilitates deskilling in the audit process.

The importance of training was reiterated by many participants who emphasised that practical training on the firm's Cloud system was more important than any changes to the education curriculum:

Train, train, train, train. And with time and experience you get there. (Junior Auditor, Firm A)

Similarly, at Firm B, participants at all levels concurred that the primary focus should be on training, rather than a revamp of education. This aligns with the findings at Firm A:

Yes, but I don't think it requires a change in education, rather it requires basic training. (Junior Auditor, Firm B)

However, Firm C presented a contrasting viewpoint, with most participants – including senior and junior auditors – advocating a transformation of the educational system. They emphasised the need for educational institutions to adapt their curricula to encompass knowledge and training relevant to Cloud Computing and other contemporary IT systems used in audit practice. A senior auditor at the firm articulated this perspective:

It's a must to have a technology background to understand the different ERP systems that are being used by the clients. You have Oracle, SAP, JD AdWords, Microsoft Dynamics, and a host of different systems. Then you need to have knowledge, working knowledge of Excel, Word, Microsoft Office. Then a little bit of data-analytics skills is also helpful. We would call it an investment. So, the firm must make an investment

in bringing them up to speed with our bespoke technology and the Cloud and so on and so forth. (Senior Auditor, Firm C)

This participant also highlighted the importance of collaboration between firms and educational institutions for updating and adapting curricula to meet the demands of the evolving business landscape.

In summary, the findings from Firm A and Firm B show that training is vital for junior auditors to adapt to the technology-driven audit environment. Participants from these firms argued that the rapid pace of technological change makes it challenging for traditional education to keep up, and firm-specific training is crucial due to the unique nature of each firm's IT and Cloud systems. Conversely, Firm C presented a different perspective, with participants emphasising the need for substantial changes to the university curricula to equip junior auditors with the necessary skills for the evolving landscape. This viewpoint emphasises the importance of collaboration between firms and educational institutions to ensure the alignment of education with industry requirements.

The agreement at Firms A and B that training is pivotal for junior auditors to adapt to the technology-driven audit environment has an implication for LPT to recognise the role of training in preparing workers for evolving work processes. It underscores that adapting to technological changes often necessitates tailored training to bridge the knowledge and skill gaps. The acknowledgement of the rapid pace of technological change and the challenge this poses to traditional education have another implication for LPT principles to consider. The theory should recognise that technology can outpace traditional educational systems, leading to the need for supplementary, firm-specific training to address the unique technological characteristics of an organisation. The perspective from Firm C, namely that changes in the

university curricula are required to equip junior auditors with the skills they need, reflects that LPT should consider the broader educational system. Educational curricula must be aligned with industry requirements to ensure that graduates are well-prepared for the evolving workplace. The call for collaboration between firms and educational institutions, as highlighted in Firm C's viewpoint, signals an important implication to LPT, emphasising cooperation between stakeholders to facilitate a smooth transition into new work processes. This collaboration helps bridge the gap between theoretical knowledge and practical workplace requirements.

6.7. Sub-Theme (2.6): The Experience of Juniors

6.7.1. Experience: Findings From the Three Audit Firms

At Firm A, differing opinions emerged regarding junior auditors' experiences with the Cloud. Some participants perceived their experiences as positive, while others did not. One senior auditor at Firm A recalled their initial challenges as a junior:

I would say that, during the first few months, I had an issue with the Cloud. Because I didn't know how to use it, basically. I would say it was a bit complex because there was too much information. And then I got used to the job. It's not user-friendly. So, you should get experience. From your mistakes, you learn through experience. I remember deleting one document. I didn't know how to get it back. That's when I was an intern. I had a problem. So, I freaked out. I went to my friends asking how to solve it. They didn't know. I thought, that's it. I would not complete my internship then. Then I went to the manager, and he told me, no, it's easy, just go to that and that's it. So, back then, the pressure was intense. (Senior Auditor, Firm A)

The senior auditor's experience highlights the initial complexity and lack of user-friendliness associated with Cloud systems, which can cause significant stress and operational disruptions for new users. This underscores the importance of comprehensive training and support to ensure that auditors can effectively navigate and utilise these technologies without compromising their performance or confidence.

A manager at Firm A raised a critical point, highlighting that while juniors now have access to more complex audit tasks due to the Cloud, their lack of prior knowledge and cumulative learning experience may result in a knowledge gap:

The only issue they may face is that they have access now to complicated areas, especially when they are working on a big client and or public entities. So, because they don't have enough experience, they don't understand what is going on and this might put them under pressure. (Manager, Firm A)

It was observed at both Firm A and Firm B that juniors often experienced intense pressure and heavy burdens due to the transparency and visibility of all their work on the Cloud. A junior auditor at Firm B echoed this sentiment, but noted that the initial challenges could be overcome with experience:

Yes, there are issues at first because you don't know how to implement these things. But when you learn how these things are implemented, it becomes easy. (Junior Auditor, Firm B)

Meanwhile, participants at Firm C emphasised that Cloud Computing was providing juniors with a distinctive auditing experience, having shifted the entire process to an electronic format. This transition had been significant over the past decade, and there was now a strong focus on

information security and the need for electronic data handling. A manager at Firm C described this transformation:

Cloud Computing is offering juniors a different experience, of course. I mean, the entire effort has now been made electronic. Again, I bring in the transition throughout the transition. And then in the last decade, I'd say the firms have focused heavily on ensuring information is in a single format or electronic. (Manager, Firm C)

In summary, the findings from all three firms indicate a shift in junior auditors' experiences since the introduction of Cloud Computing. While some reported positive experiences, others had encountered challenges. Notably, participants from all firms highlighted that the visibility and transparency of juniors' work on the Cloud had led to increased pressure and burdens. On a positive note, the Cloud allowed juniors access to more complex audit tasks, contributing to their professional growth and involvement in the audit process.

This shift in junior auditors' experiences since the introduction of Cloud Computing provides evidence for LPT's core principle that technology can transform the nature of work. However, although the theory recognises that technological changes can lead to challenging experiences for workers, it does not acknowledge the possibility of positive experiences. The increased visibility and transparency of juniors' work on the Cloud is in line with LPT's consideration of the impact of technology on monitoring and control in the workplace. Enhanced visibility can increase pressure, as observed in this context.

The positive impact of the Cloud, allowing juniors to access more complex audit tasks and thus contributing to their professional growth, has an implication for LPT to acknowledge that technology can create opportunities for skill development and career advancement. This

demonstrates how technology can empower workers and enhance their involvement in the work process.

6.7.2. Experience: Views of Partners, Managers, and Senior and Junior Auditors

Across Firm A, diverse perspectives emerged regarding junior auditors' experiences with the Cloud. While most juniors reported positive experiences, some did not. One junior auditor at Firm A elaborated on their positive experience, emphasising that the Cloud had made them more efficient in their work and allowed them to save time:

Regarding my experience, I would say it's been positive. Yes, it's interesting because some things that you do manually are time-wasting. It's not that it won't be beneficial or add up to you, it's just that you need to do it so you can get the job done. So, if there is something that makes it easier, I will prefer to use that, of course. It's easier now, but I don't think that's a negative thing. I think it's a positive thing because I'm still doing the work that allows me to recognise and understand everything. You might not know how to do certain things because it's computed. It's not at this stage, but it's in a state that helps us finish our work efficiently, I would say. (Junior Auditor, Firm A)

However, the findings also underscored the stress, pressure, and burden in the Cloud environment. A junior auditor at Firm A acknowledged that the transparency of their work created pressure:

Of course, at the beginning, even if it wasn't the Cloud, if your work is and if there is this transparency and your work is visible to everyone, even if I don't have that much

experience, I've only been here two years... but you have the stress, pressure, and burden of wanting to achieve something perfectly. (Junior Auditor, Firm A)

At Firm B, almost all participants across all levels concurred that the Cloud had changed the experiences of juniors, requiring them to possess a stronger computer and data analytics background:

Yes, definitely. The required training and the experiences are different to what they were. I mean, they need more of a computer background, data analytics background.

Yes, the experience is different in this respect. (Partner, Firm B)

The findings from Firm B also highlighted that, while there is intense pressure, it may not be directly related to Cloud Computing but rather the demanding nature of the job itself:

So, from what I understand, even if there weren't the Cloud, there would always be that pressure, especially in this sector, especially in accounting firms, because I have seen other people working in other firms have the same struggle, even when there is no Cloud. So, it's a demanding job and especially in the first quarter of the year. So, I'm not sure if it has a negative side. That they have. It will make us work more. Honestly, I don't think it's directly related to Cloud Computing. I think this is a separate thing. And it's not that, because at the end, the employee can take as much as they can doing a specific task. (Junior Auditor, Firm B)

A junior auditor at Firm C recalled the fears that they had had initially when using the Cloud, owing to the potentially significant impact of every action:

At the beginning I was afraid because every click changes a lot. We have a manager that lost his job because of one click! (Junior, Firm C)

In fact, the majority of juniors at Firm C said that working with the Cloud added pressure to their roles:

It's putting me under pressure, honestly. (Junior Auditor, Firm C)

One manager emphasised the pressure and burden placed on juniors, particularly due to the lack of a support system when working remotely:

I think it creates a bit more pressure on the individual because when you're sitting alone at home and you're doing your work, you do not necessarily have a buddy or somebody to speak to and say, listen I'm struggling with this task. How do I do that? So, I think it creates pressure from that aspect in terms of that support base and somebody to easily be able to access in terms of getting guidance. That's where the pressure comes from, if you don't have that support base anymore. (Manager, Firm C)

In summary, diverse opinions were shared regarding junior auditors' experiences with Cloud Computing. Some viewed it positively, citing increased efficiency and the facilitation of more complex tasks, while others highlighted the pressure and fear associated with the transparency of their work on the Cloud. Additionally, it was noted that digitalisation had also raised concerns related to privacy and data protection (Bednarova and Serpeninova, 2023).

This diversity of opinions highlights the complexity of technology's impact on work processes. LPT does not acknowledge that technology can have varying effects on workers, but the current findings emphasise the importance of considering multiple perspectives. The positive aspects – namely, the increased efficiency and access to more complex tasks – should be considered

by LPT to acknowledge that technology can enhance productivity and expand the scope of work for employees.

On the other hand, LPT explains how technology can impact worker well-being and job satisfaction, and the reported pressure and fear associated with transparent work on the Cloud is an example of this (Braverman, 1974). Enhanced visibility can lead to increased scrutiny and stress, which can be detrimental to employees. Furthermore, the concerns related to privacy and data protection demand consideration of the ethical and legal implications of technology in the workplace. LPT needs to recognise the need to address these issues to ensure a fair and safe work environment.

A summary of this chapter is presented next in section 6.8.

6.8. Summary

The findings presented in this chapter highlighted a consensus among participants that the demands on junior auditors for physical effort have markedly diminished since the implementation of Cloud Computing. However, a plurality of perspectives emerged regarding how the demands for mental effort had been affected. Some interviewees contended that technological advances have desensitised juniors, reducing the mental exertion required to execute audit tasks. Conversely, some posited that the Cloud-facilitated audit engagements but professional judgement, scepticism, and critical analysis remained integral to junior auditors' responsibilities. Furthermore, the findings revealed a conspicuous decline in the social and communication skills of junior auditors since the adoption of Cloud Computing. However, a notable divergence of opinions surfaced regarding the impact on juniors' technical, analytical, critical, and problem-solving skills. While some interviewees contended that these skills had been enhanced by the use of the Cloud, counterarguments posited that the Cloud tended to

simplify audit tasks, diminishing the need for in-depth analytical thinking. The consensus among interviewees was that juniors would benefit more from targeted training than a comprehensive overhaul of their educational curricula. The prevailing sentiment suggested that on-the-job training, specifically tailored to the firm's Cloud system, was pivotal for preparing junior auditors for the evolving technological landscape.

The chapter further illuminated the diverse perspectives on juniors' experiences with Cloud Computing. The positive experiences included notable time savings, access to a plethora of supportive tools, increased ease in managing audit engagements, and the convenience of online storage and real-time accessibility for team members. Conversely, negative experiences were characterised by heightened stress, attributable to the transparency of junior auditors' work on the Cloud that rendered all mistakes visible to all team members.

The findings presented in this chapter have several implications for LPT. (1) The introduction of Cloud Computing into these audit firms led to a significant reduction in the physical effort required of junior auditors, which aligns with the LPT principle that technology can reduce the need for physical effort. (2) The contrasting findings from Firms A and B illustrate that technology can yield varying effects on workers. The disagreement as to whether the need for mental effort had increased or decreased emphasises that technological changes can lead to diverse perceptions and experiences among workers. (3) The debate about the impact on cognitive tasks, such as analysis and critical thinking, demonstrates the multifaceted nature of technology's influence on work processes. Technology can both streamline routine tasks and create opportunities for more complex assignments, leading to varying perceptions among those affected. (4) The differing viewpoints regarding changes to junior auditors' autonomy and manipulative skills highlight the ways in which technology can influence the control and decision-making authority in the workplace. In this way, technology can impact worker roles,

posing the risk of deskilling. (5) The perceived decline in social and communication skills underscores how technology can alter the social aspects of work, particularly in terms of reduced face-to-face interactions. This concern is fundamental to LPT. (6) The importance of training and changes in university curricula for junior auditors to adapt to the technology-driven environment highlights the need for educational institutions and firms to collaborate in aligning education with industry requirements. (7) The shift in junior auditors' experiences following the introduction of Cloud Computing demonstrates the transformative impact of technology on work processes, reducing physical effort while introducing new dynamics and considerations. (8) The increased transparency of the work due to the Cloud has increased the pressure and burden on workers, a critical aspect to be considered by LPT. (9) The findings show that technology can bring both positive and challenging experiences for workers, underscoring the need to find balance between them.

In summary, these implications emphasise the multifaceted nature of technology's influence on work processes, affecting physical and mental effort, autonomy, skills, social dynamics, and education. They underscore the relevance of LPT for understanding the evolving nature of work in the context of technological advances and its implications for workers across various dimensions of their work experience.

The following chapter will present the analysis of the third research question.

Chapter Seven: Junior Auditors' Autonomy

7.1. Introduction

In this chapter, a thematic analysis of the research interviews is presented to address the third research question: “How is the Cloud affecting the autonomy of junior external auditors and their audit tasks?” The interpretation of these research findings is situated under the theoretical framework of LPT.

Chapter Seven is structured as follows. An analysis of how audit methodologies have changed due to technology is presented in section 7.2. This section includes 7.2.1, focusing on the variations between the three audit firms, and 7.2.2, which presents the views of the auditors at various levels. Section 7.3. discusses the concept of “junior autonomy”, beginning with the firm-level perspective (7.3.1) and then exploring the views of partners, managers, and senior and junior auditors (7.3.2). The chapter culminates with a summary in section 7.3.3.

7.2. Changes in Audit Methodology and Approach

Lee (2002) discusses the concept of audit methodology, emphasising its assumed technical neutrality that provides auditors with the latitude to uncover financial errors and irregularities that could lead to misstatements in the financial standing of the audited entity. In this traditional paradigm, the conceptual groundwork is laid by seasoned professionals, such as partners, who craft the audit approach for the particular company. Other qualified staff members then employ these methods to construct comprehensive audit programmes. In practice, it is unqualified staff who primarily execute these audit programs while scrutinising the accounts of the auditee. However, an intriguing evolution in audit methodology and approach has been observed since

the integration of Cloud technology into the auditing process. This transformation warrants a more detailed examination in the specific contexts of the three audit firms under investigation.

7.2.1. Changes in Audit Methodology and Approach in the Three Audit Firms

This investigation into the impact of Cloud adoption on auditing practices has revealed a pivotal and intriguing theme – namely, the transformation of the audit methodology and approach driven by the Cloud’s integration. A novel digital audit methodology has supplanted the traditional approach. Moreover, audit standards have undergone substantial modifications to adapt to the needs of businesses, leading to a perceptible relaxation of the standards (ICAEW, 2019). The revisions made to ISA 315 by the International Audit and Assurance Standards Board (IAASB) in September 2019 have significant implications for the field of auditing, particularly in the context of the impact of the Cloud on auditing itself and the work of juniors in particular. These changes, which became effective for financial statements audits commencing on or after 15 December 2021, are highly relevant to understanding how Cloud technology affects the auditing process, especially for junior auditors (ICAEW, 2019).

· Introduction of inherent risk factors: The inclusion of new inherent risk factors – such as subjectivity, complexity, uncertainty, change, and susceptibility to misstatement due to management bias or fraud – is particularly relevant in the context of Cloud-based systems (ICAEW, 2019). Cloud technology often involves complex and evolving IT environments, and junior auditors need to consider these factors when assessing the risks associated with Cloud-based financial systems.

· Revised risk spectrum: The new risk spectrum places a greater emphasis on significant risks (ICAEW, 2019). With Cloud technology becoming increasingly prevalent in business operations, junior auditors must be equipped to evaluate and prioritise the risks associated with

Cloud-based data storage and processing. This is crucial, as errors or security breaches in Cloud systems can have a far-reaching impact on financial statements.

·Evidence-based risk assessment: The requirement for auditors to acquire “sufficient, appropriate” evidence (ICAEW, 2019) is paramount in the context of Cloud auditing. Cloud-based systems rely on vast amounts of digital data, and junior auditors need to understand how to gather and evaluate this data effectively to assess risks related to data integrity, privacy, and security.

·Emphasis on IT and controls: The greater emphasis on IT and general controls includes an increasing reliance on Cloud-based solutions (ICAEW, 2019). Junior auditors need a strong understanding of Cloud infrastructure, security, and controls to effectively assess the risks associated with Cloud technologies.

·Integration of material for smaller entities: The integration of material specific to smaller entities directly impacts junior auditors, who often work with smaller clients (ICAEW, 2019). As smaller entities may adopt Cloud solutions for reasons of cost, junior auditors need to be aware of the specific risks and controls relevant to these clients in a Cloud environment.

In summary, the revisions to ISA 315 have had a direct impact on the work of junior auditors, particularly in the context of auditing Cloud-based systems. These changes emphasise the importance of understanding and assessing inherent risks, evidence gathering, and IT controls in the Cloud environment. Junior auditors must be well-prepared to address the unique challenges and risks posed by Cloud technology in the auditing process to ensure the accuracy and integrity of financial statements.

Furthermore, there has been a significant shift towards analysis-driven audits, with automation playing a central role in this. Automation has been introduced into many of the tasks traditionally handled by junior auditors, thus altering the composition of audit teams and the role of junior auditors (Junior Auditor, Firm B). However, the human element remains crucial in the audit process due to the evolving nature of business operations and the inherent limitations of technology. The fluidity and adaptability required to address complex and unique factors of the business necessitate human judgement and expertise, which automation simply cannot replicate (Junior Auditor, Firm B). Moreover, the findings reveal that the evolution of the audit methodology is bringing in a holistic approach that prioritises comprehensive assessments over a narrow focus on material areas. For instance, technology has made the thorough examination of an entire dataset, rather than a reliance on sampling, increasingly feasible (Partner, Firm C). This enables the auditing of exceptions and outliers, with a focus on systems and controls as integral components of the audit process (Partner, Firm C).

In summary, Cloud adoption has led to a profound transformation of the audit methodology and approach. Audit standards have evolved to accommodate the diverse needs of businesses, resulting in a more flexible framework. Automation has altered the role of junior auditors, though human judgement remains indispensable. Additionally, there has been a shift towards comprehensive assessments and the prioritisation of controls and systems. In this way, this dynamic and evolving field is responding to the challenges and opportunities presented by technological advances and evolving business models.

7.2.2. Changes in Audit Methodology and Approach: Views of Partners, Managers, and Senior and Junior Auditors

Although auditing methodologies have evolved in response to dynamic changes in knowledge and commercialisation concerns, the ultimate objective remains the same – namely, ensuring the reliability of financial accounts (Lee, 2002). This study has illuminated a substantial shift in the audit methodology and approach, raising questions about the extent to which these changes can be attributed to the adoption of Cloud technology. One perspective posits that the Cloud is merely a technological alteration, with other technologies and broader industry having also had significant influences. Moreover, audit firms are increasingly employing data analytics and Big Data, leading to a move from traditional “sampling” to comprehensive analysis, often referred to as “fishing” (Manager, Firm B).

The IAASB emphasises the importance of audit sampling. Defined as the application of audit procedures to less than 100% of the items in an audit-relevant population, “sampling” provides auditors with a reasonable basis for drawing conclusions about the entire population (Financial Reporting Council Limited, 2022). In contrast, “data dredging”, often referred to as “data fishing”, involves analysing large datasets to uncover potential relationships in the data (Awati, 2022). This practice seeks to extract more information from a dataset than it inherently contains, reflecting the data-rich landscape of contemporary auditing (Awati, 2022).

The incorporation of data analytics into auditing enables the examination of all client transactions, significantly enhancing the auditor’s understanding of the client’s operations (Murphy and Tysiac, 2015). This approach facilitates the detection of both errors and irregularities, enhancing the quality of the audit process (Murphy and Tysiac, 2015).

From a managerial perspective, the transformation primarily impacts auditing approaches, emphasising the adaptability required in the face of evolving technology (Manager, Firm B). However, the audit methodologies have also undergone significant changes, with a transition from manual processes to the use of advanced analytical tools and robotics (Manager, Firm B). Seniors in the field emphasise the changes to the audit methodology, with the new focus on analytical procedures necessitating the use of Big Data (Senior Auditor, Firm B). This has led to a greater emphasis on data analytics in planning engagements, leveraging insights from clients' IT systems. The strategic role of technology in supporting these methodologies underscores the dynamic nature of contemporary auditing (Senior Auditor, Firm B).

However, some seniors in this study perceived this change as driven primarily by technology, highlighting the importance of remaining competitive in adapting to new technological advances (Senior, Firm C). The consensus among juniors echoed that of managers and seniors, with juniors emphasising the changes in both methodology and approach. They felt that, while technology played a pivotal role in this transformation, the adaptation of new methodologies – notably to facilitate data analytics – was also apparent (Junior Auditor, Firm B). The juniors acknowledged the significance of technology but also emphasised the accompanying changes in audit methodologies (Junior Auditor, Firm C). The introduction of methodologies such as DG-GAM and Core-GAM had led to a shift in auditing practices, with analytical procedures gaining prominence (Junior Auditor, Firm B). However, there was a spectrum of opinions among the juniors, with some perceiving the primary change as technological and others highlighting that audit methodologies were changing less rapidly than the new technology was arriving (Junior Auditors, Firm B and Firm C).

In summary, the integration of Cloud technology and other technological advances has sparked a profound transformation in audit methodologies and approaches. The managers and seniors

identified changes in both methodology and approach, and the juniors shared this perspective, underscoring the dynamic nature of contemporary auditing practices. The integration of data analytics and Big Data has revolutionised traditional audit procedures, with the audit field evolving in response to a rapidly changing business landscape.

7.2.3. Summary

This study has revealed a significant alteration in the audit methodologies and approaches of the participating audit firms, across all organisational levels. The introduction of Cloud technology into the auditing domain precipitated an evolution in the conceptualisation and execution of auditing practices. In essence, the arrival of the Cloud triggered a transformation in how auditing tasks are accomplished, influencing both the strategies employed and the overarching methodologies applied (Manager, Firm B).

These findings provide support for LPT in the following ways. (1) LPT emphasises that changes in technology can alter organisations and control mechanisms (Marx, 1967; Braverman, 1974). The introduction of Cloud technology into auditing has changed how work is organised. The facilitation of remote access to data and availability of collaborative tools mean that audit tasks can be organised differently. Junior auditors, in particular, must adapt to new structures and reporting relationships. (2) LPT highlights the roles of skill and expertise in the labour process (Marx, 1967; Braverman, 1974). The adoption of Cloud technology obliges junior auditors to acquire new skills related to Cloud-based tools, data security, and data analysis. This change to the required skills will inevitably impact the hiring practices and training programmes of audit firms. (3) Technology can affect work intensity and pace (Marx, 1967; Braverman, 1974). Auditors may find that Cloud-based systems enable faster data retrieval and analysis, potentially altering the speed at which tasks are

completed. This, in turn, can influence work intensity and the demands placed on junior auditors. (4) LPT also considers the extent of autonomy and decision-making power in a work process (Marx, 1967; Braverman, 1974). The adoption of Cloud technology can alter the autonomy of junior auditors, who are expected to access and analyse data remotely, leaving them with less discretion in the management of their work and decision-making. (5) The arrival of the Cloud has implications for job security. While it creates new opportunities for junior auditors to specialise in Cloud auditing, it has also led to concerns about job security, with automation and centralised Cloud-based auditing tools replacing tasks traditionally done by junior auditors. (6) LPT addresses the division of labour in organisations (Marx, 1967; Braverman, 1974). The introduction of Cloud technology has affected how tasks are distributed among different levels of auditors. Junior auditors may be assigned specific responsibilities related to Cloud auditing, and – in the interests of their work satisfaction and career development – it is important to understand the implications of this division. (7) LPT acknowledges the possibility of worker resistance to new technologies (Marx, 1967; Braverman, 1974). Junior auditors may encounter challenges in adapting to the new Cloud-based auditing methods, thus training and support may be necessary to facilitate this transition.

7.3. Junior Autonomy Across the Three Audit Firms

LPT explains that the organisation of work and technology can impact workers' autonomy and control over their tasks (Marx, 1967; Braverman, 1974; Carchedi, 1975). The findings in this study have shown that junior auditors' autonomy varies between audit firms, which is consistent with the view that autonomy is influenced by organisational context and technological changes. The study reveals a spectrum of opinions across the three audit firms on the impact of Cloud Computing on junior auditors' autonomy. In Firm A, there were

different views on whether the Cloud had affected junior auditors' autonomy. Some said that juniors' autonomy had remained relatively unaffected, explaining that the Cloud was primarily a storage tool and did not significantly encroach upon decision-making authority. However, others contended that the Cloud did, in fact, diminish juniors' autonomy. They argued that the Cloud altered the dynamics of ownership and responsibility for audit files, which were no longer exclusively in the physical possession of the juniors and could instead be easily accessed by other team members. LPT sheds light on this observation, showing how technology can reconfigure the ownership and control of information or tasks in a work process (Marx, 1967; Braverman, 1974; Carchedi, 1975).

Contrasting viewpoints on junior autonomy and the Cloud were also expressed by Firm B participants. Some individuals in Firm B asserted that juniors' independence had been compromised by the Cloud's increasing the transparency of auditing processes, suggesting that it had exerted a degree of control over the juniors' work. This exemplifies LPT's observation that technology can increase surveillance of and control over workers (Marx, 1967; Braverman, 1974; Carchedi, 1975). However, others in Firm B took the opposite view, explaining that, by promoting transparency and collaboration, the Cloud was actually safeguarding independence and fostering teamwork. This suggests an implication for LPT to take into account the potential of the Cloud for fostering novel modes of transparency and collaboration. There was a degree of consensus among the Firm C responses, with most indicating a decline in junior autonomy following the introduction of the Cloud. However, there was some variation in the responses from Firm C, with a minority arguing that junior autonomy remained relatively unchanged.

In summary, the study illustrates some of the variation in how professionals in different firms perceive the influence of Cloud Computing on junior auditors' autonomy. Despite some consensus, the presence of diverse opinions highlights the complexity of the relationships

between technology and the different professional roles. This diversity makes it imperative to consider the particular context and dynamics of each audit firm when assessing the impact of digital tools on professional autonomy. LPT should acknowledge that workers' experiences and perceptions of technology can vary, even in the same organisation, due to factors like individual differences and varying job roles.

7.4. Junior Autonomy: Views of Partners, Managers, and Senior and Junior Auditors

Perceptions of the impact of Cloud Computing on junior auditors' autonomy and responsibilities varied across the audit firms under study. This highlights that workers' experiences and control over their tasks can differ depending on their roles and interactions with technology, a phenomenon that should be considered by LPT. The views of the partners and managers at Firm A diverged on the topic of junior autonomy and the Cloud. One partner suggested that the Cloud did not significantly infringe upon junior autonomy, emphasising that the Cloud was primarily a storage tool and did not usurp decision-making authority. However, the same partner acknowledged that the Cloud did alter the ownership of and responsibility for audit files, as the files were no longer physically in the possession of juniors and could instead be accessed by other team members. This provides an example of LPT's stance that technology can influence the balance of power and control in the workplace (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In Firm B, opinions on junior autonomy and the Cloud diverged similarly. One manager contended that the Cloud promoted transparency and collaboration, arguing that independence was not compromised, as team members were working together towards common objectives. Similarly, another manager explained that the Cloud had streamlined their independence

confirmation procedures, making the latter more efficient. Moreover, a partner with Firm B said that the Cloud had positively impacted junior auditors' autonomy by providing easy access to vast quantities of information. The ability to retrieve information swiftly is crucial for a high-quality audit.

In Firm C, there were mixed views on the impact of the Cloud on junior autonomy. One manager recognised that the Cloud had introduced risks, such as the potential loss of work due to file corruption and accidental changes by other users. The absence of a structured back-up methodology raised concerns. Additionally, the Cloud's collaborative nature could lead to situations in which one user's modifications hindered another user's access to a shared file. This provides evidence for the claim in LPT that technology can reconfigure the ownership and control of a task (Marx, 1967; Braverman, 1974; Carchedi, 1975). These managers and partners perspectives offer useful insights into the complex relationship between Cloud Computing and junior auditors' autonomy and responsibilities, highlighting the potential benefits and challenges for the profession.

The senior auditors expressed a range of views on the impact of Cloud Computing on junior auditors' autonomy and independence. In Firm A, opinions diverged as to whether the Cloud had diminished juniors' autonomy. One senior auditor acknowledged the Cloud's role in enhancing control and transparency in auditing processes, suggesting that the technology had taken a degree of control over juniors' work. This notion resonates with LPT, which explains that technology can be a tool for enhancing managerial control and oversight. Conversely, another senior auditor contended that juniors had ultimately retained control over their work because certain tasks remained reliant on their expertise, despite some aspects being automated.

There were also various responses to the question of ownership of and responsibility for audit files. One senior auditor argued that juniors had not lost their independence, as the process still relied heavily on their professional judgement. In short, the Cloud is not yet capable of fully assuming control over tasks requiring nuanced decision-making. LPT should consider that technology can have different effects on worker autonomy and control depending on the individual's job role and the nature of their tasks. The contrasting opinions on this issue reflect the fact that technology's impact on work processes is not uniform.

In Firm B, the question of whether junior auditors lose their independence in the Cloud yielded contrasting responses. Some senior auditors said that juniors' independence and responsibilities had been enhanced, as juniors now had more autonomy in managing certain tasks and even when engaging in client interactions. However, others asserted that independence had diminished, citing increased oversight and review by senior auditors in the collaborative, Cloud-based environment. In short, the technology can empower junior auditors by allowing them to manage tasks independently and engage with clients, but it can also restrict their independence by increasing oversight by senior auditors. This aligns with LPT, which explains that technology can influence collaboration and worker roles in the labour process (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In Firm C, a consensus emerged among senior auditors that juniors' autonomy had declined since the introduction of the Cloud. While team members had always had access to others' work, the Cloud had enhanced this, making it easier for managers and partners to review work. This change was perceived as a contributor to the decrease in juniors' autonomy. These perspectives highlight the need for a nuanced understanding of how technology can both empower and restrict professionals in the auditing profession, depending on the individual context and digital tools. This duality should be recognised by LPT.

In Firm A, junior auditors' perceptions regarding the impact of Cloud Computing on their autonomy and responsibility were mixed. When asked if their autonomy was being eroded, the majority of junior auditors reported that it was. They described how the Cloud had helped distribute responsibility and ownership of files among team members, reducing the risk of data loss and enhancing their control. However, one junior auditor reflected that they had had more responsibility when tasks were conducted manually. Discussing their loss of ownership of the files, one junior auditor contended that the responsibility for the files now fell more on their more-senior colleagues, particularly managers. However, another junior auditor disputed this, asserting that juniors retained ownership and responsibility, though they did acknowledge that manual working could yield different results. The findings from Firm A underscore the potential of Cloud Computing to transform junior auditors' autonomy and responsibilities, as explained in the literature highlighting its enhancement of data accessibility (Weinman, 2012, as cited in Liu and Vasarhelyi, 2014) and provision of remote data access (Jordan, 2020). This variation should be reflected on the theory's emphasis on how technology can impact worker autonomy in different ways.

In Firms B and C, the junior auditors expressed similar perspectives on the impact of the Cloud on their level of autonomy. They indicated that the Cloud exerted control over their audit tasks, leading to a sense of reduced autonomy as they were obliged to adhere to guidelines and references while working collaboratively. LPT sheds light on this, explaining that changes in technology can influence the level of control and autonomy that workers have in their tasks (Marx, 1967; Braverman, 1974; Carchedi, 1975). The Cloud's role in guiding and monitoring the juniors' work shows how technology can impact the power dynamics in the labour process. Asked about the loss of ownership and responsibility over audit files, one junior auditor in Firm B did not perceive this as a problem, instead emphasising the importance of transparency in

their work. From this perspective, the Cloud enhances transparency and visibility, potentially reinforcing professional independence. This duality is more evidence for the view that technology can both enable and restrict worker autonomy (Marx, 1967; Braverman, 1974; Carchedi, 1975).

Overall, these views highlight that Cloud Computing influences junior auditors' autonomy, responsibility, and ownership in different ways. It underscores the need for a nuanced understanding of how digital technologies shape professional roles and responsibilities, which is discussed further in Chapter Nine.

7.5. Summary

In this examination of the impact of Cloud Computing on junior auditors' autonomy and responsibilities, significant disparities in viewpoints emerged from the three audit firms, denoting the complexity of the relevant issues.

In Firm A, the partners and managers had contrasting perspectives on junior autonomy and the Cloud. While one partner downplayed the influence on juniors' autonomy, highlighting the technology's primary role as a storage tool, another partner acknowledged that the Cloud had altered the dynamics around ownership of and responsibility for audit files, thereby impacting juniors. This provides support for the claim that technology can change the control dynamics and distribution of responsibility in work processes (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In addition, the fact that one partner downplayed the Cloud's influence on juniors' autonomy while another acknowledged its impact on ownership and responsibility raises questions about whether managerial perspectives are influenced by organisational interests. Managers may

downplay or highlight certain aspects of technology's impact to suit their objectives, which can affect how junior auditors experience technology in practice.

The managerial viewpoints in Firm B also differed. One manager contended that the Cloud promoted transparency and collaboration while safeguarding independence, whereas another manager emphasised the efficiency gains in independence confirmation procedures. The Firm C participants also expressed mixed views. One manager recognised the risks associated with using the Cloud (e.g., data loss and accidental changes) and highlighted that the collaborative nature of Cloud-based working occasionally hindered access to shared files. New technology inevitably introduces new challenges and vulnerabilities, and these risks are not always adequately addressed in practice.

These findings highlight that the perspectives of partners and managers may not always align with the best interests of junior auditors, and the impact of technology on the labour process can be multifaceted, potentially leading to inequality and unaddressed risks.

Senior auditors in Firm A expressed differing views on how the Cloud had influenced the autonomy of junior auditors. While one senior auditor reported an increase in control and transparency, aligning with LPT, another senior auditor suggested that juniors maintained control, particularly over tasks reliant on their expertise. In Firm B, senior auditors' opinions diverged similarly. Some said that the Cloud had increased juniors' independence and responsibilities by fostering a collaborative environment. Conversely, others asserted that juniors' independence had been diminished due to the increased oversight by senior auditors. This raises critical questions about the extent to which technology is used for quality control versus exerting managerial authority, with the latter potentially infringing on workers' autonomy (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In Firm C, the senior auditors generally concurred that juniors' autonomy had declined with the introduction of the Cloud. The Cloud's facilitation of accessibility and easier review by managers and partners were cited as contributing factors. This exemplifies how technology can exacerbate power imbalances in organisations, a central concern in LPT (Marx, 1967; Braverman, 1974; Carchedi, 1975).

The varied interpretations of the Cloud's impact on autonomy and control underline that technology's effects are subject to individual and organisational interpretations. It is crucial to critically assess whether any reduction in autonomy is in the best interests of junior auditors or whether it primarily serves the managerial agenda.

Junior auditors in Firm A predominantly agreed that their autonomy was being affected by the Cloud. They noted that the Cloud redistributed responsibility and ownership of files among team members, reducing the risk of data loss. This is consistent with the observation in LPT that technology can alter the distribution of tasks in the work process (Marx, 1967; Braverman, 1974; Carchedi, 1975). However, it is important to identify whether this redistribution genuinely benefits junior auditors or whether it is primarily serving managerial objectives.

In Firms B and C, the junior auditors offered more consistent viewpoints. They reported reduced autonomy in the Cloud environment, where adherence to guidelines and references is essential. This raises critical questions about the nature of this control. LPT draws attention to the role of technology in introducing guidelines and standardisation (Marx, 1967; Braverman, 1974), and it is essential to critically evaluate whether this conformity stifles creativity and professional judgement.

Some junior auditors in Firms A and C suggested that more-senior colleagues – particularly managers – now took greater responsibility for audit files. However, others disputed this,

asserting that juniors retained ownership and responsibility, especially for manual work. In Firm B, one junior auditor had not perceived any loss of ownership or responsibility for audit files in the Cloud. This aligns with the view that the Cloud enhances transparency, potentially reinforcing professional independence.

In summary, this analysis has revealed the diversity of views and experiences of the impact of Cloud Computing on junior auditors' autonomy and responsibilities in the three audit firms. Notably, there was a consistent perception among the junior auditors in all three firms that the Cloud had diminished their autonomy, while opinions among managers and senior staff were varied. This highlights the need for a critical inquiry into whether individuals in higher positions are more concerned with the organisation's objectives than the best interests of junior auditors. The varying viewpoints highlight the complex interplay of technology and professional roles within the auditing profession. A nuanced understanding of the effects of digital technologies, such as the Cloud, is crucial for adapting and optimising audit practices in a rapidly evolving digital landscape. The implications of this are explored further in the discussion (Chapter Nine).

Chapter Eight: Junior Auditors' Professional Identity

8.1. Introduction

In the ever-evolving landscape of the auditing profession, the concept of professional identity is of paramount importance. This chapter discusses the dynamics of the junior auditor's professional identity, exploring aspects of behaviour, attitude, and role and identifying how the advent of Cloud Computing technology is reshaping their identities. As auditing firms grapple with the challenges and opportunities brought about by technological advances, it is critical to understand how junior auditors are perceiving and adapting to these changes.

This chapter presents a thematic analysis, breaking down the theme into several sub-themes, each shedding light on a different facet of the junior auditor's professional identity. Section 8.2 investigates the behaviours of junior auditors across the three firms. Section 8.3 explores the attitudes of junior auditors towards the adoption of Cloud Computing technology. Section 8.4 uncovers the evolving roles of junior auditors, investigating how their responsibilities and contributions have been influenced by the digital transformation. This exploration then extends to the upskilling and potential deskilling effects of Cloud Computing in section 8.5. In section 8.6, the chapter moves into the implications – positive and negative – of Cloud Computing for junior auditors' professional identity. These implications are contextualised in the environments of the audit firms, providing a perspective on the outcomes of this transformative journey. Finally, section 8.7 concludes the chapter with the recommendations derived from the insights garnered in the analysis. These recommendations serve as actionable guidelines for auditing firms seeking to optimise the professional identities of their junior auditors in the era of Cloud Computing. They are designed to address the challenges presented by technological innovation, while capitalising on the opportunities.

8.2. Sub-Theme (4.1): Junior Auditors' Behaviours

The findings of this study offer insights into how the professional identities and behaviours of junior auditors in the three firms have been impacted by the introduction of Cloud Computing. The analysis presented in this chapter will examine the similarities and differences between these firms in terms of their representatives' perspectives on the behaviours and professional identities of junior auditors.

8.2.1. Junior Auditors' Behaviours: Findings From the Three Audit Firms

The Firm A participants expressed the broadest range of views regarding the impact of technology on professional identity. In contrast, the Firm B interviewees largely saw technology as having had a positive influence on junior auditors, making them more confident and involved. The Firm C participants took a middle ground, seeing technology as enabling a shift toward a more analytical approach. Those from Firms B and C agreed that technology had led to changes in junior auditors' behaviours. In Firm B, this included issues related to remote working, while in Firm C, it was about adopting an analytical mindset. The Firm A participants expressed divergent opinions about the impact of the Cloud on juniors' behaviours. Some discussed a potential erosion of auditing skills, and some advocated for simulations without it. In contrast, the Firm B interviewees highlighted junior auditors' increased participation in engagements. The Firm C responses focused on the transition to a more analytical role. In summary, these findings reveal a range of perspectives on the impact of Cloud Computing on junior auditors' professional identities and behaviours. While the responses from Firm A were mixed, the Firm B and C participants were fairly positive, seeing technology as fostering a sense of responsibility and analytical thinking among junior auditors.

The findings suggest that the interests of those in more-senior positions may not always align with those of the junior auditors (Marx, 1967; Braverman, 1974; Carchedi, 1975). The question is whether managers and senior staff prioritise profit and organisational interests over the well-being and professional development of junior auditors (Marx, 1967; Braverman, 1974; Carchedi, 1975). LPT can be applied here to facilitate a nuanced analysis of whether these changes in behaviour align with the best interests of junior auditors or serve managerial objectives.

The differences in perspectives across the three firms indicate that the impact of technology on professional identity and behaviours is not uniform and is likely to be contextually dependent. As such, it is essential to critically analyse the specific factors that contribute to these variations – including factors such as the organisational culture, nature of the audit work, and individual experiences of the junior auditors. This is emphasised by LPT, which advocates for understanding of the specific context in which any technology is implemented.

8.2.2. Junior Auditors' Behaviours: Views of Partners, Managers, and Senior and Junior Auditors

❖ Firm A:

Partners' and Managers' Views: There was no consensus in Firm A as to whether the use of Cloud Computing was eroding the professional identities of junior auditors. Some argued that it was not having a significant impact in this area, with the technology simply a tool to reflect knowledge and maintain standards. Others argued that heavy reliance on technology could dilute the professional skills and judgement of juniors. This resonates with LPT explanation of how technology can influence workers' skills (Marx, 1967; Braverman, 1974; Carchedi, 1975)

and sense of professional identity. The question is whether this erosion is genuine or whether it reflects a resistance to change. It is also essential to consider whether technology transforms the nature of professional skills rather than diminishing them.

Senior Auditors' Views: Opinions in the senior auditor group were divided, reflecting a fundamental divergence of ideas about the role of technology in the audit profession. Some said that reliance on technology was causing a decline in auditing skills and that simulations without technology could be a solution. However, others emphasised the need for professional judgement over technology. Some said that junior auditors still possessed auditing skills and that, in fact, their technical skills had increased alongside. LPT should consider that technology can both enhance and potentially diminish the skills of workers, depending on how it is integrated into the work process. A critical analysis is required to determine whether technology is genuinely eroding auditing skills or whether it is simply facilitating changes in them.

Junior Auditors' Views: Junior auditors in Firm A expressed varied opinions on this matter. Some said that their technical skills had been enhanced and that they were becoming more efficient and effective in their use of these technologies. Others asserted that technology was complementing their auditing skills, rather than diminishing them. This offers an implication for LPT to consider that technology can enhance workers' capabilities.

❖ Firm B:

Partners' and Managers' Views: In Firm B, the Cloud's facilitation of remote working had negatively affected some of the juniors' behaviours. The need for responsibility in remote work was highlighted, and some individuals had become less accountable. However, impacts on

behaviour in general were considered rare, which raises questions about the prevalence and significance of these negative effects in particular. A critical analysis is required to understand the root causes of the negative effects and whether they are due to the broader challenges of the evolving nature of work in the audit profession.

Senior Auditors' Views: Senior auditors in Firm B argued that the Cloud had positively influenced junior auditors' behaviours by making juniors more involved in audit engagements and in discussions with clients and partners. However, this raises questions about the junior auditors' agency. Is this involvement driven by the juniors themselves or is it a result of managerial directives? LPT emphasises the importance of worker agency and autonomy in shaping the labour process. Furthermore, this is understood to enhance juniors' confidence and participation. However, it is important to clarify whether this observed positive influence on junior auditors' behaviours is substantial or superficial, and the positive influence described by senior auditors should be examined in terms of its long-term implications.

Junior Auditors' Views: Junior auditors in Firm B expressed various views on the impact of the Cloud on their behaviours. Some said that technology had blurred the lines between their work and personal lives, which raises critical questions. LPT should emphasise the impact of technology on work–life balance and worker well-being. Others said that technology had made them feel more responsible for and involved in their roles, raising their status to that of more experienced auditors. This highlights the potential for technology to empower and transform the nature of work, an aspect overlooked by LPT.

❖ Firm C:

Partners' and Managers' Views: In Firm C, there was a perspective that the roles and behaviours of junior auditors had not been significantly changed by the introduction of Cloud Computing. This suggests that, in certain contexts, the introduction of technology may not substantially transform work processes or professional roles, challenging the notion of technology as a one-size-fits-all disruptor in the labour process. A critical analysis should examine the specific factors contributing to this limited change and consider whether it reflects worker resistance, organisational culture, or the nature of audit work.

Senior Auditors' Views: Senior auditors in Firm C highlighted a shift in mindset, with the Cloud allowing junior auditors to adopt a more analytical approach and a less clerical one. The use of the Cloud had made them smarter and more analytical. This has implications for LPT, as it emphasises the capacity of technology to change work roles. A critical analysis should explore the extent to which such a shift can enhance the value of the junior auditor and the audit process and whether it is a sustainable change to the labour process or merely a temporary effect.

Junior Auditors' Views: Junior auditors in Firm C said that they were adapting to technology much more quickly than the older generations, which allowed them to be more agile and adaptable. However, it remains to be seen whether this adaptability is genuinely contributing to their effectiveness and professional growth or introducing challenges in terms of generational dynamics and work integration.

8.3. Sub-Theme (4.2): Junior Auditors' Attitudes

This section will analyse the similarities and differences between the three firms in terms of their representatives' perspectives on the changes to junior attitudes brought about by the introduction of Cloud technology.

8.3.1. Junior Auditors' Attitudes: Findings From the Three Audit Firms

Across all three firms, there was a consensus that junior auditors generally had positive attitudes towards the adoption of Cloud technology. Representatives from all three firms highlighted the technology-savvy nature of the new generation of auditors. This generation is seen as more adaptable and comfortable with technology, making the transition to the Cloud smoother. This underscores how generational characteristics can influence work processes and attitudes toward technology.

However, participants from Firms A and B said that there had been an initial resistance to change when the Cloud was introduced. LPT explains that resistance to change is a natural response (Marx, 1967; Braverman, 1974; Carchedi, 1975). An interviewee from Firm A recalled that some had initially complained but later embraced the technology. In Firm B, there was acknowledgement that nobody likes change initially, but the benefits of the Cloud were eventually recognised. The participants from Firm C, on the other hand, did not report any initial resistance from the junior generation. Rather, resistance to the Cloud had come from regulators and was due to concerns about compliance and risk management. LPT should underscore the influence of external factors on work processes. A critical analysis is needed to understand how regulatory constraints can impact technology adoption and how organisations and auditors address these constraints.

In summary, these findings provide insights into the role of generational dynamics, initial resistance to change, and external regulatory factors in shaping attitudes toward technology adoption in the audit profession. A critical analysis is essential to assess the long-term implications of these attitudes and their impact on the labour process, including the potential benefits and challenges.

8.3.2. *Junior Auditors' Attitudes: Views of Partners, Managers, and Senior and Junior Auditors*

❖ Firm A:

Partners' and Managers' Views: In Firm A, there was a consensus that junior auditors had positive attitudes towards the adoption of the Cloud. The participants highlighted how “tech-savvy” the new generation is and reported that younger auditors tended to be comfortable with using technology.

Senior Auditors' Views: Senior auditors at Firm A also confirmed that junior auditors had positive attitudes toward the Cloud.

Junior Auditors' Views: All junior auditors at Firm A expressed positive attitudes towards the adoption of the Cloud, expressing enthusiasm for the transformation.

This alignment of perspectives across different levels in the organisation underlines the significance of generational dynamics in the workplace. It highlights that generational attitudes and adaptability to technology play a pivotal role in shaping work processes. The unanimous agreement indicates a strong organisational culture that fosters a positive attitude towards technology.

❖ Firm B:

Partners' and Managers' Views: In Firm B, there was agreement that most juniors had positive attitudes towards the Cloud. However, it was noted that there had been some initial resistance to change when the Cloud was introduced.

Senior Auditors' Views: Senior auditors in Firm B shared the view that most juniors had positive attitudes toward the Cloud. However, there was also recognition that the increased responsibilities had, in some cases, created stress and affected juniors' attitudes.

Junior Auditors' Views: Junior auditors at Firm B expressed positive attitudes towards the Cloud. They appreciated the technological advances and expressed excitement about the benefits for their audit work.

This consensus across organisational levels in Firm B highlights the influence of both generational adaptability and organisational culture on technology adoption, something for LPT to consider. It shows how generational attitudes and organisational support influence the overall labour process.

❖ Firm C:

Partners' and Managers' Views: Participants from Firm C indicated that the resistance to the Cloud had not come from the junior generation but from regulators, who expressed concerns related to compliance and risk management.

Senior Auditors' Views: Senior auditors at Firm C confirmed that the junior auditors had positive attitudes towards the Cloud. They emphasised that the new generation was more tech-savvy and embraced technological changes.

Junior Auditors' Views: Junior auditors at Firm C acknowledged that the arrival of the Cloud had initially brought new pressure and challenges, but they expressed optimism and happiness about having adapted to the new system.

The resistance to Cloud adoption from regulators – due to compliance concerns – is a critical external factor, affecting the labour process. LPT should emphasise how external factors influence work processes. Overall, the findings from Firm C provide insights into the influence of external regulatory factors and generational adaptability on attitudes toward technology adoption in the audit profession. However, the findings also demonstrate the pressure on – and challenges for – junior auditors obliged to make this adaptation. A critical analysis is crucial to understand the long-term implications of these attitudes and their impact on the labour process, including the potential benefits and challenges.

8.4. Sub-Theme (4.3): Junior Auditors' Roles

Junior auditors typically begin their professional journey with a structured three-year training period. During this time, they transform from novices with limited auditing knowledge into competent accountants ready to provide independent audit services (Lee, 2002). This process culminates with the attainment of a certificate of practice after an additional two years of practical experience. Throughout their training, junior auditors focus on acquiring technical knowledge, including a deep understanding of auditing standards (SASs) and their firm's specific audit approaches (Lee, 2002). They also learn to make crucial judgements regarding audit risk areas, material misstatements, and the design of audit tests to ensure accurate financial reporting. In summary, junior auditors undergo rigorous training that emphasises knowledge acquisition, practical experience, and the development of judgemental skills, setting the foundation for their future roles in the auditing profession (Lee, 2002).

8.4.1. Junior Auditors' Roles: Findings From the Three Audit Firms

While the three firms shared commonalities in terms of their initial training periods and requirements for technical knowledge, there were notable differences in how Cloud Computing

had impacted the roles of their junior auditors. Participants from Firm A expressed a range of opinions, with some perceiving a shift and others not. In contrast, the Firm B interviewees highlighted a positive transformation, with increased responsibilities for juniors. In Firm C, there was a consensus that roles had remained stable. These variations in perspectives may be indicative of factors such as the extent of the firms' respective Cloud implementation and the specific tools and resources available in each firm.

8.4.2. Junior Auditors' Roles: Views of Partners, Managers, and Senior and Junior Auditors

According to some managers in Firm A, the role of junior auditors had been positively affected by the introduction of the Cloud. The juniors now had easier access to information, audit procedures, and standards. The Cloud had made them more efficient in their tasks, allowing them to check and understand accounts with greater ease. However, the senior auditors had more mixed views. While some said that the role of junior auditors had been changed by the Cloud, with their tasks becoming less time-consuming, others argued that the role remained largely the same, albeit with access to efficiency-enhancing tools. Similarly, junior auditors at Firm A also express mixed opinions. Some felt that they now had responsibility for more tasks. However, others said that their roles had remained much the same, with a focus on less-critical areas of the audit. These divergent views provide evidence for the idea found in LPT that technological advances can lead to role reconfiguration and varying perceptions of the labour process.

In contrast, partners and managers in Firm B asserted that the Cloud had significantly reshaped the roles of junior auditors. It had facilitated remote work, reduced manual processes, and improved communication among team members. This had led to greater efficiency and improved the quality of audits. Senior auditors in Firm B largely agreed that the roles of junior

auditors had changed due to the implementation of Cloud Computing. They emphasised that the juniors had taken on more responsibilities and were now more involved in the audit process. Most junior auditors at Firm B reported that their roles had become more important with the introduction of Cloud Computing and that they were now involved in more critical tasks during the audit engagements. The greater efficiency and improved quality of audits in Firm B showcase how technology can be a catalyst for positive changes in the labour process.

In Firm C, the partners, managers, and senior auditors generally shared the view that the roles of junior auditors had not undergone a major shift due to the Cloud. They emphasised the importance of individual accountability and increased controls on auditors but suggested that the core roles remained stable. Junior auditors in Firm C were consistent in their belief that their roles had remained the same, with no significant changes attributed to the Cloud. This aligns with the observation that some organisations resist significant changes to roles.

8.5. Sub-Theme (4.4): Cloud Computing and the Upskilling or Deskilling of Junior Auditors

The analysis of findings regarding the impact of Cloud Computing on junior auditors' upskilling or deskilling reveals both similarities and differences between the perspectives of the participants from the three firms.

8.5.1. Upskilling or Deskilling of Junior Auditors: Findings From the Three Audit Firms

The findings across Firms A, B, and C present a multifaceted picture of the impact of Cloud Computing on junior auditors, with both similarities and differences evident across participant levels. In all three firms, partners and managers uniformly perceived the Cloud as having had an upskilling effect on junior auditors. They highlighted that the technology enabled juniors to

handle more complex tasks, reduced the time required for promotion, and enhanced efficiency. In contrast, senior auditors demonstrated a more nuanced perspective. While they acknowledged that the Cloud could deskill junior auditors by replacing certain routine tasks with automation, they emphasised the upskilling effect – namely, enhancements to technical skills and overall efficiency. In Firm C, partners and managers emphasised that the new context required junior auditors to have skill sets combining traditional numerical skills with IT, engineering, and business understanding. This provides support for LPT, which explains that technology can empower workers by enhancing their capabilities and enabling them to handle more complex tasks and theorises that technology is a tool for enhancing efficiency and skills.

The opinions of the junior auditors varied according to their respective firm. The majority viewed the Cloud as an upskilling tool, enhancing their capabilities, particularly in terms of analytics and technical proficiency. However, some dissenting voices argued that it could lead to deskilling in the areas of critical thinking and social skills, depending on the seniority level of the affected person. The varying opinions among junior auditors highlight the importance of individual attributes and context in determining the impact of technology.

This underscores the nuanced and context-dependent nature of the Cloud's impact on the auditing profession, explaining the ongoing debate around whether it predominantly upskills or deskills auditors. The findings contribute to LPT by illustrating the multifaceted impact of Cloud Computing on junior auditors. They show that, while technology can both upskill and deskill, the outcome ultimately depends on individual attributes, organisational context, and the specific nature of the tasks involved.

8.5.2. Upskilling or Deskilling of Junior Auditors: Views of Partners, Managers, and Senior and Junior Auditors

❖ Firm A:

Partners' and Managers' Views: Partners and managers saw the Cloud as upskilling junior auditors, enabling them to work on more complex tasks, reducing the time needed to be promoted to a senior role, and providing them with more practical experience. However, one extreme outlier suggested that the Cloud might be “killing” junior auditors by diminishing their social intelligence, communication skills, and practical abilities.

Senior Auditors' Views: Senior auditors said that the Cloud had deskilled certain tasks, such as vouching and sample checking, which can now be automated. On the other hand, it had also had an upskilling effect on junior auditors by enhancing their technical skills and overall efficiency.

Junior Auditors' Views: Most junior auditors in Firm A reported that the Cloud had led to upskilling in various areas, enhancing their overall capabilities.

❖ Firm B:

Partners' and Managers' Views: All managerial-level responses from Firm B emphasised that the Cloud was upskilling junior auditors by providing them with more efficient tools and more access to information.

Senior Auditors' Views: Senior auditors in Firm B unanimously agreed that the Cloud was upskilling junior auditors by granting them access to more information and allowing them greater involvement in tasks that had previously required more experience.

Junior Auditors' Views: Junior auditors in Firm B were in consensus that the Cloud had upskilled them in various areas, particularly in terms of analytics, critical thinking, and digitalisation.

❖ Firm C:

Partners' and Managers' Views: In Firm C, the partners and managers stressed the importance of junior auditors today having a set of skills that combined numerical knowledge with IT, engineering, and business understanding.

Senior Auditors' Views: Senior auditors in Firm C saw the Cloud as upskilling junior auditors in specific areas but recognised that it may also have a deskilling effect in terms of social skills, which remain crucial in client relationships.

Junior Auditors' Views: Junior auditors with Firm C expressed a range of opinions. Some said that the Cloud had upskilled them by enhancing their technical skills and confidence, while others argued that it had deskilled them in terms of critical thinking. Additionally, they highlighted differences in upskilling effects depending on individual level of seniority.

The mixed opinions in Firm C and the impact of seniority underline the contingent nature of the labour process. These findings suggest that the impact of technology on work is contingent on individual characteristics and the specific context in which work is performed.

The variation in the opinions of partners, managers, and senior and junior auditors across the firms highlights the significance of organisational context. This variation in perceptions suggests that the practices and work structures in each firm play a crucial role in shaping the effects of technology on labour. The partners and managers were generally aware of the upskilling effects, seeing Cloud Computing as a tool to enhance the capabilities of junior auditors.

Senior auditors tended to have a more nuanced perspective. They acknowledged both upskilling in technical areas and deskilling in routine tasks. This duality has implications for LPT, which suggests that technology can lead to the displacement of certain tasks alongside the development of new skills. The junior auditors reported upskilling in certain areas, particularly in relation to technical skills and efficiency. These findings emphasise the complexity of the Cloud's influence on the auditing profession.

8.6. Sub-Theme (4.5): Positive and Negative Consequences of Cloud Computing

8.6.1. Positive and Negative Implications: Findings From the Three Audit Firms

The findings from the three audit firms collectively provide a nuanced perspective on the implications of Cloud Computing adoption for the auditing profession. These implications are complex and include both positive and negative aspects. On the positive side, there was a consensus across the three firms that Cloud Computing increased efficiency and enhanced time management. The participants explained that junior auditors could now focus on more complex tasks, as the routine tasks had been automated or simplified by Cloud-based tools. The ability to back-up data on the Cloud had reduced the risk of data loss and ensured the integrity of the

work. Furthermore, Cloud adoption encouraged technical upskilling, with auditors acquiring IT-related competencies in line with the evolving demands of the profession.

The unanimous agreement that Cloud Computing had enhanced efficiency and time management presents a challenge to LPT, showing that technology can empower workers by making them more efficient. This was evidenced in the upskilling of auditors, who had acquired IT-related competencies to adapt to the evolving demands of their profession. Thus, technology had enhanced the skill sets of the auditors (Manson et al., 1998).

However, the findings also reveal important negative implications. Participants from all three firms expressed concerns about cybersecurity, noting the importance of data protection in an era of increased cyber threats. In short, technology can also introduce new challenges and vulnerabilities into the labour process. In addition, Firm A's senior auditors emphasised the potential erosion of social and communication skills among junior auditors, suggesting that the human dimension of auditing could be adversely affected by reliance on technology. This provides support for the claim in LPT that technology can affect not only task-specific skills but also the social and interpersonal skills crucial for work. Additionally, participants from Firm A raised concerns about data loss due to technical problems, underscoring the need for robust data back-up and recovery mechanisms.

Although there were arguments – especially from Firm A participants – that Cloud adoption could deskill certain routine tasks, the prevailing sentiment across the firms was that it was upskilling auditors. However, this discrepancy indicated that the impact of Cloud adoption on skill levels might vary depending on firm-specific contexts and individual experiences. Different firms may adapt differently to technological changes, leading to distinct outcomes for the skills and work processes of those affected.

In summary, the findings underscore that while Cloud Computing has substantial advantages in terms of efficiency, data management, and technical upskilling, it also poses notable challenges related to cybersecurity, potential deskilling, and social skills. As the auditing profession continues to evolve in response to technological advances, firms must carefully navigate these implications, prioritising the development of strategies to mitigate risks of Cloud adoption while harnessing the benefits.

8.6.2. Positive and Negative Implications: Views of Partners, Managers, and Senior and Junior Auditors

This section breaks down the views expressed at each participant level and in each of the three audit firms, regarding the positive and negative implications of Cloud Computing adoption.

❖ Firm A:

Partners' and Managers' Views: Managers and partners at Firm A appreciated the Cloud for its ability to back-up data, eliminating concerns about data loss in the event of hardware failures. This was highlighted as a significant positive implication.

Senior Auditors' Views: Senior auditors at Firm A acknowledged that the Cloud could save time for the audit team, in particular by allowing the more-efficient management of less-critical work. However, they expressed concerns about the decline in social and communication skills among junior auditors due to increased reliance on Cloud-based tools. Another highlighted negative implication was the occasional loss of data on the Cloud due to technical issues.

Junior Auditors' Views: Junior auditors from Firm A were generally positive about Cloud adoption. They appreciated the Cloud's ability to store and share work online, making it more

accessible for team members. They also found the Cloud to be a time-saving tool that made their work easier. On the other hand, they acknowledged that manual audit work provided more comprehensive learning for juniors and that the use of the Cloud might restrict this learning experience. Some junior auditors at Firm A expressed that adoption of the Cloud could lead to increased pressure, although they saw this as an area for improvement.

❖ Firm B:

Partners' and Managers' Views: One manager at Firm B expressed a highly positive view of the Cloud, emphasising its substantial positive impact. Another manager reported that, while there were positive and negative implications, the overall impact was positive and outweighed the negatives. A partner at Firm B similarly emphasised that the Cloud had introduced both pros and cons. The negative consequences included heightened concerns about cybersecurity and the need for more data filtering.

Senior Auditors' Views: Senior auditors at Firm B generally viewed the Cloud's implications as positive, particularly for junior auditors. They also mentioned that juniors' satisfaction had increased, indicating an overall positive sentiment regarding Cloud adoption.

Junior Auditors' Views: Junior auditors at Firm B largely viewed Cloud adoption as positive, emphasising its convenience and efficiency. They said that the Cloud preserved their work and signature, thereby ensuring their accountability. However, one negative implication mentioned by the junior auditors was the potential loss of work if they forgot to save their Cloud-based documents.

The concerns voiced about cybersecurity, particularly by participants from Firm B, provide support for LPT by showing that technology can introduce new challenges that impact the labour process and potentially require new skill sets to be addressed.

❖ Firm C:

Partners' and Managers' Views: Partners and managers at Firm C saw the Cloud as facilitating access to software and enhancing connectivity, but they noted that its direct impact on auditing strategies may be limited. They identified data analytics and AI as technologies supported by the Cloud and which could potentially influence auditing.

Senior Auditors' Views: Seniors emphasised the importance of staying up-to-date with technology in audit practice, with educational institutions needing to adapt to the technological changes in auditing.

Junior Auditors' Views: Juniors acknowledged that technological transition could be stressful and required a solid foundation of knowledge and experience. They acknowledged the importance of training but noted that challenges arose when they applied the learning to their practice. There were concerns shared about data management and integrity in the Cloud environment, and participants emphasised the need for continuous skill-development and adaptation to new technologies.

The widespread recognition across the firms – among partners, managers, and junior auditors – of the Cloud's role in backing-up data and enhancing efficiency offered a new notion for LPT that technology can streamline tasks and ensure the integrity of work, thus improving the overall labour process. In summary, these views – from various participant levels of all three firms – highlight the variety of perspectives on the positive and negative implications of Cloud

Computing for the auditing profession. While there were commonalities in the identified positive aspects, the nuanced opinions and potential drawbacks reflect the complexity of technology integration in the audit firms.

8.7. Recommendations

While there were variations in the recommendations provided by participants from different firms, several common themes emerged. These recommendations offer valuable insights into the challenges and opportunities associated with Cloud Computing adoption in audit practice. Participants from Firm A highlighted the importance of junior auditors gaining technology knowledge before joining a firm, emphasising that IT proficiency was crucial for new auditors. Seniors at Firm A stressed the need for proper training before working with Cloud systems. This training should equip juniors with the skills necessary to effectively navigate the digital audit landscape. One manager at Firm A recommended a balanced approach, suggesting that traditional in-class training should not be neglected. This approach could help to maintain the development of social intelligence, technical skills, and business acumen.

Participants from Firm B said that the adoption of Cloud Computing had necessitated changes in the composition of audit teams. Auditors needed to be skilled not only in accounting but also in maintaining and managing various technologies, including robotics, cybersecurity, and data analysis. Senior auditors at Firm B recommended that educational institutions adapt their curricula to incorporate the latest technologies and developments in audit practices. Juniors from Firm B described a need for flexibility and adaptability. They emphasised that technology was inevitable and recommended using it as a tool to enhance audit quality. Participants from Firm B emphasised the importance of continuous learning. They suggested that auditors should see technology as an ally and take courses to improve their technology-related skills. Junior

auditors at Firm B highlighted the importance of maintaining high-quality standards in Cloud Computing, addressing concerns about speed and data loss. They also recommended standardising audit planning processes to improve efficiency and consistency in audit work.

Participants from Firm C underscored the significance of IT knowledge. They suggested that junior auditors prioritise gaining IT proficiency to efficiently navigate the Cloud environment.

A Manager at Firm C emphasised the importance of information security in the context of Cloud adoption, suggesting that this should be a top priority. Senior auditors at Firm C recommended maintaining physical meetings and regular touchpoints with audit teams to facilitate effective supervision and guidance for junior auditors. Junior auditors at Firm C advised their counterparts to not be afraid of the Cloud but rather to embrace it as a tool providing freedom and learning opportunities.

These recommendations collectively highlight the complex nature of the transition to Cloud Computing in audit practices. They underscore the need for a balanced approach that combines technology proficiency with traditional audit skills, continuous learning, and a focus on information security to ensure a successful and secure transition to Cloud-based work.

8.8. Summary

The study has investigated how the adoption of Cloud technology has affected junior auditors' professional identities, including their behaviours, attitudes, and roles. While some juniors expressed positive attitudes toward new technology, which was attributed to their generation's tech-savviness, opinions on the changes to their roles were mixed. Some said that the Cloud had exchanged their traditional tasks for more complex ones, while others had perceived no significant changes to their roles. LPT should consider that changes in technology can influence

not only the tasks but also the attitudes and behaviours of workers, leading to changes in professional identity.

On the question of upskilling versus deskilling, the findings indicated varying perspectives. This reflects the reality that technological advances can both enhance and threaten certain skill sets, highlighting the complexities introduced into the labour process by technological change that LPT should consider. Some participants argued that the Cloud had upskilled junior auditors, enabling them to handle more complex tasks and advance more quickly to senior positions. However, others contended that the technology had deskilled certain aspects of auditing, particularly routine tasks such as vouching and sample checking. Furthermore, the Cloud was seen by some as having diminished juniors' social intelligence, communication, and soft skills. This highlights that technology can influence not only technical skills but also interpersonal and soft skills, impacting the labour process in multifaceted ways, a notion for LPT to consider. LPT should also acknowledge that technology can have differing effects on workers depending on their unique experiences and contexts.

The participants described both positive and negative consequences of Cloud adoption for junior auditors. This illustrates that the impact of technology is not one-sided but involves a complex interplay of factors, a notion for LPT to take in consideration. Positive aspects included the ease of data back-up, time-saving, improved access to work, and enhanced collaboration among team members. In contrast, the reduction of social and communication skills was a commonly mentioned negative impact.

When making recommendations, participants across all levels emphasised the importance of juniors staying up-to-date with IT changes in the workplace and advocated for training before engaging with Cloud technology. Additionally, one senior recommended the inclusion of

traditional training to preserve juniors' professional identity. The juniors themselves expressed frustration with manual processes, suggesting that Cloud adoption had streamlined their work and reduced the required effort.

The following chapter will move into the discussion of the findings and present a conclusion of the thesis.

Chapter Nine: Discussion and Conclusion

9.1. Introduction

This chapter moves into the heart of the research findings and insights to navigate the intricate landscape of auditing in the era of Cloud Computing. This chapter presents an exploration of the changes that have occurred as auditors adapt to the digital revolution. It will address the seismic shifts that have occurred in the auditing profession and outline the key areas of investigation, including the impact of Cloud Computing on auditing practices, the evolving role and skills of junior auditors, their autonomy and the development of their professional identity. Section 9.2 discusses auditing before and since the introduction of Cloud Computing. It traces the evolution of auditing practices, comparing the traditional methods with the innovative approaches that have emerged with the adoption of Cloud Computing. Section 9.3 discusses junior auditors' efforts, skills, education, and experience. This section explores how Cloud technology has reshaped the experiences of junior auditors and how they must adapt to remain effective contributors to the audit process. Section 9.4 discusses the autonomy of junior auditors, and section 9.5 discusses juniors' professional identities.

Finally, section 9.6 presents the thesis conclusion and the recommendations. It synthesises and draws insights from the findings. Based on the research analysis, it then presents some recommendations for auditors, audit firms, and educational institutions to navigate the implications of – and changes produced by – the adoption of Cloud Computing in the auditing field. The thesis conclusions provide a perspective on the current state of auditing and offer guidance for its future evolution in the digital age.

9.2. Auditing Before and Since the Introduction of Cloud Computing

This section responds to the first research question: “*How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed?*” It offers a critical examination of the findings to clarify the evolution of auditing practices since the introduction of Cloud Computing. The transition from manual auditing processes to technologically driven alternatives has been a significant change in the labour processes of the auditing profession, and this transformation is analysed here through the lens of LPT.

The transition to Cloud-based auditing comprised a number of intermediate stages and began with purely manual audits. These intermediate stages included increasingly commonplace use of laptop computers and then intranets (clients’ own intranets and those of the audit firms themselves). The study’s findings on this history are in concordance with those of Hanlon (1994). The traditional approach was heavily dependent on paper records (Hanlon, 1994). This manual labour-intensive approach exemplifies the traditional understanding of labour processes outlined by Braverman (1974), who describes work tasks as divided and controlled by management to maximise efficiency and minimise the input of skilled labour. Before the Cloud, junior auditors were primarily engaged in repetitive, routine tasks – such as preparing manual files and proofreading financial statements for language errors. This division of labour was emblematic of the hierarchy in auditing firms, with junior auditors occupying the lower rungs of the professional ladder (Lee, 2002). Furthermore, heavy reliance on physical documentation and the absence of advanced technological tools created an environment in which audit evidence collection was time-consuming and labour-intensive. In addition, the burden of carrying physical audit files and the threat of document loss were among the challenges faced by junior auditors in the pre-Cloud era.

However, the introduction of Cloud technology marked a significant departure from these traditional labour processes. In recent years, auditors have increasingly embraced modern digital technologies, reaching a zenith with the adoption of Cloud Computing – an internet-based service enabling users to access stored data and applications from virtually any location (ICAEW, 2017).

Hanlon (1994) and Lee (2002) provide valuable insights into the ever-evolving field of auditing. These studies, while disparate in focus, illustrate the rich tapestry of perspectives on the multifaceted nature of auditing practices. Hanlon's 1994 study provides a historical perspective, exploring the internal labour processes and socialisation of accounting professionals in major firms. It offers crucial insights into the dynamics of control, ideological paradigms, and adaptation to changing accumulation regimes. However, the study's relevance is limited by its historical context. The accounting profession has seen significant shifts since 1994, both in terms of technology and regulation, thus the study's applicability to the contemporary auditing landscape may be limited. Lee's 2002 research focuses on external influences – specifically, commercial concerns and time pressures and their impact on the actions of junior auditors. The study uncovers the concept of “irregular auditing”, illustrating how external pressures shape the behaviour of auditors. However, a limitation of this study is that it primarily examines these external factors, without diving into the complexities of control and ideological paradigms in the auditing profession. Further research should strive to bridge these gaps and consider the internal and external factors affecting the field of auditing, while staying attuned to the dynamic nature of the profession.

The findings of the current study reveal a transformation in auditing practices, with the Cloud serving streamlining processes and leading to changes in the roles of junior auditors, allowing them to engage in more complex tasks. This discovery is consistent with the findings of

Vasarhelyi and Romero (2014) and Hanlon (1994), who both observe that IT can have a significant impact on how external audits are conducted. This finding also resonates with Marx's observations in 1954 on the capitalist pursuit of profitability that often manifests in the displacement of labour by technological innovation in work contexts. LPT explains that the integration of technology embodies a capitalist rationale focused on cost reduction and labour control. These goals are achieved by the embedding of work regulation into the technology itself, ultimately leading to the deskilling of the workforce (Braverman, 1974).

On the question of auditing in the Cloud environment, two key findings emerge: first, there has been a broader restructuring of the auditing pyramid and reduced number of juniors; and second, dynamic alterations in audit methodologies and approaches have led to the implementation of a more analytical approach.

First, a transformation in the pyramid of auditing since the adoption of the Cloud has reduced the number of junior auditors employed in all three firms. The evolving labour landscape has reduced the need for junior professionals because they possess fewer skills and the tasks that were once routine are being automated (Hanlon, 1994). Gardner and Bryson (2021, p. 46) report, "The ongoing application of technology, combined with commoditization, to audit and accountancy has shifted the balance in the delivery of accountancy services towards more routine, fragmented and deskilled tasks." The findings of the current research are also congruent with those of Omoteso et al. (2010), Banker et al. (2002), and Wilson and Sangster (1992), all of whom underscore that increased computerisation in an organisation's audit function correlates with a diminished presence of non-professional staff and junior auditors and senior professional personnel assuming a more dominant role.

However, these findings contradict one observation of Manson et al. (1998) – namely that there have been few indications of deskilling in neither the United Kingdom or the United States. Manson et al. observed that, despite the incorporation of IT for auditing purposes, there was little evidence of qualified staff being replaced by less-qualified personnel. However, Manson et al. (1998) do propose that audit automation has afforded professional staff the opportunity to dedicate more time to non-routine technical aspects, and this finding is supported by the findings of the current study.

Second, there has been a discernible shift in audit methodology and approach following the introduction of Cloud technology (Deloitte, n.d.). Audit methodologies have evolved significantly from manual processes to incorporate advanced analytical tools and robotics, as emphasised by a manager from Firm B. The implementation of methodologies such as DG-GAM and Core-GAM has made a substantial change to auditing practices, placing a greater emphasis on analytical procedures (Junior Auditor, Firm B). This transformation is characterised by a shift from the traditional audit paradigm to a technology-driven audit framework, as elucidated by Tarek et al. (2017). The research findings highlight significant changes in the nature of work conducted by junior auditors post-Cloud adoption. Their tasks, once reliant on manual processes, are now reliant on Cloud-based tools. This has resulted in a marked reduction in the time required for the audit tasks, leading to enhanced efficiency.

It is important to note that these findings regarding the observed transformation in the auditing pyramid were consistent across participant levels and audit firms. This transformation resonates with the principle elucidated in LPT, wherein organisations endeavour to fragment tasks as a strategic means of economising and enhancing operational efficiency – a form of deskilling (Braverman, 1974). The Cloud, by facilitating such task fragmentation, reduces the

costs associated with the audit process and reshapes the roles and responsibilities of junior auditors.

The findings demonstrate that the Cloud has facilitated online communication and collaboration, reducing the need for face-to-face interactions and enabling remote work capabilities. This exemplifies the notion of a “deskilling” reversal, where technology empowers workers to take on more diverse and intellectually stimulating tasks. Junior auditors found themselves in a more dynamic role, with their responsibilities now encompassing advanced analytics, data interpretation, and collaborative online reviews (Kalia et al. 2019).

Capital owners once sought to exploit labour’s value-creating potential by implementing an extensive division of labour. This fragmented the work into small tasks, which were then assigned to different workers, who continually repeated their specialised tasks while products moved swiftly between them. Supervised by capital representatives, this process eventually incorporated technology. This trend of task fragmentation was later extended to the middle echelons of growing corporations, leading to routine roles and proletarianisation. Braverman’s analysis highlights the enduring impact of labour fragmentation, resulting in a polarised workforce with an expanding working-class and a concentrated elite, reshaping capitalist enterprises (Braverman, 1974). This polarisation has exerted a significant influence on contemporary capitalist societies.

In conclusion, the evolution of auditing practices since the introduction of Cloud Computing can be understood through LPT. The pre-Cloud era was characterised by labour-intensive, hierarchical, and routine-based tasks, as described by traditional LPT. Conversely, the Cloud-driven transformation of auditing practices reshaped labour processes, promoting less autonomy and obliging junior auditors to engage in more diverse and complex tasks. In this

way, technology changed the labour dynamics in the auditing profession and fundamentally altered the nature of work in this field.

The following section discusses how junior auditors' efforts, skills, education, and experiences have changed in the period since the adoption of the Cloud.

9.3. The Efforts, Skills, Education, and Experience of Junior Auditors

This section responds to the second research question: “2) *How has the introduction of Cloud Computing affected the physical and mental effort, manipulative and general skills, education, and experience of junior external auditors (Braverman, 1974)?*”. The research findings presented here offer insights into the multifaceted impact of Cloud Computing on the labour process of junior auditors in three audit firms. These findings provide insights into how technology, particularly the adoption of Cloud Computing, is transforming the nature of work, skills, and the overall experiences of junior auditors. This discussion will critically analyse these findings and connect them to the principles and concepts of LPT, while also highlighting the distinctions between the three firms.

The research findings show a clear decrease in the physical effort required of junior auditors, indicated across all three firms and by participants at all levels. This provides support for the observation in LPT that technology can alter the physical demands of a job (Braverman, 1974). Cloud integration has led to remote and online audit procedures, reducing the need for physical visits to clients. However, the potential drawback of this is an increased susceptibility to errors, which highlights the continuing importance of human intervention in the audit process, aligning with LPT's emphasis on the role of workers in quality control (Marx, 1967; Braverman, 1974; Carchedi, 1975). Firm-specific practices and client preferences also influence the requirements for physical effort, demonstrating the complexity of the labour process in audit firms.

The research findings on the mental efforts required of junior auditors varied, revealing a nuanced impact of Cloud technology on cognitive work. Managers at Firm A were in agreement that the mental effort required of junior auditors had decreased, but there were various views expressed by junior and senior auditors. Firm B participants were divided in their opinions across managerial and senior levels, while Firm B junior auditors were clear that their mental effort had increased. Firm C participants described a general increase in mental effort, which they attributed to expanded responsibilities and compliance demands. The prescriptive nature of Cloud-based procedures simplifies tasks, potentially reducing opportunities for learning and critical thinking, as indicated by responses from Firms A and B. However, the automation of routine tasks, as noted by Firm B representatives, can lead to more complex assignments that require greater cognitive effort. This illustrates that the impact of technology on mental effort is not uniform and depends on the specific workplace context.

The findings indicate a range of views concerning the Cloud's impact on manipulative skills, reflecting the claim in LPT that technology can constrain workers' autonomy and skills. In Firms B and C, there was a perception among the junior auditors that they had lost manipulative skills due to automation and reliance on the Cloud. This corroborates the discoveries by Azan and Bollecker (2011) that technological progress had expanded the scope of controllers' competencies, with ERP systems playing a pivotal intermediary role in facilitating this contingency-driven evolution. Their findings provides support for LPT's contention that technology can erode workers' control over their tasks (Marx, 1967; Braverman, 1974; Carchedi, 1975). The challenge of balancing system functionalities and autonomy, as mentioned, resonates with LPT's stance on management's control over skills and processes (Marx, 1967; Braverman, 1974; Carchedi, 1975). The anecdote of a junior auditor feeling like a "robotic executor" provides an illustration of the potential deskilling effect of technology, a

central concern in LPT (Marx, 1967; Braverman, 1974). This suggests that, while technology can enhance efficiency, it can also diminish the development of critical skills and decision-making abilities among junior auditors.

The findings in relation to general skills emphasised the impact of Cloud adoption on the juniors' social and communication skills, notably due to the reductions in face-to-face interactions. This aligns with LPT's emphasis on how changes in technology and work organisation can affect workers' social interactions (Braverman, 1974). The enhancement of technical and computer skills by the growth in automation provides an example of this type of evolution. The outcomes of this study are in concordance with the findings obtained by Azan and Bollecker (2011), showing the transformative impact of enterprise resource planning (ERP) systems on the responsibilities of management controllers, confirming that proficiency in IT skills has become indispensable – particularly in light of the extensive adoption of ERP functionalities.

The variety of views expressed by the participants regarding analytical, problem-solving, and critical-thinking skills reflects the complexity of technology's impact on cognitive work. While technical skills may improve, at the same time, problem-solving and critical-thinking skills can be eroded by a reduction in human interaction. These findings are consistent with the insights of Orlikowski (1991), presenting a divergent perspective. Orlikowski found that deskilling was indeed evident in blue-collar occupations, but its manifestation took on a distinct character in the consultancy domain. This distinct manifestation had the potential to result in a complete absence of skill advancement among workers. Orlikowski argues that an organisation's dependency on technology-incorporated knowledge, as opposed to the expertise of its own workers, has the effect of undermining the organisation's assertion of professionalism. This aligns with the conclusions drawn by Manson et al. (2001) – namely, that the incorporation of

IT induces audit personnel to depend progressively more on technological features that incorporate skills derived from audit professionals. As observed by LPT, technology may shape workers' skill sets in ways that require ongoing attention and adaptation (Marx, 1967; Braverman, 1974; Carchedi, 1975). This investigation produced similar findings to those of Adler (1987) and Manson et al. (1998), who posit that audit automation has transformed the skill prerequisites and categorisations of professional auditors. This phenomenon has previously been observed in the United Kingdom and the United States and now here, in this study, in Saudi Arabia.

The findings reveal variations between the firms regarding their representatives' views on education. Participants from Firms A and B emphasised the importance of training to prepare junior auditors for the technology-driven audit environment. Conversely, interviewees from Firm C suggested that universities should modify their curricula and make broad changes to their educational approaches to ensure alignment with evolving audit practices.

The research findings highlight a shift in junior auditors' experiences following Cloud adoption. Increased visibility and transparency have increased the pressure and burdens on juniors, which aligns with LPT's observation that technology can change workers' experiences by altering the organisation of their work (Marx, 1967; Braverman, 1974; Carchedi, 1975). The participants highlighted certain positive aspects of this, including juniors' access to more complex tasks, demonstrating that technology can also provide opportunities for professional growth. However, concerns were raised about privacy and data protection due to digitalisation, which resonates with LPT's recognition of the potential negative consequences of technological change (Braverman, 1974). Taken together, these findings highlight the importance of considering both the benefits and the risks associated with the adoption of new technology in the workplace.

In conclusion, the integration of Cloud Computing into audit practices has multiple implications for junior auditors' labour processes, skills, education, and experiences. In Marxist theory, labour is the source of surplus value, while technology can only transfer its existing value. An increase in technology relative to labour can lead to a falling rate of profit, discouraging investment and causing crises. Technology also depreciates, requiring new labour for emerging technologies. This cycle of crises and technological change is evident in the adoption of technologies such as the Cloud in capitalist economies.

9.4. Junior Auditors' Autonomy

This section responds to the third research question: “3) *How is the Cloud affecting the autonomy of junior external auditors and their audit tasks?*”. Marx (1954), writing in the 19th century, showed that the technological advances of his time, particularly the introduction of machinery, had led to a shift in the dynamics of work. This transformation resulted in workers losing control over their labour processes, as ownership of capital enabled the regulation of production output through mechanical means. Braverman (1974) subsequently revisited and extended these concepts to explain the evolution of labour in the 20th century. The research findings regarding the impact of Cloud Computing on the autonomy and responsibilities of junior auditors are in concurrence with assertions that draw parallels between labour process dynamics in the service sector, exemplified by the auditing profession, and those found in manufacturing (Mandel, cited in Allen, 1988; Hanlon, 1994). Although there is some variance, the majority of the evidence indicates a diminishment in the autonomy of junior auditors following the introduction of the Cloud.

The findings show a divergence of perspectives among partners and managers regarding the impact of the Cloud on junior auditors. One partner in Firm A downplayed the Cloud's

influence, viewing it primarily as a storage tool. This reflects an understanding of technology as a tool to support existing work processes without fundamentally altering them. However, another partner in the same firm said that the Cloud had changed the dynamics of ownership and responsibility for audit files, affecting junior auditors. This reflects Braverman's observation that technological changes can alter the division of labour and control in an organisation.

The senior auditors' perspectives regarding the Cloud's influence on juniors' autonomy were similarly varied. For example, in Firm B, some senior auditors reported that the Cloud had enhanced juniors' independence and responsibilities, fostering collaboration, while others asserted that juniors' independence had been diminished due to increased control by senior auditors. In contrast, Firm C's senior auditors generally concurred that juniors' autonomy has declined with the introduction of the Cloud. Its facilitation of accessibility and easier review by managers and partners was cited as a contributing factor, aligning with Braverman's notion of technology altering the control mechanisms in organisations.

More importantly, junior auditors across all three firms reported a sense of reduced autonomy in the Cloud environment, where development of responsibility and ownership is essential. This reflects the deskilling discussed in LPT, with the technology leading to more routine and controlled tasks for junior workers. These findings are consistent with the those of Orlikowski (1991), Manson et al. (2001), and Hanlon (1994). Orlikowski (1991) highlights that IT productivity tools, such as Cloud Computing, can transcend their conventional role as mere "tools" and evolve into intricate systems that embody human expertise and competencies. These tools are designed to enhance consistency, exert control, and reduce dependence on professional personnel. Similarly, Manson et al. (2001) emphasise that audit automation and information-sharing can result in increased surveillance and management oversight.

Furthermore, Hanlon (1994) explored the transformation of organisational dynamics, control mechanisms, and ideological paradigms in the field of accountancy, as seen in response to an emerging accumulation regime. These scholars collectively reinforce the idea that technological advances such as the adoption of the Cloud can bring about significant changes in professional roles, control structures, and the nature of expertise in an industry.

9.5. Junior Auditors' Professional Identity

This section addresses the fourth research question: “*How has Cloud Computing affected the professional identities of junior external auditors (i.e., their behaviours, attitudes, and roles)?*”

9.5.1. Junior Auditors' Behaviours

The examination of how juniors' behaviours had been affected by the introduction of Cloud Computing provides some insights into the evolving dynamics of the audit profession. This section critically analyses these findings, drawing connections to LPT to clarify the complex interplay between technology, professional identity, and behaviours in the audit context (Braverman, 1974).

In Firm A, there were various views on the impact of technology, particularly Cloud Computing, on junior auditors' behaviours and professional identities. Some argued that technology was merely a tool to reflect knowledge and could not significantly affect professional identity. However, others expressed a concern that excessive reliance on technology could weaken the skills and judgement of junior auditors. This exemplifies the potential alienation and degradation of skills that are a central focus of LPT (Marx, 1967; Braverman, 1974; Carchedi, 1975).

Participants from Firm B offered a different perspective, concluding that technology had had a more negative impact on junior auditors' behaviours. The partners and managers acknowledged that the remote work facilitated by the Cloud had affected some behaviours negatively, but they also saw its potential to increase responsibility. This reflects LPT's observations regarding the power of technological change to influence work dynamics and responsibilities (Marx, 1967; Braverman, 1974; Carchedi, 1975).

The Firm C participants adopted a somewhat neutral stance on this issue, with the partners and managers saying that the role and behaviours of junior auditors had not been significantly changed by the introduction of Cloud Computing. However, senior auditors at Firm C highlighted a shift in mindset among junior auditors, with the Cloud enabling them to adopt a more analytical approach. This demonstrates the potential for technology to influence the cognitive aspects of work, a view inherent to LPT (Braverman, 1974). Junior auditors in Firm C said that they had adapted to the technology more quickly than their colleagues of older generations, being more agile and adaptable in their use of systems and technology. This aligns with LPT in its demonstration of changing skill requirements (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In conclusion, these findings underscore the complex interplay between technology and the professional identities and behaviours of junior auditors. The disagreement among Firm A participants, the positive perceptions in Firm B, and the technological adaptability described by the Firm C interviewees collectively highlight the multifaceted nature of technology's influence on work processes. These findings have broader implications for the audit profession, as well as other industries undergoing technological transformations. They underscore the need for organisations to carefully navigate the relationship between technology and worker behaviours. Technology can both empower and constrain individuals in the labour process, and

organisations must recognise this if they are to manage change and optimise outcomes in an ever-evolving work landscape.

9.5.2. Junior Auditors' Attitudes

This examination of junior auditors' attitudes towards the adoption of Cloud technology offers an understanding of the impact of technological change on the labour process in audit firms. This section will critically analyse the implications of these findings, taking into account LPT and contextual factors, to clarify the broader implications for junior auditors and the auditing profession.

One key commonality across all three firms is the positive attitudes exhibited by the junior auditors towards the adoption of Cloud technology. This positivity can be largely attributed to the technological proficiency of the younger generation. The findings demonstrate that the comfort of this generation with technology has permitted a smoother transition to the Cloud-based environment.

While the consensus was generally positive, there were subtle variations in the findings. Firms A and B reported initial resistance to change when the Cloud was introduced, which subsequently gave way to acceptance as the benefits became evident. This initial resistance can be explained with reference to LPT, which observes that the introduction of new technology can disrupt established work routines, leading to resistance (Marx, 1967; Braverman, 1974). However, the eventual acceptance underscores the adaptability of the workforce.

The findings from Firm C introduce a further noteworthy dimension to the discussion. Here, the resistance to Cloud technology adoption was attributed to concerns about external factors such as regulatory constraints, compliance, and risk management. This highlights the broader

contextual influences on the labour process, with external factors having a significant impact on attitudes and behaviours.

The findings have important implications for the auditing profession as a whole. The positive attitudes of junior auditors towards Cloud technology suggest that the profession is evolving in response to technological advances. This aligns with the broader trends of digital transformation in various industries. However, the variation in attitudes across firms emphasises the role of organisational culture and management in shaping the labour process. Firms that successfully manage technological transitions and cultivate a culture of adaptability are likely to thrive in this evolving landscape.

In conclusion, this examination of juniors' attitudes towards Cloud technology adoption in audit firms has illustrated the complex interplay between technological change, individual attitudes, organisational culture, and external influences. The findings demonstrate that, while technological proficiency is a key driver of positive attitudes, the initial resistance and ultimate adaptation are contingent upon contextual factors. Firm-specific approaches to change management and regulatory environments significantly shape the labour process. Thus, audit firms investing in technology must also consider the human element in the labour process. Successful technology adoption and adaptation require a comprehensive understanding of the workforce's attitudes and behaviours, as well as a proactive approach to addressing resistance and fostering a culture of technological proficiency.

9.5.3. Junior Auditors' Roles

The examination of changes to junior auditors' roles in the advent of Cloud Computing adoption sheds light on the evolving dynamics of the auditing profession. The discussion in

this section will critically dissect the findings and relate them to LPT, highlighting the commonalities and variations between the various perspectives and three firms under study.

The Firm A participants painted a mixed picture regarding the impact of Cloud Computing on junior auditors' roles. Some said that there had been changes in roles, while others felt that there had not. This divergence of opinion illustrates that technology can result in varied outcomes, depending on individual experiences and organisational contexts. Firm B, in contrast, reported a positive transformation in junior auditors' roles due to the introduction of the Cloud. Partners, managers, and senior auditors all described a significant reshaping of these roles, marked by an increase in responsibilities and involvement in the audit process. This shift provides support for LPT's claim that technology can alter the division of labour and work processes (Marx, 1967; Braverman, 1974; Carchedi, 1975).

The Firm C participants provided a different perspective, with partners, managers, and senior auditors concurring that the roles of junior auditors had remained stable. While there was an emphasis on individual accountability and increased controls, the core roles were perceived as unchanged. The junior auditors in Firm C shared this view, explaining that the Cloud had not significantly impacted their roles. This highlights the potential resistance to change, a phenomenon well-established in LPT (Marx, 1967; Braverman, 1974).

LPT provides a framework for understanding the variations in how technology influences juniors' roles in audit firms. The central tenets of LPT – namely, the division of labour, the impact of technological change are all evident in the findings of this study. The transformation of the juniors' roles in Firm B provides support for the theory's claim that technology can redefine the division of labour in an organisation. Junior auditors are now involved in more critical tasks, reflecting the Cloud's impact on the distribution of their responsibilities. The

mixed perspectives from Firm A underscore that the impact of technology can be perceived differently by individuals in the same organisation. Finally, the Firm C participants' perception that the juniors' roles had remained stable suggests that organisational context, including culture and resistance to change, can mitigate the transformative potential of technology.

9.5.4. Cloud Computing and the Upskilling or Deskilling of Junior Auditors

This examination of the impact of Cloud Computing on junior auditors in terms of upskilling or deskilling provides insights into the evolving dynamics of the auditing profession. The discussion in this section will critically dissect the findings and link them to LPT, highlighting the multifaceted nature of technology's influence on junior auditors' roles and skills.

Across all three firms, the partners and managers uniformly perceived Cloud Computing as having had an upskilling effect on junior auditors. They emphasised the positive aspects of the technology, noting that it had enabled juniors to handle more complex tasks, reduced the time required for promotion, and enhanced overall efficiency. This finding can be seen in light of LPT, which explains that technology can reduce production costs by reducing the time required to complete a task (Marx, 1967; Braverman, 1974; Carchedi, 1975). The senior auditors, on the other hand, had more nuanced perspectives. While they acknowledged that the Cloud could have a deskilling effect on junior auditors by automating certain routine tasks, they emphasised the upskilling that occurred in relation to technical skills and overall efficiency. The junior auditors in the three firms expressed a range of opinions on the impact of Cloud Computing on their upskilling or deskilling. The majority described the Cloud as having had a deskilling effect on some individuals' critical thinking and social skills, with the effects varying according to seniority level.

These findings present a notable departure from the conclusions drawn by Hanlon (1994), Manson et al. (1997), Manson et al. (1998), and Manson et al. (2001), all of which contributed significantly to the emerging body of evidence suggesting that the integration of IT, ICT, and automation in auditing firms has not resulted in the deskilling of professional staff. Several factors may account for this contradiction. First, the unique context of Saudi Arabia could play a pivotal role in this. The dynamics and characteristics of the local accounting and auditing landscape, coupled with specific cultural, regulatory, and economic factors, may create a distinct environment in which the impact of technological integration differs from that observed in other regions. Second, the disparity in findings might be attributable to the different focus of the previous studies, as compared to the current work. Prior research has predominantly investigated deskilling effects among senior-level professionals who had already ascended the learning curve and possessed extensive knowledge and experience in the field. For these seasoned professionals, the introduction of technology may have had a relatively limited impact, with their existing expertise mitigating any potential deskilling effects. In contrast, the present study concentrates on the experiences of junior auditors, who are at the outset of their professional journey and thus lack experience and knowledge of the auditing domain. Consequently, the introduction of Cloud Computing technology is likely to exert a more pronounced impact on this cohort, and the deskilling phenomenon may thus be more pronounced. This variance underscores the importance of considering the career stage and expertise level of professionals when assessing the impact of technological innovations on their skills and roles in the organisation. In essence, while previous research has generally suggested the resilience of professional skills in the face of technological advancement, this study illuminates some nuance and suggests that these effects might be contingent upon contextual factors and the demographic of the professionals under investigation.

Uniquely, the Firm C participants emphasised that junior auditors today needed a different skill set to their predecessors, combining traditional numerical skills with understanding of IT, engineering, and business. This reflects the evolving nature of work and aligns with LPT, which explains that technological shifts can necessitate changes in skill requirements.

In conclusion, this analysis of Cloud Computing's impact on junior auditors reveals the multifaceted and context-dependent nature of technology's influence on the auditing profession. The findings shed light on the ongoing debate in the profession regarding whether technology primarily upskills or deskills auditors. LPT offers a valuable framework for understanding these complexities, emphasising that technology can have varying effects on workers' skills and roles, with outcomes influenced by individual attributes and organisational contexts (Marx, 1967; Braverman, 1974; Carchedi, 1975). These findings have broader implications not only for the auditing profession but also for other industries undergoing similar digital transformation. The findings emphasise that technology's impact on workers is multifaceted and that a nuanced understanding is necessary to effectively manage and optimise the outcomes of technological change.

9.5.5. The Positive and Negative Consequences of Cloud Computing

This examination of the implications of Cloud Computing adoption in audit firms sheds light on the multifaceted consequences of technological integration. The discussion in this section critically dissects the findings and links them to LPT, emphasising the interplay between technological advances and traditional audit practices.

Across all three firms, there was a consensus that Cloud Computing enhanced efficiency and time management. Furthermore, the ability to back-up data on the Cloud was identified as a significant positive aspect. On the other hand, it was explained that junior auditors were

particularly affected by automation and the simplification of routine tasks by Cloud-based tools. Furthermore, participants from all three firms expressed concerns about the need for cybersecurity when utilising Cloud services, highlighting the importance of data protection in an era of increased cyber threats. This provides an example of the potential vulnerabilities introduced by technology and the need for robust security measures in audit practices. As explained by LPT, technological integration can introduce new risks.

The findings indicate that Cloud adoption encourages technical upskilling among auditors, who acquire IT-related competencies as a result. This aligns with the argument in prior research that technology can enhance the skill sets of auditors (Manson et al., 1998). However, Firm A's senior auditors noted a potential decline in the social and communication skills of junior auditors due to their increased reliance on Cloud-based tools. This underscores the potential for adverse effects on the human dimension of auditing, something not typically associated with technology. Furthermore, some participants – particularly in Firm A – made the case that Cloud adoption was deskilling certain routine tasks. This aligns with LPT's observations on the division of labour, deskilling, skill transformation, and worker control (Marx, 1967; Braverman, 1974; Carchedi, 1975). It highlights the complex interplay between technology and work processes and the need for organisations to carefully manage these changes to ensure a balance between efficiency gains and potential deskilling effects. Additionally, it underscores the importance of considering worker perspectives and addressing their concerns during technological transitions. Finally, the views of the junior auditors in Firm C reveal the need for continuous skill-development and adaptation to new technologies.

In conclusion, the findings from the three audit firms underscore the complexity of Cloud Computing's implications for the auditing profession. While there are clear positive aspects of the new technology – such as the efficiency gains and technical upskilling – there are also

significant concerns related to cybersecurity, potential deskilling, and the erosion of social skills. The findings also highlight the importance of organisational strategies to harness the benefits of Cloud adoption while mitigating associated risks.

9.5.6. Recommendations

The recommendations put forth by the participants offer valuable insights into the adoption of Cloud Computing in the context of audit practices. The participants recommended that junior auditors obtain an understanding of technology before joining a firm. This can be explained by LPT's concept of skill acquisition (Braverman, 1974): in short, in the contemporary workplace, IT proficiency is a fundamental skill that junior auditors need from the outset of their careers. This recommendation reflects the changing skill requirements in the labour process (Marx, 1967; Braverman, 1974; Carchedi, 1975). While certain routine tasks are being automated, new skills related to technology utilisation and data security are becoming essential. Training is a proactive approach to addressing this transformation of skill needs.

The suggestion of a balanced approach that includes both training and traditional in-class education acknowledges the importance of maintaining a balance between technology-driven change and the preservation of social intelligence, technical skills, and business acumen. LPT emphasises the need to maintain and empower the human factor in the labour process (Marx, 1967, Braverman, 1974, Carchedi, 1975). The Firm B participants' recommendation regarding a change in the composition of the audit teams aligns with the notion in LPT of a division of labour. This highlights the evolution of the roles and skill sets required in audit practices due to technology adoption.

Auditors are not simply accountants but also technology managers. The call for educational institutions to adapt their curricula to incorporate the latest technologies aligns with LPT's idea

of skill formation (Braverman, 1974). It underscores the role of educational institutions in providing future auditors with the skills required in the contemporary workplace. Technology is an ever-evolving aspect of the labour process, and auditors must adapt and continuously improve their skills to remain relevant. The emphasis on information security as a top priority is in line with LPT's consideration of control and resistance. The recommendation that physical meetings and regular touchpoints with audit teams be maintained underscores the importance of human interaction in the audit process. This aligns with LPT's recognition of the human dimension of work and the potential deskilling effect of technology in relation to social skills (Marx, 1967; Braverman, 1974; Carchedi, 1975).

In conclusion, the recommendations provided by the participants offer a multifaceted perspective on the implications of Cloud Computing adoption. These recommendations address the implications and highlight the opportunities for junior auditors to adapt effectively to technological changes.

9.6. Conclusion

The primary objective of this thesis was to apply the Marxian (1954) analysis of capitalist development and LPT to clarify the impact of technological advances, particularly the introduction of the Cloud, on the roles of junior auditors in the Big Four audit firms in Saudi Arabia. In doing so, this discussion has contributed to the literature in four significant ways. First, the thesis's main contribution lies in its application of Marx's views on capitalist industrial development to audit firms. It aligns with Marx's idea that pursuing profitability through increased productivity in auditing parallels the trajectory of technological advancements, including the shift to the Cloud. Bryer, in his 2017 and 2019 work, sheds light on how accounting practices can obscure declining profit rates when technology only partially

transfers its value. This potential for a decline in profit rates is particularly relevant to this research because the introduction of technology to replace the labour of junior auditors may be exacerbating this issue. This relates to the second contribution of this thesis: by acknowledging the parallel between the pursuit of profitability through increased productivity in auditing and the trajectory of technological advances, this work contributes to a broader understanding of how audit firms can address the challenges posed by technology-induced declines in profit rate.

One potential solution involves audit firms redirecting their consultancy services towards the production of goods and services with intrinsic value, thereby contributing to societal well-being and sustainability. This proposal represents a noteworthy contribution to the audit landscape and its relationship with capitalist development, as analysed through the lens of Marxist economic theory. This suggestion acknowledges the need for stricter regulation of audit firms and does not negate their historical roles in facilitating profit extraction and tax avoidance (Arnold and Cooper, 1999; Armstrong, 1987; Mitchell and Sikka, 2011; Sikka, 2009, 2016; Sikka and Willmott, 2013).

The third contribution of this thesis is its application of LPT (Braverman, 1974) to the integration of the Cloud into auditing. In this way, the study is able to demonstrate management increased control over certain audit tasks due to the Cloud. This aligns with the view of Braverman (1974) that emerging information technologies diminish the level of control available to the workforce. However, the findings also show that the Cloud has led junior auditors to develop expertise in project management and data analytics.

The global function of capital proposed by Carchedi (1975) and the division of capital's functions by Armstrong (1987) are employed here to analyse auditors' class positions. While there is some tension in rent distribution between partners and junior staff, this divide is less

pronounced in audit firms than in other practices due to social relations shaped by factors such as the auditors' knowledge base, which is protected by Royal Charter. New partners must acquire this knowledge, thus large audit firms share expertise – on project management and data analytics facilitated by the Cloud, for example – with juniors. Consequently, while traditional LPT can explain some of the deskilling in audit tasks, professionalism mechanisms safeguard access to commercial services while combining deskilled tasks with enhanced knowledge.

The fourth theoretical contribution of this research lies in its examination of the intersection between traditional LPT and the dynamics in the field of audit. Traditional LPT, when applied to the audit profession, explains the deskilling of certain audit tasks due to automation and technology-driven changes in the industry. However, the current research adds an additional layer to this analysis by highlighting the mechanisms of professionalism that operate in audit firms. These mechanisms play a pivotal role in safeguarding access to commercial services while introducing a nuanced perspective on the role of junior auditors. This study shows that, while some aspects of junior auditors' roles may be deskilled by technological advances, professionalism mechanisms ensure that these roles also integrate enhanced knowledge and skills. This nuanced approach represents a distinct aspect of this theoretical contribution. In addition, this research is distinguished from studies applying traditional LPT by its focus on the audit profession. While traditional LPT has primarily been applied to manufacturing and other industries, this research takes this established theoretical framework and applies it in the unique context of audit firms. It recognises the distinctive features of the audit profession, including the emphasis on professional standards, the ethical considerations, and the role of knowledge in auditing. In essence, this research offers an understanding of how LPT applies to the audit profession, highlighting both the deskilling triggered by technological changes and

the countervailing effects of the professionalism mechanisms. This approach provides a view of the evolving roles of junior auditors in a technology-driven audit landscape, ultimately contributing to the broader discourse on LPT and its application in contemporary professional contexts.

Another contribution of this thesis is in the realm of labour process theory, it is imperative to recognise that the theory itself sets the overarching parameters within which firms operate. These parameters reflect the fundamental objectives of generating income through rent or value addition. However, within these confines, firms have the flexibility to employ a diverse array of strategies to achieve their goals. This flexibility is illustrated by the findings of Andy Friedman (1977), exploring the concepts of responsible autonomy and direct control in the labour context, primarily in factory settings. These strategic choices are clearly not exclusive to manufacturing environments and can be transposed to the landscape of audit firms, albeit with adaptations tailored to their unique characteristics. By acknowledging this adaptability and drawing on theoretical frameworks such as responsible autonomy and direct control, LPT can be expanded to elucidate the diverse strategies that firms, including audit firms, can employ to achieve their objectives, thus enriching the theoretical landscape.

The thesis makes another contribution to LPT. The central premise of the theory is that labour power, defined as the potential for action, can be transformed into actual labour and manifested in the provision of services or the creation of products. In the case of audit firms, individuals aspiring to attain partner status face stringent requirements. They are obligated to demonstrate their capacity to generate substantial financial gains, often running into hundreds of thousands or even millions. Additionally, they must invest capital to obtain a share in the firm, all while attaining professional qualifications. This dynamic introduces a unique facet to LPT: the imperative of skill and knowledge transfer. It becomes evident that complete control, as posited

by traditional LPT, is unattainable in this particular professional environment. This research thus contributes to the development of LPT by elucidating that certain professional organisations and firms train their junior colleagues in a manner that does not adhere to the traditional model of absolute control. The existence of such deviations in practice underscores the fluidity of LPT and its adaptability to diverse organisational structures and professional roles.

This study demonstrates that contemporary professional organisations are evolving to meet changing needs, providing a more nuanced view of labour processes. Traditional LPT highlights the rigid control mechanisms in workplaces, and scholars such as Braverman (1974) have extensively studied the deskilling and alienation associated with such models. The findings of this research, however, align with more contemporary perspectives that acknowledge the need for adaptability and flexibility in labour processes. While Braverman's work has been influential in shaping LPT, it is grounded in a specific historical context, and the world of work has evolved considerably in the period since its creation. The findings of the current study reflect the changing dynamics of professional organisations and their willingness to adapt. This evolution of thought in LPT is particularly relevant in today's rapidly changing business landscape. Adaptability and fluidity in labour processes are made ever more relevant by the diversity of organisational structures and professional roles. Traditional models often struggle to accommodate the unique needs of modern workplaces. This study argues that embracing adaptability and awareness is a practical reflection of the real-world complexities of modern organisations.

This thesis has explored the evolution of auditors' roles that resulted from the introduction of the Cloud. The Cloud's facilitation of remote data access and routine control testing has enabled audit firms to streamline their processes and even outsource tasks to regions with cost-

effective labour. While this research primarily focuses on Saudi Arabia, it suggests that the Cloud's features, such as enhanced data synthesis and improved audit reviews, have the potential to nurture project-management and data-analytics skills among junior auditors.

The thesis's final contribution is its empirical insights into the work of junior auditors in the context of Saudi Arabia. Prior empirical investigations of the auditing process have predominantly centred on Western firms. However, the Big Four chartered accountancy firms have extensive global networks, extending their operations beyond Western territories. This study illuminates that the organisational structures of the auditing practices in the Saudi Arabian offices of these prominent firms closely resemble those of their Western counterparts.

In the context of Saudi Arabia, the integration of Cloud Computing in audit firms encompasses intricate layers influenced by global integration, political dynamics, and cultural intersections. The nation's Vision 2030 initiative, aimed at economic diversification and reduced oil dependency, positions Cloud Computing as a strategic tool for modernizing the financial and auditing sectors to meet global standards, thereby enhancing operational efficiency and international competitiveness. Politically, substantial investments by the Saudi government in technological infrastructure support this digital transformation, yet impose stringent regulatory frameworks for data security and compliance, complicating the auditors' landscape. Culturally, the traditional hierarchical structures and preference for face-to-face interactions challenge the adoption of Cloud Computing, potentially exacerbating the decline in social and communication skills among junior auditors. To address these issues, firms must navigate the delicate balance between technological advancement and cultural sensitivities to maintain effective communication and teamwork. Furthermore, despite educational reforms aimed at aligning academic training with the needs of the digital economy, a gap persists between theoretical knowledge and practical skills necessary for Cloud Computing environments,

necessitating closer collaboration between educational institutions and audit firms. Additionally, the increased transparency and accountability introduced by Cloud Computing heighten workplace pressures, particularly within the culturally nuanced context of Saudi workplaces, where constant performance scrutiny can be daunting. Consequently, supportive measures are imperative to manage stress and foster a positive work environment.

The limitations of this study include its focus on three of the Big Four audit firms in Saudi Arabia, which may not fully represent the diversity of audit practices in other regions or smaller firms. In addition, the insights are derived from self-reported data, which could be subject to response bias or social desirability bias. There are potential generalisability issues, given the specific context of Saudi Arabia; and the study presents only a limited examination of the long-term implications of Cloud technology adoption.

The issues related to cloud independence and the reuse of work for multiple clients, as highlighted by participants, indeed intersect with audit quality concerns. Future research could investigate the implications of cloud service independence on audit objectivity and the ethical considerations of using client-specific work as templates for other engagements, potentially influencing audit quality. Moreover, future research avenues could include similar studies in different cultural and regulatory contexts to assess variations in the impact of Cloud technology on auditors' roles. In addition, it may be useful to explore the experiences of junior auditors in smaller audit firms or non-Big Four settings to understand the variation in technological adoption and labour processes. Longitudinal studies could assess the sustainability of the observed changes to auditors' roles over time. In addition, further investigations could identify the effects of emerging technologies such as AI and blockchain on audit practices and auditors' roles. Finally, other researchers could explore the relationship between large audit firms'

profitability and their adoption of technology, as well as the potential implications for the external-audit industry in Saudi Arabia.

Appendices

Appendix 1: Braverman Worker-Contribution or -Sacrifice Framework

Worker contribution or sacrifice, traditionally in exchange for compensation	Mechanisation levels			
	1-4	5-8	9-11	12-17
	Hand control	Mechanical control	Variable control, signal response	Variable control, action response
Physical effort	Increasing-decreasing	Decreasing	Decreasing- Nil	Nil
Mental effort	Increasing	Increasing-decreasing	Increasing-decreasing	Decreasing-nil
Manipulative skills (dexterity)	Increasing	Decreasing	Decreasing-nil	Nil
General skills	Increasing	Increasing	Increasing-decreasing	Decreasing-nil
Education	Increasing	Increasing	Increasing or decreasing	Increasing or decreasing
Experience	Increasing	Increasing-decreasing	Increasing-decreasing	Decreasing-nil

Appendix 2: Labour Process Theory (LPT) – Definitions

→ *Labour* “is defined as the monetary equivalent of the required labour time in the most efficient firm”. (Bowman and Toms, 2010, p.188)

→ *The capitalist mode of production* is “[t]he unity in subordination of the mode of production upon which the labour process rests and of the mode of production upon which the surplus value producing process rests”. (Carchedi, 1975, p.14)

→ *The means of production* “(i.e., machinery, components, electricity) creates commodities with a value of C; where C is a sum of value, a quantity of socially necessary labour time embodied in machinery etc. and wage goods”. (Bowman and Toms, 2010, p.188)

→ *Constant capital* “is constant because it cannot create more value than it already embodies”. (Bowman and Toms, 2010, p.188)

→ *Variable capital* “has the capacity to create value and surplus value over and above the costs of its production, represented by wage goods”. (Bowman and Toms, 2010, p.188)

→ *Exchange value* “is the monetary value that the product exchanges for; it is value in its money form”. (Bowman and Toms, 2010, p.187)

→ *Rate of profit* “is formed through adjustments of money wages to the socially necessary equivalent through imitation; a process which is continually disrupted by new developments of dynamic capabilities”. (Bowman and Toms, 2010, p.188)

→ *Economic structure* is “[t]he unity (actually a unity in determination) of the mode of production and the production process corresponding to it”. (Carchedi, 1975, p.6)

→ *The middle-classes* are all individuals involved in production who perform both the role of workers and capitalists, regardless of their ownership of means of production. They can be either exploiters or the exploited. (Carchedi, 1975)

→ *The working-class* are “[t]hose wage earners whose wage is determined, tendentially, by the value of their labour power”. (Carchedi, 1975, p.4)

→ *The collective worker* participates in the organised labour process as part of a group, contributing to the production of goods or services and directly generating surplus value for capital. (Carchedi, 1975)

→ *Proletarianisation* is the culmination of the devaluing of the new middle-class’s labour power, reducing it to an average, unskilled level and removing its global function as capital. (Carchedi, 1975)

→ *The bourgeoisie* are those who economically exploit or oppress, own the means of production, function as capital, and derive income from surplus value. (Carchedi, 1975)

Appendix 3: Template Analysis

Template Analysis	
Theme (1)	Auditing Before and Since the Introduction of Cloud Computing
1) How was auditing performed by junior auditors before the introduction of the Cloud, and how has this changed?	
Theme (2)	Deskilling and Upskilling
2) How has the introduction of Cloud Computing affected the physical and mental effort , manipulative and general skills, education, and experience required of junior external auditors? (Based on Braverman (1974) worker-contribution or -sacrifice framework.)	
Theme (3)	Autonomy
3) How is the Cloud affecting the autonomy of junior external auditors and their audit tasks?	
Theme (4)	Professional Identity
4) How has Cloud Computing affected the professional identities of junior external auditors (i.e., their behaviours, attitudes, and roles)?	

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