

Adult acceptance factors to corporate mobile learning: A case from the retail sector in South Africa

Lovinthrie Reddy

440122

440122@students.wits.ac.za,

0833084910

A research proposal submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Johannesburg, 2024

KEYWORDS

Retail firm self-directed learning, workplace mobile learning, Mobile Learning, Mobile learning for adults, M-learning, Corporate mobile learning, Retail mobile learning in South Africa. Factors affecting acceptance to mobile learning in a large retailer, Acceptance to corporate mobile learning, , employed adults and mobile learning. Mobile learning adoption, Self-directed mobile learning .

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CHAPTER 1.INTRODUCTION

1.1 Statement of purpose

“This research is a study to identify factors contributing to adult mobile learning acceptance within a large retail firm in South Africa.”

1.2 Background of the study

Unemployment in South Africa is remarkably high and rising. In 2002, it was officially measured at 41% on the broad definition and 30% on the narrow definition (StatsSA, 2002). Unemployment is a serious concern due to its effects on economic welfare, erosion of human capital, social exclusion, crime, and social instability. Some view the level of unemployment and its rise as the most serious threat facing South African society and its governance. Comparisons of data from the 1994 October Household Survey and the 2014 Quarterly Labour Force Survey show that in the first quarter of 2014, 25% of South African workers occupied skilled occupations (i.e., managers, professionals, and technicians), an increase from 21% in 1994. However, a higher percentage (46%) were still in semi-skilled occupations (e.g., clerks, craft and related trades, and machine operators) in 2014, a slight decrease from 47% in 1994; and 29% were in low-skilled occupations (elementary jobs and domestic work), down from 32% in 1994 (StatsSA, 2002).

The concern regarding jobless growth was noted in the National Development Plan (Department of the Presidency, 2011). According to the NDP report, factors that drive growth are not always the same as those that drive job creation. Similarly, the factors that are good for job creation are not always good for growth. However, since the economy needs both, intervention strategies need to complement each other. It is therefore important for all sectors of the South African economy to contribute toward job creation in their strategies. Achieving full employment, decent work, and sustainable livelihoods is the only way to improve the lives of all South Africans.

Since the retail sector is such a large contributor to South Africa's economy, accounting for about 12.5% of GDP and about 21% of the total workforce (W&RSETA, 2014), increases in job creation and retention in the sector can have a large impact on one of South Africa's major difficulties, namely unemployment, and will thus contribute substantially to one of the National Development Plan's core priorities, namely job creation.

As of the second quarter of 2024, South Africa's unemployment rate has escalated to 33.5%, the highest level observed in the past two years. This rise follows a rate of 32.9% in the first quarter of 2024, marking the second consecutive quarterly increase. Analysts had expected a decrease to 32.3%, making the actual rise to 33.5% unexpected. The latest statistics represent a 0.8 percentage point increase from the last quarter of 2023.

The changing environment, with pressures from macroeconomic factors and the transformative effect of online retailing, will continue to require new strategies for current retailers to maintain and grow their sales (Malgas et al., 2017). This is important as it has been established that there is a large proportion of retail jobs that are considered vulnerable and employment growth in the retail sector responds well to positive economic performance. Therefore, the continued success of the sector is likely to have a direct impact on employment (Malgas et al., 2017). From the retailers' side, strategies are focused on maintaining and stimulating demand for their products and services. Extensive analysis has been done on a global level to suggest how best to respond to the changing environment in the retail sector, with particular emphasis on understanding changes and drivers in consumer behaviour (PWC, 2008a).

Traditionally, retailers and wholesalers have gathered a lot of data regarding customers and buying patterns, but that information was not always collected with a thorough understanding of what was intended to be done with it. PWC (2008b) states that looking forward to 2020 and beyond, retailers need to focus on data extraction rather than data collection. This coordinated approach will allow retailers to build personalised relationships with their customers. Retailers will have the advantage of building the service and product offerings in-store that align with customers' expectations. At its heart, retail innovation will only be

successful if it can substantially increase customers' quality of life throughout the shopping experience. Only by doing so will the retail firm benefit from continued customer preferences (Malgas et al., 2017).

South Africa is characterised by an exceptionally large pool of relatively low-skilled workers, and as one moves to higher skill levels, the number of available workers falls. In the traditional high-employment industries, this would not be problematic as the mix of skills demanded follows a similar profile. According to the W&R Sector Skills Plan (W&RSETA, 2013), the wholesale and retail sector follows an even more exaggerated mix with a greater proportion of low-skill occupations than the economy. The question remains whether the future skills mix of the sector will remain unchanged or follow the same profile as historically. In general, as the world evolves into the knowledge economy, employment growth is no longer organic. Structural changes affect the basic mix of skills required, with the proportion of low-skilled jobs decreasing and mid- to high-level skilled jobs increasing. Furthermore, technological innovation increases productivity per worker and the entry-level skills demanded per post. The retail sector can be considered an 'entry-level' sector in that there are many posts that are not skills-intensive and can absorb the high number of low/semi-skilled unemployed in the country. Firms within the retail sector cannot be onlookers; they have to be active stakeholders that change and improve employment in South Africa, as a large part of their employee base are people that come from varying backgrounds of literacy, experience, and education (Malgas et al., 2017).

Retail firms must continuously meet varying customer expectations on products and services; it is critical for them to keep their employees continuously upskilled to meet these expectations, and thus this becomes a vital and strategic imperative. Retail firms expect their employees to have a good understanding of the products they sell, how to interact seamlessly with customers, and finally to guide customers to make a purchase decision. As a result, more adults are taking charge of their learning and development to meet the demands of their daily lives. This has become necessary due to the pressures from a fast-changing socio-economic world that sometimes impacts their employment. Their interest in seeking specific knowledge and skill makes them self-directed learners with the

primary responsibility for their learning ranging from planning how to learn to evaluating learning experiences, including all other activities falling in-between that are necessary to ensure successful learning (Caffarella, 2000; Ellinger, 2004; Tekkol et al., 2018).

As part of self-directed learning, adults also manage multiple roles (Lundberg, 2014). Adult employees manage multiple roles, including being spouses, partners, and parents while being full-time workers. These equally essential roles compete for an employee's limited time. In the retail sector specifically, employees are adults who are a mix of youth still studying part-time to complete qualification-based programs; others who joined the retail sector to avoid being unemployed; many who barely managed to complete basic schooling; those who have family responsibilities outside of work; and those who see no need to further educate themselves. With this varying degree of literacy, retail firms face the challenge of what type and how to effectively deliver learning that could suit this diversity of needs. Additionally, retail stores are spread geographically across South Africa, and reaching to facilitate learning becomes a cost-sensitive occurrence. According to McGreal et al. (2004), "Education is one of the fastest-growing economic and social sectors in the world, and the use of new technologies is an integral and driving component of that growth." The Advisory Committee for Online Learning (2001) recommends that e-learning be the focus for the delivery of skills-based training because of its relevance to the global market and its flexibility, availability, and affordability.

Much research to date supports the efficacy of workplace-based e-learning to educate and train people. Aside from the commonly advertised cost reductions, e-learning provides consistency of learning, can be faster than traditional learning, and tailored to specific individual needs (Clark, 2006). Although the numbers vary from 26% to 60% on the reduced learning times involved (Rayson, 2006), reducing the amount of time required to learn the subject matter benefits both the learner and the employer by increasing productivity more rapidly. The interruptions to the instructional process that are often found in conventional educational settings are removed, and typically a higher level of interactivity exists with a capability for the learners to work at their own pace. Therefore, e-

learning can engage and produce better results. In fact, studies have shown that e-learning may be more effective in improving knowledge and skills because of its more personalised nature (Rayson, 2006).

Learners want to know that they will benefit from workplace training initiatives in their jobs. If the training is relevant, related to job performance, and supported by the employer, employees will be more open to learning and acquiring new skills (Brown et al., 2002; Rosenberg, 2001).

Learning technology and the internet have narrowed the divide between access to learning and time for learning. Adult lifelong learning is today's reality, and many employers provide workplace-based learning, and more specifically, e-learning, to permit employees to upgrade their skills and knowledge while on the job (Rebak et al., 2006). Retail firms can ensure that employees are upskilled just in time to meet business strategies as and when necessary, upskilling both management and non-management employees to be competent to engage with customers and achieve the required targets. Key to the successful introduction of an e-learning initiative in the workplace is to ensure that employees are engaged in the process. The best-designed product will not affect the desired changes without an understanding of what motivates people to learn and what barriers exist that preclude it. As Clark (2006) stated, "motivation is learner-centric, not trainer-centric."

A crucial factor for the success of an e-learning initiative is learner/employee motivation. E-learning is more successful when the learners take the initiative for self-improvement rather than having learning imposed on them. Employers need to be aware that if the training is imposed on the employees and they are resistant, then alternative inducements must be factored in to gain their commitment for the success of the e-learning initiative. "If a corporate e-learner isn't internally motivated, a company will have to step in" (Frankola, 2001).

Adult learners have varying ways of engaging in the learning process, either by filtering new concepts through their frames of reference or by constructing new meaning from the experience. It is important for self-directed learners to consider those factors that would predispose adults to assume responsibility for learning

(Hiemstra, 1997). To take advantage of e-learning and the opportunities it presents, it is essential to develop an understanding of how to get employees engaged. Various factors need to be taken into consideration to ensure that barriers to learning are removed (Frankola, 2001). Even with well-designed courses, competent instructors, and stable technology, lack of support and/or understanding of learning preferences has a direct effect on the employee's acceptance of and participation in e-learning. Internal factors, the beliefs and values that have a direct effect on a person's willingness to participate, are difficult to discern. By identifying the factors that are associated with resistance, the opportunity exists to lessen their influence and increase participation in staff development. Gaining insight into the reasons for resistance requires an individualised examination of learners' perceptions. As Olgren (2000) states, "Each individual is complex and unique and enters into a learning experience with a variety of backgrounds, attitudes, skills, and motivations." Burge (2000) suggests that for employers, "Rather than asking 'How do I motivate a learner?' it is more appropriate to ask, 'What am I or others doing that is blocking the learner's intrinsic motivating drives?'"

With the recent rapid advancement in mobile telecommunication technologies, mobile phone applications have changed not only how we use mobile phones but also our lives. Thus, mobile devices are a crucial tool for mobile health, banking, and mobile learning (m-learning) (Alalwan et al., 2017; Briz-Ponce et al., 2017; Hoque et al., 2017; Nikou et al., 2017; Crompton et al., 2018).

M-learning is a tool with considerable potential that provides new possibilities for education and learning assessment (Nikou et al., 2017). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) indicated the potential of m-learning to enhance learning quality and students' test results.

Mobile learning is becoming a significant component of corporate training due to its flexibility, accessibility, and capacity to provide personalised learning experiences. It allows employees to engage with training materials at their convenience, which is especially advantageous for remote or geographically dispersed teams. This flexibility supports continuous learning and upskilling,

making it easier for employees to learn in various contexts, including during downtime or while on-the-go (Alves et al., 2022; Boase & Ling, 2013).

Furthermore, corporate m-learning platforms are increasingly utilising technologies like artificial intelligence (AI) and data analytics to customise learning experiences to meet individual needs. This personalisation enhances employee engagement and the overall effectiveness of training programs (Zhang et al., 2022). Additionally, integrating m-learning with corporate Learning Management Systems (LMS) and other workplace tools further embeds learning within everyday work activities, allowing employees to immediately apply new skills in their job roles (Zhang et al., 2022; Alves et al., 2022).

1.3 Research problem

“This research is a study to identify what factors contribute to adult mobile learning acceptance within a large retail firm in South Africa.”

In an era of rapid technological advancement, where skills and knowledge can quickly become obsolete, the need for innovative strategies to maximise adult learning through technology is paramount. The ability to effectively upskill and reskill both management and non-management employees is essential for maintaining a competitive edge, particularly in large retailers that must consistently meet evolving customer expectations with high levels of product and service quality. In this context, digital learning emerges as a promising solution for upskilling, though its success depends critically on user acceptance, as outlined by Davis (1989).

Despite growing interest in mobile learning, there remains a significant lack of empirical evidence on its usage within informal learning contexts (Jones et al., 2013). This gap may be attributed to the challenges inherent in capturing the use of technology in such settings, as noted by Pachler (2007). As mobile learning activities continue to expand in informal contexts (Looi et al., 2014), the need for further investigation into this area becomes increasingly urgent (Kearney et al., 2012). Additionally, existing research has largely overlooked the influence of individual learner characteristics on mobile learning usage, particularly in relation to self-directed learning, which is essential for the success of mobile learning applications (Kreber, 1998).

This research seeks to provide valuable insights into the self-directed decision-making behaviors that influence the acceptance of Mobile Learning Applications (MLAs) in informal settings. Such insights could significantly enhance organisational learning, enabling employees to acquire the skills necessary to perform their roles competently, thereby driving sales and improving customer experiences. This study is particularly relevant for geographically dispersed,

large-scale retail businesses in South Africa that are seeking cost-effective solutions to upskill their employees through mobile learning technologies, even in the face of challenges such as load shedding.

By exploring the factors and decisions that affect the adoption and acceptance of mobile learning from the perspective of employed adult learners, this research could offer critical insights into retail employees' decision-making processes regarding mobile technology for learning. Furthermore, it could elucidate the contextual elements within mobile applications that foster engagement and course completion, contributing to the broader discourse on effective adult learning in the digital age.

1.4 Research objectives

Since the advent of mobile learning, scholars have extensively studied the factors influencing its adoption. Various theories, models, and frameworks have been employed to investigate this phenomenon, including the Theory of Reasoned Action (TRA), Social Cognitive Theory (SCT), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Masrek et al., 2019). Among these, UTAUT has emerged as the most widely adopted model in the context of mobile learning, with literature suggesting that it can explain up to 70% of the variance in technology acceptance behaviors (Venkatesh et al., 2003). UTAUT identifies four key constructs—performance expectancy, effort expectancy, social influence, and facilitating conditions—as having a direct impact on the intention to adopt technology.

While these constructs have consistently been shown to contribute to mobile learning adoption, some scholars have argued that the main constructs of UTAUT may not fully capture the unique factors relevant to mobile learning (Pedersen, Nysveen, & Thorbjørnsen, 2003; Wang, Wu, & Wang, 2009; Karimi, 2016). Consequently, there is a need to test and verify the applicability of UTAUT in mobile learning by modifying and extending the model with additional

determinants. This research builds upon the existing literature and proposes an alternative model for mobile learning adoption tailored to specific learning contexts.

In addition to the four core UTAUT constructs, previous studies have explored the role of self-directed learning in mobile learning environments, recognising that such environments promote self-management and student-centered learning (Karimi, 2016; Lin, Zimmer, & Lee, 2016). As mobile learning is particularly well-suited for learners who are independent or minimally supervised, it is crucial to consider how self-directed learning influences mobile learning adoption.

The primary objective of this research is to identify the factors that influence retail employees' use of the existing Mobile Learning Application (MLA) within the context of workplace learning. Specifically, the research aims to examine the self-directed decision-making processes that employees engage in when determining their personal learning strategies and setting learning goals. Additionally, the study seeks to identify the elements within the mobile learning technology that influence employee usage, decision-making, and course completion rates.

1.5 Rationale

Venkatesh et al. (2003) identified performance expectancy, effort expectancy, social influence, and facilitating conditions as direct determinants of technology behavioural intention. These constructs have been widely used to understand technology adoption, including in the context of mobile learning. Recent studies have sought to expand this model by incorporating the concept of self-directed learning, given the autonomous nature of mobile learning environments.

However, the results regarding the impact of self-directed learning on technology adoption are inconclusive. For instance, Wang et al. (2009) reported a significant effect of self-directed learning on mobile learning adoption, whereas Lowenthal (2010) did not observe a significant influence. Given these conflicting findings, it is crucial to further investigate the role of self-directed learning as a determinant of mobile technology adoption.

Building on this premise, the present study aims to explore the factors influencing the adoption of mobile learning by integrating elements related to self-directed learning behaviours into the established theoretical framework. While mobile learning is theorised to be an effective tool across various learning contexts, there is a notable gap in research concerning the learning behaviours of employed adults in relation to mobile learning. This study addresses this gap by examining the factors that encourage the acceptance and usage of a mobile learning application among employees in a large retail organisation in South Africa.

The theoretical model proposed in this study is a combination of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Venkatesh et al., 2012) and the Self-Directed Learning (SDL) model (Garrison, 1997). The SDL model incorporates key dimensions of self-directed learning, including motivation, self-management, and self-monitoring, which are critical for understanding the behaviours of adult learners in mobile learning environments.

The findings from this study could provide valuable insights for practitioners aiming to enhance behavioural intentions toward mobile learning usage and inform implementation strategies within large organisations. By focusing on the attributes of employed adult learners, this research contributes to a deeper understanding of how m-learning can be effectively integrated into workplace learning environments. The primary contribution of this study lies in its exploration of adult learners' characteristics and behaviours, which could inform the development of tailored m-learning applications and strategies. The research questions are designed to extend the existing knowledge base of self-directed learning by contextualising the SDL model (Garrison, 1997) within the UTAUT framework (Venkatesh et al., 2003), thereby creating a comprehensive model for understanding mobile learning adoption in the workplace.

1.6 Delimitations of the study

Keskin et al. (2011) identified various prominent m-learning theories that engage learners in mobile learning environments, including behaviourism, cognitivism, constructivism, situated learning, problem-based learning, context-aware

learning, socio-cultural theory, collaborative learning, conversational learning, lifelong learning, informal learning, activity theory, connectivism, navigationism, and location-based learning. However, this study will not focus on any of these specific theories.

Theories of learning play a crucial role in informing the decisions and approaches used to create learning experiences in a given context, particularly in terms of how learning content is structured based on a specific theoretical framework. Nevertheless, the framework for structuring learning content is not within the scope of this research.

This study will be limited to examining adult learners employed within a retail organisation, including both management and non-management employees. The primary focus will be on identifying elements within the self-directed learning (SDL) decision-making process as it relates to the existing mobile learning technology within the organisation. Specifically, the study aims to identify the factors that encourage the completion of learning content.

It is important to note that this study will not evaluate the performance improvements resulting from the learning activities. Instead, it will assess employees' perceptions of competence related to the learning content available on the Mobile Learning Application (MLA). The research will be conducted using a survey format, with questions designed to explore the research objectives. The survey will be distributed to all employees who currently access the MLA, and the responses will be analysed to gain insights into the factors influencing their learning experiences.

1.7 Definition of terms

The Retail Organisation - an organisation that sells beauty and pharmaceutical products to consumers. The employee base is a combination of roles that deal directly with the consumer., i.e., cashier, store manager, stock replenisher, customer services and pharmacist. These employees are full time employees, who work at varying hours over 7 days of the week and receive monthly salaries. The organisation also has support staff based in a head office environment, i.e.,

human resource, IT, marketing, distribution, and finance. Work ranges from simple to complex, and role types are management to non-management. Head office support staff work 5-day week Monday to Friday, between 7am to 5pm

1.8 Assumptions

The Mobile Learning Application (MLA) currently in use by many employees within the organisation has already been adopted, and therefore, this study will not include questions related to the adoption of the learning application. The research assumes that the technology has been successfully integrated into the organisation's learning environment and is actively used by employees. Since participation in the learning activities provided by the MLA is non-compulsory, it is anticipated that respondents to the study's survey will primarily be those employees who have voluntarily chosen to engage with the application. Consequently, the survey questions will be framed from the perspective of these active users.

It is also assumed that the employees who utilise the MLA exhibit characteristics associated with self-directed learning, given that they choose to engage with non-compulsory content. The employees access the MLA using their personal mobile devices, specifically mobile phones, as the application is designed to be delivered via this platform. The study will not include questions related to gender or age, as these demographic data are readily available through the organisation's internal records, given that the MLA is an internal tool.

1.9 Chapter Outline

This study will commence with a comprehensive review of Knowles' theory of Andragogy to gain a deeper understanding of adult learning processes. This review will be enriched with literature focusing on self-directed learning (SDL) to establish a theoretical foundation for adult learning in online environments. The SDL model proposed by Garrison (1997), which includes the constructs of motivation, self-management, and self-monitoring, will be a central component of the theoretical framework guiding this research.

The study will investigate the conditions that influence employees' use of the Mobile Learning Application (MLA) in the following contexts:

- The decision to engage in learning,
- Choices regarding what to learn,
- Decisions on when to learn,
- Completion of learning assessments,
- Preferences for using the MLA.

Relevant studies on mobile learning will be integrated into the literature review to provide further context and support for this research. Given that this research focuses on the use of existing technology within a retail environment, the choice of models included in the theoretical framework is influenced by the current acceptance and use of the MLA within the organisation. Since the MLA is already widely accepted and its usage is growing, the primary focus of this research is not on technology acceptance but rather on identifying:

- The factors that influence MLA usage, including organisational and environmental factors,
- The factors that encourage continued usage,
- The factors that influence course completion rates within the MLA,
- The factors that engage users,
- The physical conditions under which the MLA is used.

The Unified Theory of Acceptance and Use of Technology (UTAUT) model, proposed by Venkatesh et al. (2003), has been selected as a key element of the theoretical framework. This model offers a comprehensive approach to understanding technology acceptance and could provide valuable insights into learner preferences in online learning environments.

By combining the UTAUT model (Venkatesh et al., 2003) with Garrison's (1997) SDL model, this study aims to shed light on the decision-making factors and learning technology functionalities that are most effective for large, geographically dispersed retail organisations. The overarching goal of this study is to identify the specific factors within the mobile learning application that influence retail employees to engage with mobile learning technologies.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Adult Learning

The Information age offers tremendous opportunities for learning. Adult learners working in this time can use a unique combination of skills and technology to grasp the opportunities at hand. **This type of learning is rooted in the adult learning concepts of (a)andragogy (b)self-directed learning (c)learning-how-to-learn (d) real-life learning, and (e)learning strategies.** These concepts are all vital to understanding the methods adults use when learning using technology, more specifically mobile learning.

In this study involving adult learning processes, it is important to understand the learning model known as andragogy, which is the art and science of helping adults learn Knowles (1980). Malcolm Knowles popularised this term and is recognised as the father of andragogy although Alexander Kapp, a German grammar schoolteacher, first used the term Knowles, et al (1998).

Knowles'(1980) andragogical model was originally based on four basic assumptions of adult learners. As people develop, their (a)self-concept moves from dependence to self-direction (b) experiences become a storehouse to access during learning (c) learning readiness adapts to the developmental tasks of social roles, and(d) knowledge adaptation becomes immediate, and their orientation shifts from subject-centeredness to performance-centeredness. Some have argued against the value of Knowles' andragogical model however, his work is the foundation of thinking in the field of adult learning during the last decade, Hiemstra et al (1990) Merriam (2001).

In his book, *The Adult Learner, A Neglected Species* Knowles (1990), Knowles describes the “assumptions of andragogy” as they differ from the more traditional, pedagogical approach. He describes how adults must understand

why they need to know something before they become willing to invest the time to learn it. The adult learner has a psychological need to be both self-directed and responsible for his or her own decisions. Historically our educational systems have conditioned the adult to be dependent on the educator. Making this switch in dependency could be influenced by the environment the adult finds themselves in or as an unconscious progression in life. The adult learner unconsciously brings life experience to the learning environment; furthermore, the adult finds more value in experiential learning than in passive learning. Simultaneously, a variety of life experiences result in an increasingly diverse population of adults with established habits and biases, creating a need for individualised learning practices.

The adult learner is ready to learn when there is a specific need for that learning and what is learned must be applicable to everyday life. The orientation of the learning process should be problem-and performance-centered; where the focus is on resolving the learner's current, real-life needs through the development of a new skill or knowledge base. The strongest motivators for adults to learn are increased self-esteem, greater job satisfaction, and improved quality of life. Knowles also describes that the necessary elements and considerations for structuring any educational experience for adult learners should consider an environment that is informal and comfortable with mutual respect and collaboration.

Andragogy is attributed with helping understand adult learning Knowles et al (2014), it does not meet the criteria to be classified as a theory. Rather, it is a model under the theory of humanism that, according to Knowles (1980), is a set of principles applicable to most adult learning situations. Adults should feel "accepted, respected, and supported," as there is "a spirit of mutuality between teachers and students as joint inquirers" Knowles (1980).

Self-directed Learning

As society continues to experience an eruption in diffusion of knowledge via the internet, adult education and learning has had a rapid expansion of research in self-directed learning. Unidentified for many years, self-directed learning (SDL)

became formally recognised and studied during the last several decades Knowles (1990).

The process occurs when: Individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing, and implementing appropriate learning strategies, and evaluating learning outcomes. Knowles (1975) iterated that SDL is any process where the learner is the decision-maker and in control of the learning process. Indeed, SDL is a freedom that all learners should be permitted to explore Rogers (1969). "It is self-initiated. even when the impetus or stimulus comes from the outside, the sense of discovery, of reaching out, of grasping and comprehending, comes from within."

The concept of SDL applies to many learning events for adults. Some may be quite simple such as learning to operate a mobile phone for the first time while others could be overly complex such as learning a new skill from watching a YouTube video. Research related to SDL reveals that 90% of adults conduct at least one self-directed learning project annually Tough (1978) and that 70% of adult learning is self-directed in nature Tough (1978). Knowles describes two concepts of self-directed learning, Brookfield (1986); Candy (1991). First, self-directed learning is self-teaching where learners have power over all systematic characteristics and approaches of their learning process. Next, self-directed learning is personal autonomy or "taking control of the goals and purposes of learning and assuming ownership of learning" Knowles (1998).

Since the work of Tough in the early 1970s Tough (1971), the attention given to SDL has significantly increased in adult education Merriam et al (2007). Through the development of the concept of SDL the mainstream literature grounding the conceptualisation of SDL can be divided to two types, the personal attribute perspective, and the learning process perspective Brockett et al (1991). SDL researchers consider self-direction as a personal attribute Merriam (2001). Guglielmino (1977) offered a detailed operational definition for SDL. In it, she describes a highly self-directed learner as follows:

A self-directed learner is one who exhibits initiative, independence, and persistence in learning; one who accepts responsibility for his or her own learning and views problems as challenges, not obstacles; one who is capable of self-discipline and has a high degree of curiosity; one who has a strong desire to learn or change and is self-confident; one who is able to use basic study skills, organise his or her own time, set an appropriate pace for learning, and develop a plan for completing work; one who enjoys learning and has a tendency to be goal-oriented. Like Guglielmino's definition, which provides many specific characteristics of SDL, Long's (1991) definition two decades later stated that SDL has the following elements: relatively independent, values self-initiative, possesses positive self-efficacy, is metacognitively aware, is intrinsically motivated, engages in deep processing, and prioritises mental focus.

A more recent definition from Sze-Yeng & Hussian (2010) emphasised learner autonomy when discussing SDL. They defined SDL as "a learner's autonomous ability to manage his or her own learning process, by perceiving oneself as the source of one's own actions and decisions as a responsibility towards one's own lifelong learning." Autonomy relates to the need for freedom or choice of one's behaviour. Learners' autonomy provides a motivational basis for their behavioural engagement because of the choice of making decisions for participating in an activity Skinner et al. (2008). Brookfield (2013) also emphasises learners' decisions on what to learn, when to learn it, how much to learn, and whether something has been learned well enough. From this perspective, learning decisions are made by learners. Accordingly, the truly self-directed learner is empowered, not controlled by external decisions to acquire skills.

There is a caution, however, that studies focusing on SDL as personal attributes might lead us to ignore the social and environmental perspectives of SDL Ainoda et al. (2005). This study will incorporate the personal process perspective of SDL whilst integrating some environmental perspectives the adult learners find themselves. These will comprise the broader organisation as well as the immediate workplace environment. The learning process perspective incorporates the work of Knowles (1975) who described SDL as "a process in which individuals take the initiative, with or without the help of others, in

diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating learning outcomes”. Initially, Tough (1971) and Knowles (1975) considered SDL as a linear model in which learners followed a series of steps to achieve their learning goals through SDL. Later this understanding broadened and viewed as iterative. Similar to Knowles’ (1975) perspective, Brookfield (1986) described SDL as a process in which learners are expected to work independently or with others and take responsibility for planning, implementing, and evaluating their own learning.

Later interactive and instructional aspects to SDL definitions were added by other researchers Brockett et al (1991) Garrison (1997); Grow (1991). For instance, Brockett et al (1991) defined SDL as a process “in which a learner assumes primary responsibility for planning, implementing, and evaluating the learning process”. Building on Knowles and Brookfield work, Garrison (1997) put forth a popular three dimensions model of SDL, which defined SDL to include three aspects. These dimensions are the reasons that this model was selected to be added to the theoretical framework.

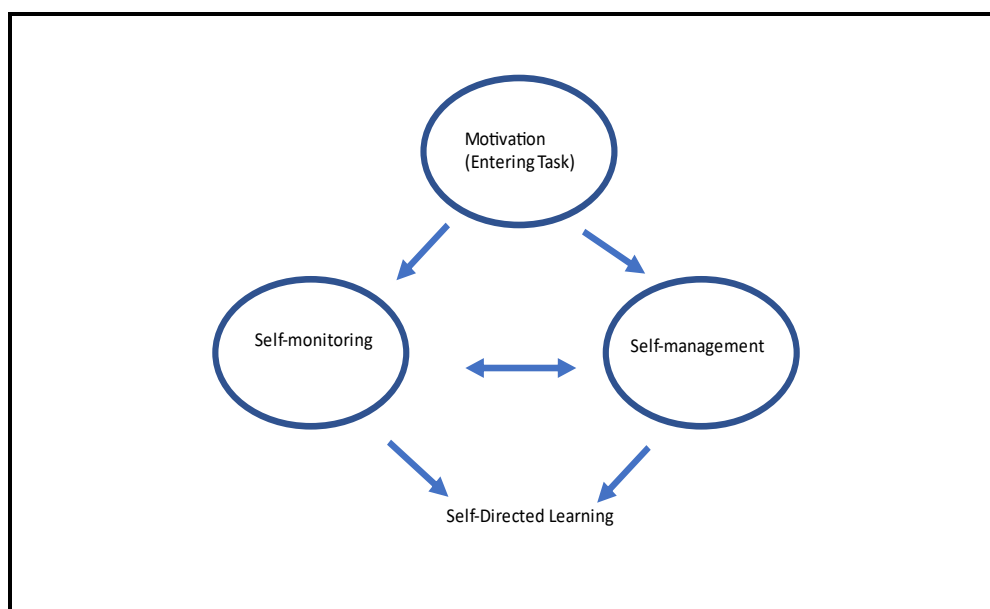


Figure 1: SDL Garrison (1997)

Self-management is related to task control. As it focuses on external activities that influence the learning process, such as the enactment of learning goals and

the management of learning resources and support. These activities are constantly assessed and negotiated by the adult.

The second dimension of this model is self-monitoring. It involves cognitive and metacognitive processes which include the ability to monitor one's learning strategies as well as the ability to think about thinking. According to Garrison, self-monitoring means that the learner is responsible for the construction of personal learning. Internal self-monitoring alone is not enough to promote cognitive improvement. Consequently, to effectively build SDL skills, instructors should provide external feedback to support learners' self-monitoring. Garrison considers self-monitoring of cognitive and metacognitive processes as a critical component of SDL.

The third dimension of the model, motivation, includes entering motivation and task motivation. Simply put, motivation can initiate and maintain the effort toward learning and realising cognitive goals. Importantly, these three dimensions, self-management, self-monitoring, and motivation, are closely related to each other. Based on Garrison's (1997) model, learner motivation influences their self-monitoring and self-management. The cognitive component of self-monitoring and self-management influence each other. Garrison (1997) explained that the relationship between self-monitoring and self-management may be complicated. Theoretically, their relationship should be reciprocal as illustrated in **Fig. 1**; however, critical decisions in learning, such as what to learn (learning content), how to deliver learning (instructional strategies and methods), and where to learn (classroom, virtual) are primarily made by teachers. Thus, the behavioural aspects of SDL i.e., self-management supported externally by prompts and feedback may affect or constrain adult learners cognitive and meta-cognitive activities i.e., self-monitoring.

Not only is SDL important for successful online learning in an informal setting, but a learner's SDL readiness can also influence their preference for an online learning environment. To establish a theoretical model that explained factors impacting preferences for learning, Chu et al (2009) found that SDL readiness played a vital role in predicting learner's preferences for online learning environments.

Learning Online

The rapid diffusion of Information Technology (IT) and its deployment in learning processes has led to a massive improvement in the quality of learning using several learning techniques and modalities. This supports the establishment of a learning environment in which knowledge may be obtained at any time irrespective of geographical location. Alzahrani et al (2014); Sarraf (2014).

Self-directed learning in digital learning contexts is a growing phenomenon with implications for both the learning process and learner attributes Curran et al (2017); Fahlman (2013); Scott et al. (2014). Research on self-directed learning in a digital age is relatively undeveloped, however there is growing usage of these mobile technologies as a modality to facilitate self-directed, informal, and incidental learning Merriam et al (2013); Fahlman (2013).

Definition of M-Learning

The rapid advancement of mobile and wireless technologies has resulted in an increasing use of mobile devices in education which has impacted approaches to learning Use of IT in learning has expanded from programmed instruction, through computer-assisted instruction, to Internet-connected eLearning, and further to mobile learning. Mobile learning for educational use has become increasingly common, and thus has received increasing attention from researchers and educators Briz-Ponce et al. (2017); Kim et al. (2017); Nikou et al (2017); Crompton et al (2018); Hamidi et al (2018); Hamidi et al (2019).

M-learning is a critical component of education that enables students to learn anytime and anywhere. However, although mobile learning is a pertinent topic of discussion, a single definition has not been established. Hamidi et al (2018) argued that alongside the Internet and the development of technology, mobile learning offers an online learning environment through which students can learn and interact. Martin et al (2013) defined mobile learning as a method of learning that is enabled when learners have access to information anytime and anywhere through mobile technologies, allowing them to participate in authentic activities while learning. Yousafzai et al. (2016) defined mobile learning as a learning

process where learners are not restrained by fixed locations and could benefit from access to learning materials through mobile devices. Similar to other teaching methods, mobile learning has many advantages from the perspective of users, such as a substantial amount of learning resources, rapid access to information, two-way interaction, and removal of time- and location-related restrictions Briz-Ponce et al. (2017); Kim et al. (2017); Tang et al (2017); Crompton et al (2018); Hamidi et al (2018); Hamidi et al (2019). Mobile Learning theories according to Alsaadat (2011), mobile learning can be classified into three types: formal, informal, and self-directed.

A systematic review by Jia and Harji (2022) analysed studies on mobile-assisted task-based learning (M-TBL) from 2013 to 2022, focusing predominantly on language learning, particularly English as a foreign language (EFL). The review, which examined 16 relevant papers, revealed that most research is conducted in higher education contexts and highlights the increasing importance of informal learning environments. A notable gap identified in the literature is the absence of studies combining mobile learning with social media platforms for language acquisition. The review suggests that effective mobile technologies can enhance task-based learning across various educational settings. For future research, the authors recommend exploring areas such as cognitive load, learning anxiety, and mobile seamless learning, and suggest extending the review period and employing big data analysis to further deepen understanding of M-TBL.

A systematic review by Parsons et al. (2023) examined mobile learning frameworks addressing pedagogy from 2011 to 2022. The study analysed 18 peer-reviewed articles and found that mobile learning frameworks have become increasingly specialised, often focusing on specific pedagogical approaches such as social constructivism and experiential learning. Key characteristics of mobile learning identified in the review include portability, connectivity, and learner-centeredness. The authors call for further research to distinctly define mobile learning pedagogy.

Choi-Lundberg et al. (2023) conducted a systematic review of digital innovations in technology-enhanced learning designs, with a focus on mobile learning from 2014 to 2019. The review categorises various digital technologies and examines

their effectiveness in professional development settings. The findings suggest that mobile learning, when coupled with other educational technologies, holds significant potential for enhancing professional skills through flexible and accessible learning experiences.

Lu et al. (2022) conducted a systematic review to identify challenges and barriers that adult learners face in adopting mobile learning technologies. The study highlights issues such as time constraints, low ICT skills, and the need for flexible, life-oriented online courses. The paper offers recommendations to overcome these barriers, including the importance of preparatory learning and the design of structured online courses tailored to the needs of adult learners.

During the research process many studies were identified having conducted research on mobile learning in formal and informal educational settings. There were however limited resources that focussed on studies of self-directed adult learners that were formally employed in South Africa and were using mobile learning informally to improve their knowledge to be effective in their workplace. As mobile instruments are categorised as technology it seems apt to integrate elements of the UTAUT model in the theoretical framework, to identify what factors influence use of the MLA.

Unified Theory of Acceptance and Use of Technology (UTAUT)

The most frequently used technology acceptance model is UTAUT Venkatesh et al. (2003)

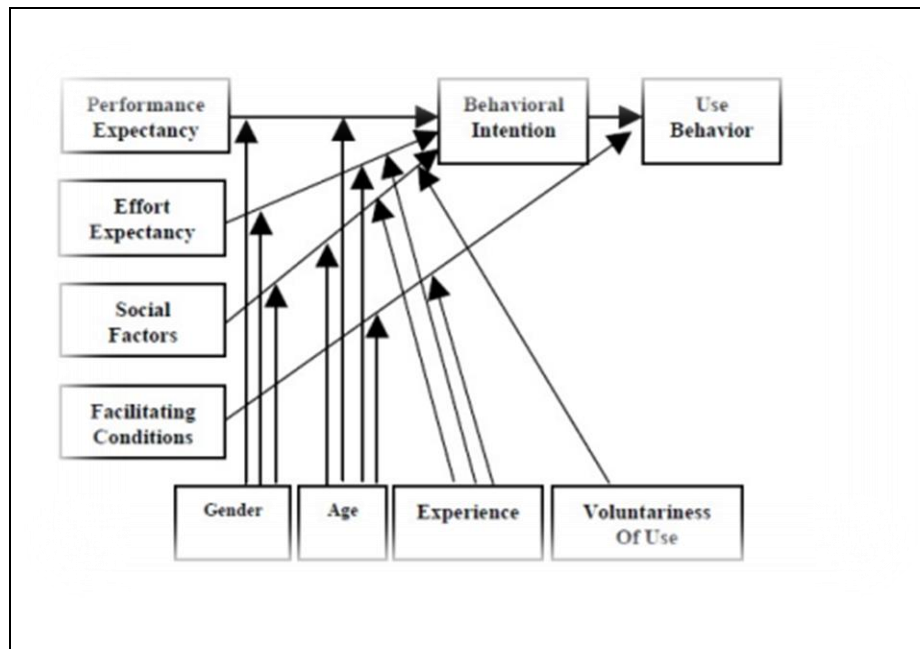


Figure 2: The UTAUT Model (Venkatesh et al. 2003)

Howard et al (2016) advocate that UTAUT combines eight prominent models describing technology acceptance: technology acceptance model (TAM), theory of planned behaviour (TPB), innovation diffusion theory (IDT), social cognitive theory (SCT), theory of reasoned action (TRA), motivation model (MM), model of PC utilisation (MPCU) and the combination of TAM and TPB. Therefore, UTAUT is known as the foremost theory for an evaluation in different angles in the field of technology acceptance, specifically with its citation in an impressive number of articles Shorfuzzaman et al (2016). This unified theory will lead the acceptance studies on employee's behavioural intention for MLA usage.

UTAUT depicts a flexible framework that investigates acceptance by extending it with various attributes to test the acceptance relevancy Karimi (2016) The study will adopt and integrate UTAUT with the three SDL constructs to achieve the research purpose, thereby providing an understanding of the elements that encourage usage and adoption, from a system perspective as well as from an SDL perspective. UTAUT's four attributes will be used to see the result in acceptance behaviour and use, these consists of performance expectancy, effort expectancy, social factor and facilitating conditions.

2.2 Research Question 1

Which conditions on the Mobile Learning Application influence usage and adoption.

To identify the functional elements within a mobile learning application that influence its usage and adoption, the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003) provides a valuable framework. This model's four components—performance expectancy, effort expectancy, social influence, and facilitating conditions—can be applied to assess which factors encourage or hinder the adoption of mobile learning applications. Insights from this analysis can guide potential updates or modifications to the application, thereby enhancing its usability and encouraging broader adoption.

Performance Expectancy refers to "the degree to which an individual believes that using mobile learning will help him or her attain gains in job performance" (Venkatesh et al., 2012). In the context of mobile learning, this suggests that users perceive the application as valuable because it enables them to accomplish learning activities effectively and flexibly (Masrek et al., 2019). This perception of usefulness is likely to drive higher adoption rates.

Effort Expectancy is defined as "the degree of ease associated with the use of the system" (Venkatesh et al., 2012). In mobile learning, this concept pertains to the user's expectation that the application will be easy to use, requiring minimal effort to navigate and utilise. The simpler and more intuitive the application, the more likely users are to adopt it. Thus, minimising the effort required strengthens the intention to use the technology (Sivathanu, 2019).

Social Influence is described as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003). This involves the internalisation of the subjective norms of reference groups and the specific interpersonal agreements that individuals have within social contexts (Botero et al., 2018). In mobile learning, the perception that peers or superiors endorse the application can significantly impact its adoption.

Facilitating Conditions are defined as "the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2012). The acceptance and effective use of new technology are heavily dependent on the supporting conditions or environment. In mobile learning, these facilitating conditions may include access to resources, sufficient knowledge, reliable internet speed, guidance, and training (Sivathanu, 2019). The presence of strong facilitating conditions can greatly enhance the likelihood of adoption.

Attributes	Definitions	Reference
Performance Expectancy (PE)	The extent to which learners believe that using the mobile learning application will help them improve	Venkatesh et al (2003) Venkatesh et al (2012)
Effort expectancy (EE)	The degree of ease associated with the use of the mobile learning application	
Social influence (SI)	The degree to which learners perceive that other important people believe that learners should use the mobile learning application	
Facilitating condition (FC)	The extent to which learners believe that the organisation and technical infrastructure exist to support the use of the mobile learning application	

Table 1: UTAUT attributes

The key relationships in The UTAUT model are moderated by four moderators: gender, age, experiences, and voluntariness. This study is an internal case study, information related to age and gender will be available and requesting that information in the survey will not be necessary. As the MLA is adopted and in use in the environment the experiences and voluntariness moderators will not be essential, however elements of the SDL Garrison (1997) model will be incorporated which will determine motivation, self-management, and self-monitoring.

2.3 Research Question 2

To what extent does the employees SDL behaviour impact the usage of the Mobile Learning Application?

Self-directed learning (SDL) is defined by Knowles (1975) as "a process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes." In the context of mobile learning, this implies that the process should empower learners to become independent, mature, and authentic in their learning experiences (Savin-Baden & Major, 2004). Mobile learning inherently supports SDL by allowing learners to personalise and tailor their learning experiences to meet their individual needs (Park, 2010).

In this process, learners play an active and central role, taking the initiative in their learning activities, often without external guidance. This autonomy underscores the importance of enabling learners to exert greater control over their learning processes. As a result, mobile learning applications place learners at the centre of the learning experience, giving them the opportunity to actively engage from goal setting to assessment (Makoe, 2010). When learners are actively engaged, they are more likely to develop effective learning strategies, leading to enhanced learning outcomes and increased motivation. Unlike other digital media, mobile devices offer constant accessibility and give users significant control over how and when they engage with their learning content.

Using the SDL framework as presented by Garrison (1997), examining self-directed learning behaviors can provide insights into how adult learners plan, execute, and evaluate their learning when using mobile learning applications. The goal is to identify the extent to which learners take initiative in determining their learning requirements, implementing learning strategies, and evaluating their outcomes.

SDL positions the learner as the primary decision-maker, allowing for control over the learning process. Rogers (1969) emphasises that self-directed learning is

self-initiated, where even external stimuli lead to internal discovery and comprehension. This autonomy may positively influence key factors in the UTAUT model, such as performance expectancy, effort expectancy, social influence, and facilitating conditions. Mobile learning serves as a tool that supports SDL, helping learners achieve their performance goals (Knowles, 1975; Karimi, 2016; Viberg & Grönlund, 2018).

Attributes	Definitions	Reference
Motivation (MOT)	The extent to which learners can initiate and maintain effort to learn	Garrison (1997)
Self-management (SMAN)	Activities that enable the enactment of learning goals	
Self-monitoring (SMON)	Learner takes responsibility for own learning	

Table 2: Principles of Self-directed Learning

2.3.1 Hypotheses (UTAUT)

H1: Performance expectancy has a positive influence on behavioural intention and use behaviour.

Previous research has consistently demonstrated a strong relationship between performance expectancy and behavioural intention (Diep et al., 2016; Venkatesh et al., 2003; Shorfuzzaman et al., 2016; Lawrence, 2016). In the context of mobile learning, performance expectancy is likely to exert a positive influence due to the immediate access and convenience it offers (Milosevic, 2015). However, there is a notable gap in research regarding part-time learners, as most studies have focused on online member engagement in higher education settings (Howard et al., 2017).

H2: Effort expectancy has a positive influence on behavioural intention and use behaviour.

Effort expectancy has been validated as a significant predictor of behavioural intention in numerous studies (So, 2016; Howard et al., 2017; Chaka et al., 2017). However, there is limited research examining use behavior within work environments, particularly concerning adults engaged in informal learning..

H3: Social influence has a positive influence on behavioural intention and use behaviour.

Social influence, shaped by effective communication and the use of mobile learning, significantly impacts the intention to use mobile learning (Venkatesh et al., 2003). Social factors, such as organisational and workplace norms, play a critical role in influencing behavioural intention. These findings underscore the importance of social influence in fostering a positive behavioural intent towards mobile learning.

H4: Facilitating condition has a positive influence on behavioural intention and use behaviour.

Facilitating conditions have been shown to positively influence usage intention in prior studies (Hoque et al., 2018). However, this finding is contested by Shorfuzzaman et al. (2016), who reported that facilitating conditions do not significantly affect intention. Given these contradictory findings, further research is warranted to explore the impact of facilitating conditions on behavioural intention, particularly among employed learners participating in mobile learning activities.

H5: Behavioural intention has a positive influence on usage behaviour.

Behavioural intention has been consistently shown to predict actual usage of mobile learning technologies (Dwivedi et al., 2019; Howard et al., 2017). Most studies have reported a positive relationship between behavioural intention and the use of technology (Venkatesh et al., 2003; Radovan & Makovec, 2017; Hashim et al., 2015). In the mobile learning context, behavior is a crucial factor in the successful implementation of these technologies (Dwivedi et al., 2019), as intention often precedes the decision to adopt and use new technologies.

2.3.2 Hypotheses (SDL)

H6: Motivation has a positive influence on performance expectancy.

Motivation, encompassing both intrinsic and extrinsic factors, plays a critical role in initiating and sustaining efforts towards learning and achieving cognitive goals (Garrison, 1997). The availability of various learning resources influences both the method and content of learning, highlighting the importance of self-directed learning in mobile learning environments (Viberg et al., 2018). Although adults have the autonomy to manage their own learning, some level of external support remains beneficial to enhance job performance (Siriwongs, 2015).

H7: Motivation has a positive influence on effort expectancy.

According to Garrison's (1997) model, learner motivation significantly influences self-monitoring and self-management, which are interrelated cognitive processes. Although their relationship can be complex, self-directed learning in the context of motivation enhances effort expectancy, particularly when learners comfortably use mobile learning technologies for collaborative purposes (Hagen, 2015). Motivation also serves as a resource for identifying and planning learning needs, as well as facilitating peer support.

H8: Self-monitoring has a positive influence on performance expectancy.

Self-monitoring involves cognitive and metacognitive processes, including the ability to monitor and regulate one's learning strategies (Garrison, 1997). While internal self-monitoring is essential, it is often insufficient for significant cognitive improvement. Therefore, external feedback is crucial for supporting learners' self-monitoring efforts (Garrison, 1997). The integration of mobile learning technologies can further support individuals in aligning their learning activities with their developmental goals. However, there is limited research on how working adults use mobile learning to enhance their knowledge and skills, particularly as they transition from a self-concept of learner to a more self-directed learning style (Hegyesi et al., 2014)..

H9: Self-management has a positive influence on behavioural intention.

Self-management is closely related to task control and involves the regulation of external activities that influence the learning process, such as goal setting and resource management (Garrison, 1997). For adult learners, self-management supports behavioural intention and use behavior in self-directed learning activities. Mobile learning technologies provide a flexible platform that enables learners to engage with content at their own pace, thereby enhancing their ability to manage their learning processes effectively (Karimi, 2016; Viberg et al., 2018).

2.4 ANALYTICAL FRAMEWORK

The identification and isolation of attributes within a mobile learning application that encourage usage and adoption can be effectively examined through the four attributes of the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003). As illustrated in Figure 2, this model provides a comprehensive framework to analyse how different factors contribute to the adoption and acceptance of mobile learning technologies. Survey questions will be designed to contextualise each attribute from the perspective of employees currently utilising the mobile learning application. This approach will enable the identification of specific elements within each attribute that positively influence user behavior, thereby offering valuable insights into the factors driving adoption and continued use.

Self-Directed Learning (SDL) is recognised as a critical component in online educational settings. Research indicates that successful online learners often establish their own learning goals and progress at their own pace (Lin et al., 2001; Owston, 1997). SDL skills are closely related to cognitive presence in online courses (Garrison, 2003) and play a pivotal role in helping learners navigate the learning process in these environments (Hartley et al., 2001). Additionally, several studies have identified a range of psychosocial and cognitive factors—such as metacognition, self-regulation, and motivation—that significantly influence e-learning capabilities (Kim et al., 2017; Terras & Ramsay, 2015). Accordingly, the survey questions related to SDL will be sub-categorised into motivation, self-management, and self-monitoring, based on Garrison's (1997) framework.

2.4.1 Theoretical Framework

Over the years, numerous researchers have developed and tested various models to predict the acceptance of technology. Among these, the UTAUT model (Venkatesh et al., 2003) has emerged as the most widely used framework for understanding technology acceptance. The model offers a robust approach to evaluating technology adoption from multiple perspectives and has been extensively cited in scholarly research (Howard et al., 2016; Shorfuzzaman et al., 2016). As such, UTAUT is considered a leading theoretical model for evaluating technology acceptance in diverse contexts.

Self-directed learning (SDL) is a foundational theoretical construct in adult education. The focus of SDL has traditionally been on the external control and management of learning tasks. Garrison (1997) proposed a model that integrates three key dimensions: self-management (contextual control), self-monitoring (cognitive responsibility), and motivation (entering and task orientation). This model provides a meaningful and comprehensive approach to understanding self-directed learning in adult education.

2.4.2 Conceptual Framework

The UTAUT model comprises four essential determinants (Venkatesh et al., 2003), each of which will be contextualised as follows:

- **Performance Expectancy (PE):** This component assesses the extent to which employees believe that using the mobile learning application (MLA) will enhance their work performance. Survey questions will be framed in the context of existing training available on the MLA. The response options will include questions on the actual application of learned knowledge, confidence in using this knowledge when needed, and additional questions related to content quality and design to determine their impact on performance expectancy.
- **Effort Expectancy (EE):** This component evaluates the degree of ease associated with using the MLA. The survey will identify which functionalities within the application either facilitate or hinder ease of use.

Questions will address issues related to accessing content, the setup of content, and the clarity of instructions provided within the application.

- **Social Influence (SI):** This component examines the degree to which employees perceive that their peers are using the MLA. Given that the learning provided through the MLA is non-compulsory, it is important to explore how social influence affects its usage. Survey questions will focus on the extent to which employees discuss and recommend the MLA to their peers.
- **Facilitating Conditions (FC):** This component assesses the extent to which employees believe that the organisation and its technical infrastructure support the use of the MLA. A key aspect of this research will be to evaluate the role of zero-rated data access in facilitating learning within the organisation.

Additionally, the SDL framework as proposed by Garrison (1997) will be integrated into the conceptual framework. Survey questions related to SDL will explore how adult learners plan, execute, and evaluate their learning when using the MLA. The objective is to understand how learners take initiative in determining their learning requirements, the strategies they employ to achieve their learning goals, and how they assess the outcomes of their learning efforts.

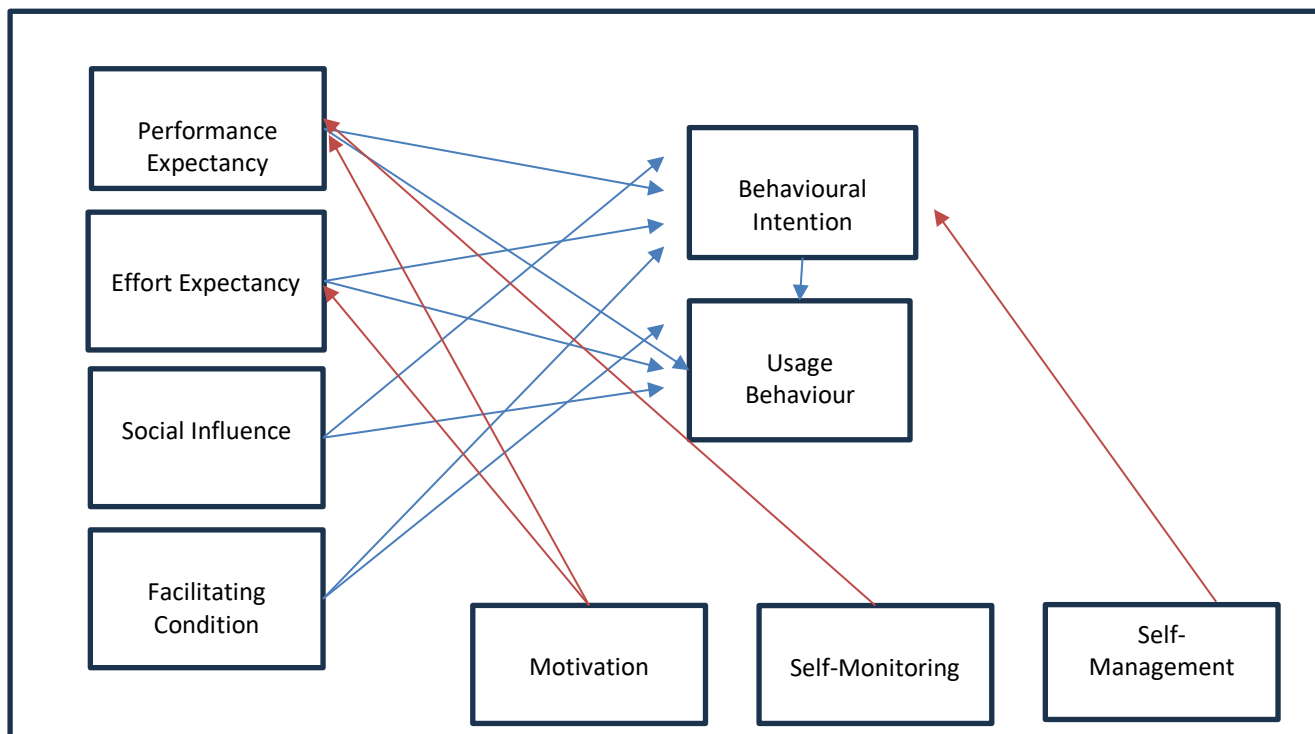


Figure 3: The UTAUT Model (Venkatesh et al. 2003) & The SDL Model (Garrison 1997)

Figure 3 is the conceptual framework that will define the questions in relation to the four UTAUT components as described in research question 1, i.e., **Research Question 1: Which conditions on the Mobile Learning Application influence usage and adoption**, and the three constructs of SDL as described in question 2, i.e. **Research Question 2: To what extent does the employees SDL behaviour impact the usage of the Mobile Learning Application?**

These elements will be the underlying criteria of the survey questions which aim to answer both research questions.

2.5 Conclusion of Literature Review

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides a comprehensive framework for understanding technology acceptance and is particularly useful for predicting learners' preferences in online learning environments (Howard et al., 2016). Given its robustness, UTAUT appears to be the most suitable model for achieving the objectives of this study.

Similarly, Garrison's (1997) model, which integrates student motivation and its influence on self-monitoring and self-management, is well-suited to address the second research question. This model is particularly relevant for identifying the dominant Self-Directed Learning (SDL) behaviors exhibited by learners before, during, and after their engagement with mobile learning applications.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research Approach

This study will employ a quantitative research methodology, which is well-suited for explaining phenomena by collecting and analysing numerical data (Creswell, 1994). The quantitative approach will allow the study to quantify opinions, attitudes, and behaviours related to the adoption and use of a mobile learning application (MLA) within an organisation. As this research is designed as a case study, the data collection process will be via an online survey specifically designed from the perspective of employees who are current users of the MLA. (Appendix 1)

3.2 Research Design

The quantitative survey will be administered via the MLA, with survey questions aligned with the conceptual framework of the study. The survey will exclude demographic questions such as gender and age, as this information is already available through existing records (Venkatesh et al., 2003). Additionally, questions related to experience and voluntariness of use will be omitted, given that the application is already in use by all participants. The survey will be easily accessible through the MLA, and participation will be entirely voluntary.

3.3 Data Collection Methods

Data will be collected through an online survey (Appendix 1) available to all employees who access the MLA. Each employee will be permitted to complete the survey only once, ensuring the reliability of the data. Participants will be informed that their responses are confidential and that the study has undergone ethical review, ensuring that no individual employee information will be disclosed. The final report will present data in an aggregated form, thereby protecting the

privacy of respondents. The survey responses will be anonymised, and no personal identifiers will be used in the analysis or reporting of the findings.

3.4 Population and Sample

The population for this study comprises approximately 5,000 employees who currently utilise the MLA for product training. These employees hold various roles that involve direct interaction with customers, such as cashiers, store managers, stock replenishers, customer service representatives, and pharmacists. They are full-time employees based in various retail locations across South Africa, with some employees stationed in administrative roles at the head office. The study aims to achieve a sample size of at least 50% of the current user base, anticipating that around 2,500 employees will complete the survey.

3.4.1 Population

The population includes a diverse range of roles within the organisation, including cashiers, store managers, stock replenishers, customer service personnel, and pharmacists, all of whom are full-time employees. Additionally, the organisation employs support staff in roles such as human resources, IT, marketing, distribution, and finance. These employees are also full-time and receive a monthly salary, although they may not require the same level of product knowledge as those in customer-facing roles.

3.5 Research Instrument

The research instrument consists of a set of questions designed to identify various self-directed learning (SDL) attributes, either utilised or not, when engaging with the MLA. The questions are grounded in the components of the UTAUT model, which includes Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions (Venkatesh et al., 2003). The survey will be delivered online via the existing MLA platform.

3.6 Data Analysis Strategies and Interpretation

The primary goal of this quantitative research is to generalise the findings from the survey responses. The survey is structured around the constructs of the UTAUT model:

- **Performance Expectancy:** This construct will be measured by three questions focusing on the use of mobile learning in the workplace, specifically in terms of skill acquisition, knowledge, and performance.
- **Effort Expectancy:** Six questions will assess the ease of use, content quality, volume, and general application functionality.
- **Social Influence:** Three questions will explore peer influence, leadership behaviour concerning the MLA, and recognition of learning achievements.
- **Facilitating Conditions:** Five questions will evaluate organisational support, the removal of cost barriers, and the timing of learning activities.
- **Behavioural Intention and Use Behaviour:** These constructs will be combined into one, with three questions examining continued use, course completions, and preferences for mobile learning.

The SDL components will include three questions each for Motivation, Self-Management, and Self-Monitoring, based on Garrison's (1997) model. In total, the survey will consist of 29 questions, providing a comprehensive overview of the factors influencing the use and adoption of the MLA.

3.7 Quality Assurance

3.7.1 *Internal Validity or Credibility*

The internal validity of the study is ensured through the use of a secure online format accessible only through the MLA, which is exclusive to employees of the organisation. This controlled access enhances the credibility and reliability of the data collected.

3.8 Ethical Considerations

Employees will be informed about the following ethical considerations:

- The purpose of the survey.
- The voluntary nature of participation.
- The intended use of the data collected.
- The importance of the data for the organisation.
- The confidentiality of their responses.
- The assurance that personal details will not be shared.
- The condition that the survey can only be completed once.

3.9 Proposed Schedule and Timelines

The survey is scheduled to be deployed on September 30, 2023, and will remain open for two weeks. Data collection and analysis will begin in the third week of October, with data consolidation expected to be completed by the end of October. The survey results and findings will be collated and analysed by the end of October 2023.

The research methodology that will be used in this study will be quantitative, according to Creswell (1994) quantitative research as a type of research that is explaining phenomena by collecting numerical data that is analysed.

As this research study will be in the form of a case, the data collection process will include historical data that has been collected over a 3-year period. The data collected in the online survey will be composed specifically from the viewpoint of the MLA and will be collated accordingly.

As quantitative research is useful to quantify opinions, attitudes, and behaviours it will assist in establishing how large groups of employees feel about the mobile learning application.

CHAPTER 4. Final Report and Analysis

4.1 Research Findings

The research methodology employed in this study was quantitative. According to Creswell (1994), quantitative research involves explaining phenomena by collecting and analysing numerical data. The data for this study was collected through an online survey designed specifically to capture the perspectives of employees using the Mobile Learning Application (MLA). This approach was deemed appropriate for quantifying opinions, attitudes, and behaviours, enabling the study to assess how a large group of employees within a major retail organisation perceives and interacts with the MLA.

4.2 Research Approach

The quantitative survey was distributed via the MLA to **9,357** active users within the organisation. The survey questions were closely aligned with the conceptual framework of the study and did not include variables related to gender, age, or voluntariness of use, as these factors were either irrelevant or already accounted for within the existing application usage context (Venkatesh et al., 2003). The survey was accessible to all active users, and participation was entirely voluntary.

4.3 Research Design

The survey was conducted online over a two-week period. The questions were structured to quantify various constructs within the conceptual framework. Respondents were limited to one submission each to ensure data integrity. No personal identifiers such as name, gender, or age were collected. The survey focused on assessing the usage of the existing MLA within the organisation, and the findings were supplemented with primary data related to geographic location, and management, and non-management roles.

4.4 Data Collection Methods

Data collection was conducted through an online survey available to all employees who accessed the MLA. Each participant could complete the survey only once, and confidentiality was assured. The employer was informed that the research had passed the university's ethics review, ensuring that no individual employee information would be disclosed. The final report aggregates all data to protect respondent privacy. A total of 774 employees completed the survey, resulting in a response rate of 8.27% among active users.

4.5 Population and Sample

The research aimed to identify factors that influence the adoption and usage of the MLA among employees. The survey was accessible to approximately 9,357 employees who use the application primarily for product training. The employee base consists of various roles, including cashiers, store managers, stock replenishers, customer service representatives, and pharmacists—all full-time employees. Additionally, there is a group of support staff based in offices, responsible for administrative functions, who did not participate in the survey. The target was for at least 5% of active users to complete the survey, with the final respondent count being **774**, including 179 managers and 595 non-management employees.

4.6 Population

The employee population surveyed includes a mix of roles directly involved in consumer-facing tasks, such as cashiers, store managers, stock replenishers, customer service personnel, and pharmacists. These individuals are full-time employees receiving monthly salaries. The organisation also employs support staff in roles such as human resources, IT, marketing, distribution, and finance, who do not typically require expanded product knowledge through the MLA.

4.7 Research Instrument

The research instrument consisted of 29 questions designed to assess various self-directed learning attributes that employees either utilise or do not utilise when engaging with the MLA. These questions were grounded in the four components of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). The survey was administered online through the existing MLA platform.

4.8 Data Analysis Strategies and Interpretation

The objective of this quantitative research was to identify and generalise patterns in the responses from retail employees. The survey was structured around UTAUT constructs, including Performance Expectancy, Effort Expectancy, Social Factors, and Facilitating Conditions. Each construct was assessed through multiple questions designed to capture the employees' experiences and perceptions of the MLA. Additionally, Behavioral Intention and Use Behavior were analysed as a combined construct to understand the link between continued usage, course completion, and preferences for mobile learning.

The self-directed learning component was expanded using Garrison's (1997) model, which includes constructs such as Motivation, Self-Management, and Self-Monitoring. The survey data provided insights into current usage patterns, the reasons behind employees' adoption of the MLA, and the potential of this modality as a preferred learning method within the organisation.

4.9 Quality Assurance

4.9.1 *Internal Validity or Credibility*

The survey was conducted online within the MLA, which is only accessible to employees of the organisation. This restricted access ensured that the data collected is credible and reliable, as only legitimate users of the MLA participated in the study.

4.9.2 *Ethical Considerations*

Employees who participated in the survey were informed about:

- The purpose of the survey,
- The voluntary nature of their participation,
- How their data would be used,
- The importance of the data within the organisational context,
- The confidentiality of their responses,
- The assurance that personal details would not be shared,
- The restriction that the survey could only be completed once per participant.

4.10 Schedule and Timelines

The survey was live for a two-week period in October 2023. Data collation and analysis commenced in November 2023, with the final data consolidation and analysis completed by January 2024.

4.11 Likert Scores

A total of 774 employees completed the survey which comprised 29 questions using a Likert scale:

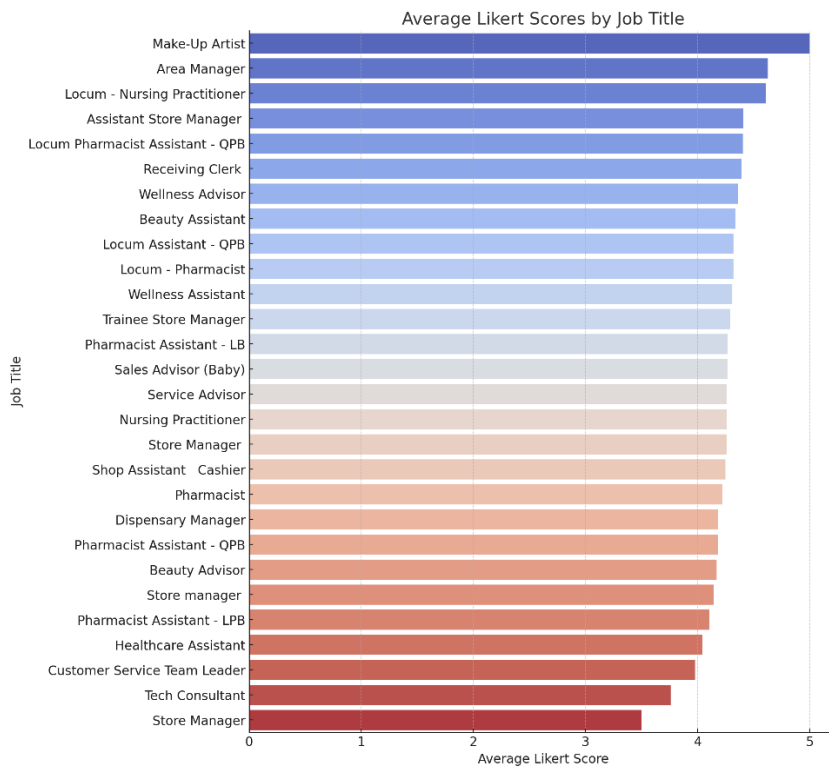


Figure 4: Total number of responses based on job titles:

4.11.1 Observations

Variation Across Job Titles: The analysis reveals variation in the average Likert scores across different job titles, indicating that perceptions and attitudes towards mobile learning vary depending on one's role within the organisation. This variation highlights the importance of considering job-specific needs and preferences when designing and implementing mobile learning initiatives.

Generally Positive Perceptions: Despite the observed variations, the overall trend suggests generally positive perceptions of mobile learning across most job titles. High average scores across a variety of roles indicate broad acceptance and recognition of the value of mobile learning in professional development.

4.11.2 Implications

Tailored Mobile Learning Strategies: The variation in scores by job title underscores the need for mobile learning strategies that are customised to the unique needs, challenges, and preferences of different roles within the organisation. Developing tailored content, learning pathways, and support mechanisms can enhance the relevance and effectiveness of mobile learning for diverse groups.

Focus on High-Value Areas: Job titles with particularly high average Likert scores may represent groups that are already highly engaged with, or perceive significant value in, mobile learning. These groups could be leveraged as champions or pilot users for new mobile learning initiatives, providing valuable feedback and encouraging broader adoption across the organisation.

Addressing Lower-Score Areas: Job titles with relatively lower average scores might benefit from targeted interventions aimed at addressing potential barriers or misconceptions about mobile learning. Understanding the specific concerns or needs of these groups can inform efforts to improve their mobile learning experiences and outcomes.

This analysis provides a nuanced understanding of mobile learning perceptions across the organisation. It informs strategies to maximise engagement, satisfaction, and learning outcomes for employees in different roles, ultimately supporting the broader objectives of organisational learning and development.

4.12 Descriptive Statistics

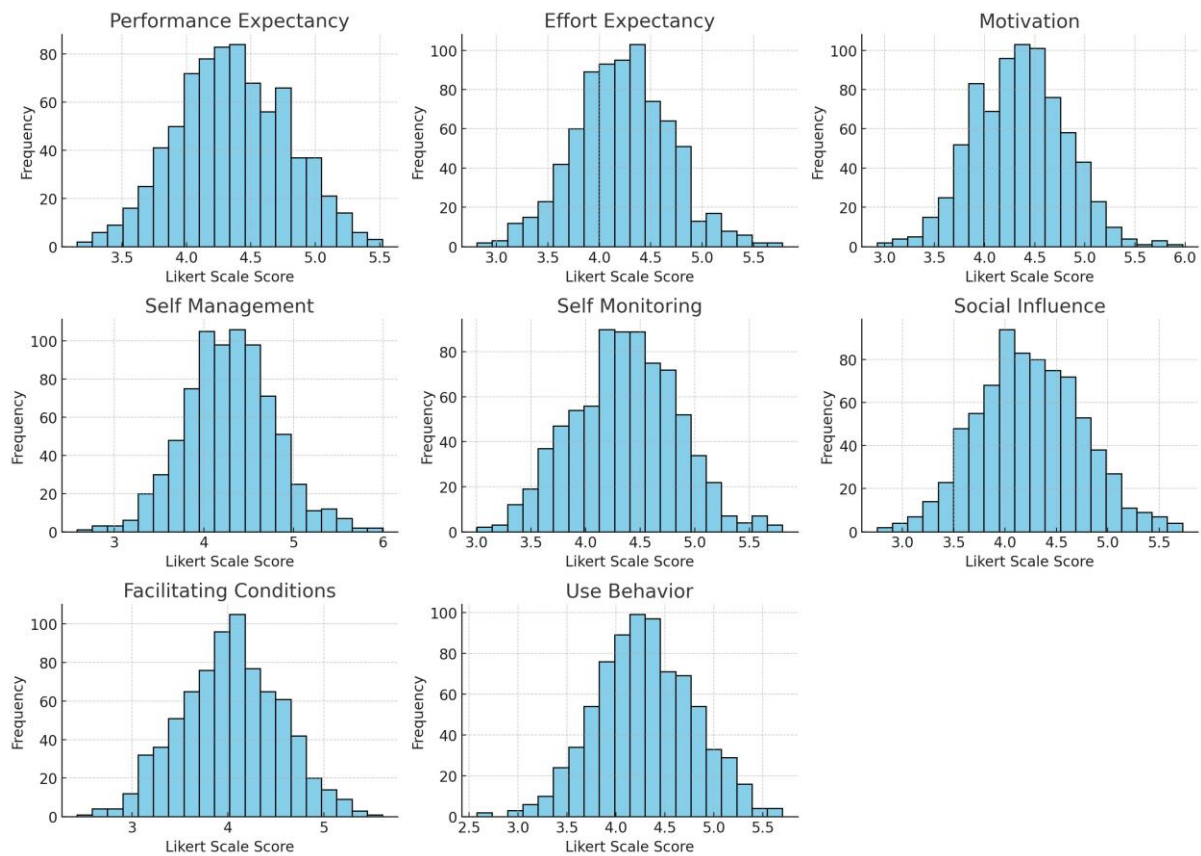


Figure 5: Visual Summary of descriptive statistics

The histogram plots for each variable provide a clear visualisation of the distribution of responses across the Likert scale. The distributions are mostly centered around higher scores, reinforcing the positive overall perceptions.

Variable	Mean	Standard Deviation	Minimum	25th Percentile	50th Percentile (Median)	75th Percentile	Maximum
Performance Expectancy	4.36	0.43	3.15	4.05	4.34	4.66	5.52
Effort Expectancy	4.22	0.46	2.81	3.91	4.23	4.54	5.78
Motivation	4.35	0.46	2.93	4.01	4.36	4.64	5.97
Self-Management	4.28	0.50	2.58	3.97	4.28	4.60	5.99
Self-Monitoring	4.36	0.47	3.01	4.05	4.38	4.69	5.80
Social Influence	4.24	0.51	2.75	3.88	4.22	4.58	5.73
Facilitating Conditions	4.03	0.52	2.43	3.68	4.03	4.39	5.61
Use Behavior	4.30	0.50	2.58	3.96	4.28	4.64	5.70

Table 3: Descriptive statistics

4.12.1 Interpretation of Descriptive Statistics

- **Performance Expectancy and Motivation** have relatively high mean scores, indicating strong positive perceptions among the respondents regarding the benefits of mobile learning for job performance and their intrinsic motivation to use the application.

- **Effort Expectancy** also has a high mean, suggesting that the majority of respondents find the mobile learning application easy to use, which is crucial for adoption and continued use.
- **Facilitating Conditions** scored slightly lower than other variables, though still positive, which could indicate that while organisational support is generally adequate, there may be room for improvement in providing resources or infrastructure to support mobile learning.
- **Social Influence** and **Use Behavior** also reflect positive perceptions, with mean scores indicating that peer and managerial influence plays a role in encouraging the use of the mobile learning application.

4.13 Correlation Analysis

Variable	Performance Expectancy	Effort Expectancy	Motivation	Self-Management	Self-Monitoring	Social Influence	Facilitating Conditions	Use Behavior
Performance Expectancy	1.00	0.01	-0.01	0.04	-0.01	0.01	-0.01	0.05
Effort Expectancy	0.01	1.00	-0.09	0.04	-0.03	-0.00	-0.07	0.00
Motivation	-0.01	-0.09	1.00	0.02	-0.03	0.01	0.07	0.06
Self-Management	0.04	0.04	0.02	1.00	-0.03	0.05	0.08	-0.01
Self-Monitoring	-0.01	-0.03	-0.03	-0.03	1.00	0.00	-0.04	0.06
Social Influence	0.01	-0.00	0.01	0.05	0.00	1.00	-0.03	-0.03
Facilitating Conditions	-0.01	-0.07	0.07	0.08	-0.04	-0.03	1.00	0.01
Use Behavior	0.05	0.00	0.06	-0.01	0.06	-0.03	0.01	1.00

Table 4: Interpretation of Correlation Analysis

Performance Expectancy and Use Behavior: A positive but weak correlation (0.05) suggests that as employees perceive greater benefits in terms of performance, they are slightly more likely to engage with the mobile learning application. This aligns with the hypothesis that Performance Expectancy influences Behavioural Intention and Use Behavior.

Effort Expectancy and Use Behavior: The near-zero correlation (0.00) between Effort Expectancy and Use Behavior suggests that ease of use does not significantly influence whether employees use the MLA, which could be an unexpected finding given the literature that usually supports a stronger relationship. This might indicate that other factors are more critical in this specific context.

Motivation and Use Behavior: A weak positive correlation (0.06) indicates that employees with higher motivation levels are slightly more likely to use the MLA. This supports the idea that intrinsic motivation can influence the adoption of learning technologies.

Facilitating Conditions and Use Behavior: The near-zero correlation (0.01) indicates that the presence of support and resources is not strongly correlated with actual usage of the MLA. This may suggest that while facilitating conditions are necessary, they are not sufficient on their own to drive usage behavior.

4.13.1 Observations and Implications

The generally weak correlations suggest that while there are relationships between these variables, they are not particularly strong. This could indicate that multiple factors need to work together to significantly influence Use Behavior, or it could suggest the presence of other, unmeasured variables that have a stronger impact on usage.

Performance Expectancy and Motivation show the most substantial relationships with Use Behavior, albeit still weak. This suggests that while these factors are important, the overall model might need refinement to capture other relevant influences on mobile learning adoption.

The lack of strong correlation with Facilitating Conditions could imply that organisational support alone may not be enough to ensure engagement with mobile learning. Factors such as content quality, personal relevance, or external pressures could be more impactful.

4.14 Comparative Analysis

The table below presents the mean scores for each key variable across different roles (Manager, Non-Manager, and Support Staff):

Variable	Manager	Non-Manager	Support Staff
Performance Expectancy	4.34	4.37	4.30
Effort Expectancy	4.21	4.24	4.17
Motivation	4.32	4.35	4.37
Self-Management	4.29	4.29	4.25
Self-Monitoring	4.34	4.38	4.34
Social Influence	4.16	4.26	4.23
Facilitating Conditions	4.05	4.02	4.06
Use Behavior	4.28	4.31	4.28

Table 5: Mean score by role

4.14.1 Key Observations

Performance Expectancy:

Non-Managers reported slightly higher mean scores (4.37) compared to Managers (4.34) and Support Staff (4.30). This suggests that Non-Managers perceive the benefits of mobile learning for job performance slightly more positively than other roles.

Effort Expectancy:

Non-Managers also reported the highest Effort Expectancy (4.24), indicating they find the MLA easier to use compared to Managers (4.21) and Support Staff (4.17).

Motivation:

Support Staff reported the highest mean Motivation score (4.37), suggesting they might be more intrinsically motivated to engage with mobile learning, slightly higher than Non-Managers (4.35) and Managers (4.32).

Social Influence:

Social Influence scores are slightly higher among Non-Managers (4.26), indicating that peer and managerial influence may be more significant in this group compared to Managers (4.16).

Facilitating Conditions:

Support Staff reported slightly higher Facilitating Conditions (4.06), which could indicate better perceived organisational support, compared to Non-Managers (4.02) and Managers (4.05).

Use Behavior:

Non-Managers show a marginally higher mean score for Use Behavior (4.31), suggesting they are more likely to engage with the MLA compared to Managers and Support Staff (both at 4.28).

4.14.2 Implications

Targeted Interventions: The slight variations in scores suggest that different roles perceive mobile learning slightly differently. For instance, Non-Managers appear to be more positive about the MLA, which may warrant targeted interventions to maintain or even enhance this engagement.

Support and Resources: The differences in Facilitating Conditions suggest that organisational support might be perceived differently across roles, indicating a need for tailored support mechanisms.

Social Influence: The slightly lower scores among Managers for Social Influence could imply that managerial roles might not feel as much peer pressure or support for using the MLA, which could be an area to address through managerial engagement strategies.

4.15 Regression Analysis

The regression analysis sought to determine how the key variables (Performance Expectancy, Effort Expectancy, Motivation, Self-Management, Self-Monitoring, Social Influence, and Facilitating Conditions) predict Use Behavior. Here is a summary of the findings:

Key Statistics from the Regression Model:

R-squared: 0.011

Adjusted R-squared: 0.002

F-statistic: 1.202 (p-value = 0.299)

Coefficients and Significance:

Performance Expectancy: Coefficient = 0.065, p = 0.123

Effort Expectancy: Coefficient = 0.011, p = 0.781

Motivation: Coefficient = 0.066, p = 0.098

Self-Management: Coefficient = -0.007, p = 0.841

Self-Monitoring: Coefficient = 0.066, p = 0.084

Social Influence: Coefficient = -0.026, p = 0.470

Facilitating Conditions: Coefficient = 0.006, p = 0.860

Table 6: Regression statistics

4.15.1 Interpretation

Model Fit: The R-squared value of 0.011 suggests that only about 1.1% of the variance in Use Behavior is explained by the model. This indicates a weak

explanatory power, meaning that other factors not included in the model may play a significant role in predicting Use Behavior.

Significant Predictors:

None of the variables in this model were statistically significant at the conventional p-value threshold of 0.05.

Performance Expectancy and Motivation had the highest coefficients (0.065 and 0.066 respectively), suggesting a positive relationship with Use Behavior, though these were not statistically significant.

Self-Monitoring also showed a positive coefficient (0.066), approaching significance with a p-value of 0.084.

Non-Significant Predictors:

Effort Expectancy, Self-Management, Social Influence, and Facilitating Conditions did not show significant relationships with Use Behavior, as indicated by their high p-values.

4.15.2 Implications

The low R-squared value and lack of statistically significant predictors suggest that the model does not strongly predict Use Behavior based on the included variables. This may indicate that:

Other variables not captured in the study (e.g., personal relevance of content, organisational culture, external pressures) might have a more significant impact on Use Behavior.

Context-specific factors such as the retail environment or individual differences in learning preferences could play a crucial role in influencing mobile learning adoption.

The slightly higher coefficients for Performance Expectancy, Motivation, and Self-Monitoring indicate that while not statistically significant, these factors may still

have some influence on Use Behavior. Further research could explore these relationships in more depth.

4.16 PCA as a Factor Analysis

The Principal Component Analysis (PCA) results indicate the following:

Component 1 explains about **15.63%** of the total variance.

Component 2 explains about **14.59%** of the total variance.

Component 3 explains about **13.85%** of the total variance.

Component 4 explains about **13.02%** of the total variance.

Component 5 explains about **11.83%** of the total variance.

Component 6 explains about **11.30%** of the total variance.

Component 7 explains about **10.13%** of the total variance.

Component 8 explains about **9.63%** of the total variance.

Table 7: PCA Results: Explained Variance

The **cumulative variance** together of all eight components is **100%**.

4.16.1 Interpretation

The first four components together explain approximately 57.10% of the total variance. This suggests that the majority of the variance in the data can be captured by these components.

Key Insights from Component Loadings:

Component 1:

Facilitating Conditions (-0.833) and Self-Management (-0.400) have strong negative loadings on Component 1. This suggests that Component 1 is capturing

a dimension related to how support conditions and the ability to manage one's learning impact the overall variance.

Self-Monitoring (-0.865) also strongly loads onto this component, indicating a close relationship between facilitating conditions, self-management, and self-monitoring.

Component 2:

Social Influence (0.758) has the strongest positive loading on Component 2, suggesting that this component represents social factors and peer influence.

Self-Management (0.443) also positively loads on this component, implying that self-management behaviors may be somewhat influenced by social factors.

Component 3:

Use Behavior (-0.807) has a strong negative loading on Component 3, suggesting this component represents use behavior.

Social Influence (-0.400) also negatively loads on this component, which might indicate that when use behavior decreases, social factors also tend to have less influence.

Component 4:

Effort Expectancy (0.527) and Self-Management (0.614) have high positive loadings, suggesting that this component represents ease of use and self-management. This could be interpreted as a component that captures the interplay between how easy the MLA is to use and how individuals manage their learning.

Component 5:

Motivation (0.311) and Self-Monitoring (-0.866) show strong but opposing loadings on this component. This might indicate that motivation and self-monitoring work in different directions in this context.

Component 6:

Effort Expectancy (0.570) and Facilitating Conditions (0.469) load positively on Component 6, highlighting another dimension related to ease of use and organisational support.

Component 7:

Motivation (0.636) strongly loads on this component, suggesting that it represents a motivational factor.

Effort Expectancy (0.535) also loads positively, indicating that motivation and ease of use may be linked in this component.

Component 8:

Performance Expectancy (0.836) loads heavily on this component, suggesting it represents perceptions of the usefulness and expected performance outcomes of the MLA.

4.16.2 Interpretation of Findings

Component 1 is mainly associated with Facilitating Conditions, Self-Management, and Self-Monitoring, indicating that this factor likely represents how well the organisation supports mobile learning and how learners manage and monitor their own learning processes.

Component 2 seems to represent Social Influence, pointing to a factor related to the impact of peers and managers on the adoption and use of mobile learning.

Component 3 is strongly tied to Use Behavior and might reflect actual engagement with the mobile learning platform, with a potential relationship to social influence.

Component 4 brings together Effort Expectancy and Self-Management, which may represent the usability and personal management of learning.

Implications

Component 1: Facilitating Conditions and Self-Directed Learning

Interpretation: This component primarily reflects the importance of organisational support and self-directed learning practices (Self-Management and Self-Monitoring). The strong loadings of Facilitating Conditions and Self-Monitoring suggest that employees' ability to manage and monitor their own learning is closely tied to the resources and support provided by the organisation.

Literature Alignment: This finding aligns with Garrison's (1997) Self-Directed Learning (SDL) model, which emphasises the role of contextual support and cognitive responsibility in promoting effective learning. In this case, the availability of resources and organisational support (Facilitating Conditions) seems to be a critical enabler for employees to effectively manage their learning activities.

Implications: Organisations should focus on enhancing the support structures around mobile learning, such as providing adequate resources, clear guidelines, and accessible support services. This can help employees better manage and monitor their learning, leading to more effective outcomes.

Component 2: Social Influence and Managerial Engagement

Interpretation: This component is dominated by Social Influence, indicating that peer and managerial engagement plays a significant role in mobile learning adoption. The connection between Social Influence and Self-Management suggests that managerial and peer support may influence how employees manage their learning.

Literature Alignment: Venkatesh et al.'s (2003) UTAUT model highlights the role of social influence in technology adoption. This finding reinforces the idea that in a retail environment, social dynamics, such as peer encouragement and managerial support, are crucial for motivating employees to engage with MLAs.

Implications: To enhance mobile learning adoption, organisations should foster a learning culture where managers actively promote and support mobile learning. This could involve recognising learning achievements, encouraging peer discussions about learning content, and integrating mobile learning into regular team activities.

Component 3: Use Behavior and Actual Engagement

Interpretation: This component is strongly associated with Use Behavior, suggesting it represents actual engagement with the MLA. The negative relationship with Social Influence might indicate that when employees are highly engaged with the MLA, social influences are less impactful, or it could reflect a context where strong individual engagement diminishes reliance on social validation.

Literature Alignment: The UTAUT model positions Behavioural Intention as a precursor to actual Use Behavior. However, this component suggests that actual use might operate somewhat independently of social influences, at least in contexts where engagement is already high.

Implications: Organisations should focus on strategies that directly enhance engagement with mobile learning, such as through personalised content, gamification, or linking learning outcomes with tangible rewards like career advancement opportunities.

Component 4: Effort Expectancy and Self-Management

Interpretation: This component combines Effort Expectancy with Self-Management, indicating that ease of use and self-directed learning strategies are interrelated. This could suggest that employees who find the MLA easy to use are better able to manage their learning processes.

Literature Alignment: This finding is consistent with research that emphasises the importance of usability in technology adoption. It suggests that improving the user experience of the MLA could enhance employees' ability to self-manage their learning, which is crucial for long-term adoption.

Implications: Enhancing the usability of the MLA should be a priority. This could involve simplifying the user interface, providing clear instructions, and ensuring that the application is intuitive and easy to navigate.

Practical Recommendations

Enhance Organisational Support: Strengthen facilitating conditions by providing robust resources and support services. Ensure that employees have easy access to learning materials and technical assistance.

Foster a Supportive Learning Culture: Encourage managers and peers to actively promote and engage with mobile learning. This could involve integrating learning into team meetings, recognising learning achievements, and encouraging peer collaboration.

Improve User Experience: Focus on improving the usability of the MLA to make it more intuitive and user-friendly. Simplifying navigation, providing clear instructions, and reducing technical barriers can enhance user satisfaction and engagement.

Leverage Social Influence: Use social dynamics to your advantage by encouraging peer-led learning sessions, manager-driven learning initiatives, and recognition of learning achievements. This can help to build a community of learners and increase overall engagement.

Targeted Content: Tailor the learning content to be highly relevant to employees' job roles and career goals. This can increase motivation and perceived relevance, which are key drivers of engagement and continued use.

The factor analysis has revealed that mobile learning adoption in a retail environment is influenced by a combination of organisational support, social influence, ease of use, and self-directed learning capabilities. By addressing these factors through targeted strategies, organisations can enhance the effectiveness of mobile learning and achieve better outcomes in employee development and performance.

4.17 Discussion and Recommendations

Model Refinement: Future studies should consider including additional variables that may better capture the nuances of mobile learning adoption in retail settings, such as perceived relevance, user satisfaction, or organisational climate.

Qualitative Insights: Incorporating qualitative research could help uncover the underlying reasons for the weak correlations and non-significant predictors, providing a richer understanding of what drives or hinders mobile learning usage.

Targeted Strategies: While the statistical significance is limited, organisations could still consider focusing on improving aspects related to Performance Expectancy and Motivation as these showed some positive trends.

Conclusion Enhancement

This analysis suggests that the UTAUT and SDL models, as applied in this context, might not fully capture the complexities of mobile learning adoption among retail employees. While traditional predictors like Performance Expectancy and Motivation showed some positive influence, their effects were not strong enough to be considered significant within this sample.

Moving forward, research should aim to refine the models used and consider a broader range of factors, including qualitative dimensions, to develop a more comprehensive understanding of what drives mobile learning adoption in retail environments.

Increased Adoption of Mobile Learning Tools

The literature suggested a growing trend in the adoption of mobile learning (m-learning) tools across various educational contexts, including higher education and corporate environments. Future research should explore how this trend extends to workplace learning, specifically investigating how organisations are integrating m-learning tools into their training and development programs.

Self-Directed Learning and Its Impact

Given the significance of self-directed learning, future research should focus on the role of m-learning in facilitating self-directed learning within the workplace. Studies could examine whether m-learning tools enhance employees' autonomy in managing their own learning and the subsequent effects on job performance and career advancement.

Technology Acceptance Models

Future studies could apply technology acceptance models to the workplace setting to better understand the factors influencing the acceptance and use of m-learning among employees. Such insights would be invaluable in guiding the design of m-learning programs that align more closely with employees' needs and preferences.

Barriers and Challenges

Future research should delve deeper into barriers within the workplace context, identifying effective strategies to overcome them and ensure the successful adoption of m-learning initiatives.

Impact on Learning Outcomes

There is a clear need to evaluate the impact of m-learning on learning outcomes in the workplace. Future studies could assess how m-learning influences knowledge retention, skill development, and the practical application of learned concepts in real-world work scenarios. Additionally, research could explore the role of m-learning in fostering continuous professional development and lifelong learning.

Customisation and Personalisation

The literature suggests that m-learning offers significant opportunities for customisation and personalisation, which are particularly important for adult learners. Future research could investigate how personalised m-learning experiences can be tailored to meet the diverse needs of employees across various industries and how these personalised experiences affect engagement and learning effectiveness.

Cross-Cultural and Global Perspectives

Given the increasingly global nature of many workplaces, future research should investigate the cross-cultural dimensions of m-learning. Specifically, studies could explore how cultural differences impact the adoption and effectiveness of

m-learning tools and how organisations can design m-learning programs that are responsive to the needs of a global workforce.

Emerging Technologies and Future Trends

Emerging technologies, such as mobile cloud computing, augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), represent significant opportunities for advancing m-learning. Future academic studies could explore how these technologies might revolutionise workplace learning, particularly in terms of enhancing the effectiveness of employee training and development programs.

Sustainability of Mobile Learning

As m-learning becomes increasingly prevalent in organisational settings, there is a pressing need to examine the sustainability of these initiatives. Future research could investigate the factors contributing to the long-term viability of m-learning programs in the workplace, including the elements that influence their success or failure over time.

Quantitative and Qualitative Evaluations

To gain a comprehensive understanding of m-learning in the workplace, future studies should employ both quantitative and qualitative research methods. Quantitative research could measure the effectiveness of m-learning initiatives, while qualitative research could provide deeper insights into employees' experiences and perceptions of using these tools.

The review of the literature on mobile learning, self-directed learning, and technology acceptance underscores the significant potential of m-learning to enhance workplace learning. However, to fully realise this potential, future academic studies must address the various challenges and explore strategies for effectively integrating m-learning into organisational learning frameworks. By doing so, researchers can offer valuable guidance to organisations seeking to optimise their use of m-learning tools and better support employee development in an increasingly digital and mobile world.

4.18 Future Research Directions: Addressing Barriers

Future studies on mobile learning in the workplace should focus on addressing several key barriers that may impede the effective adoption and implementation of m-learning initiatives. These barriers can be categorised into technological, organisational, learner-related, and content-related challenges.

4.18.1 *Technological Barriers*

Device and Platform Compatibility: The diversity of devices (e.g., smartphones, tablets) and operating systems used by employees can lead to compatibility issues with m-learning platforms. Future research should explore strategies for developing universally compatible and accessible m-learning solutions.

Internet Connectivity: Reliable and fast internet access is essential for m-learning. In regions with limited connectivity, this can be a significant barrier. Research could investigate offline capabilities or lightweight applications that function effectively with low bandwidth.

Security and Privacy Concerns: The use of mobile devices for workplace learning raises concerns about data security and privacy, especially when handling sensitive information. Future studies could examine the effectiveness of various security measures in safeguarding learner data and ensuring compliance with data protection regulations.

4.18.2 *Organisational Barriers*

Resistance to Change: Resistance from employees and management to adopting new learning technologies may stem from a preference for traditional methods or scepticism about the effectiveness of m-learning. Research could investigate the factors contributing to such resistance and identify strategies to foster a positive organisational culture toward m-learning.

Lack of Support and Resources: Implementing m-learning requires adequate resources, including time, budget, and technical support. Future studies could

explore how organisations can effectively allocate these resources and provide the necessary support to ensure the successful adoption of m-learning.

Inadequate Training for Instructors: Instructors may lack the necessary skills to deliver m-learning content effectively. Research could focus on developing comprehensive training programs to upskill instructors in the use of mobile technologies for teaching and learning.

4.18.3 *Learner-Related Barriers*

Digital Literacy: Not all employees possess the digital skills required to engage effectively with m-learning platforms. Future research could address this gap by proposing interventions to equip employees with the necessary digital skills.

Learner Motivation: Maintaining learner motivation in a self-directed m-learning environment can be challenging. Studies could explore factors that influence motivation and investigate how m-learning platforms can be designed to sustain engagement and motivation over time.

Balancing Work and Learning: Employees may struggle to balance work responsibilities with m-learning activities, particularly if the learning is self-directed. Research could examine ways to integrate learning into the workday, minimising disruption and maximising effectiveness.

4.18.4 *Content-Related Barriers*

Relevance of Content: The content delivered through m-learning must be relevant to learners' job roles and career development goals. Future research could explore methods for personalising and adapting learning content to meet individual needs.

Content Delivery Challenges: The smaller screens and limited input methods of mobile devices can make it difficult to deliver complex content effectively. Studies could investigate innovative content formats and delivery methods optimised for mobile devices.

Assessment and Feedback: Assessing learning outcomes and providing timely feedback in an m-learning environment can be challenging. Research could explore new approaches to assessment compatible with m-learning, such as gamified assessments or AI-driven feedback mechanisms.

Cultural and Social Barriers

Cultural Differences: In global organisations, cultural differences can influence how m-learning is perceived and adopted by employees in different regions. Future research could examine how to design culturally sensitive m-learning programs that resonate with diverse employee populations.

Social Isolation: M-learning can be an isolated activity, lacking the social interaction found in traditional learning environments. Research could explore ways to integrate social learning features into mobile platforms, such as peer discussions, collaborative projects, or social media integration.

Sustainability and Scalability Issues

Sustainability of Mobile Learning Programs: Ensuring the long-term sustainability of m-learning initiatives can be challenging, particularly in terms of keeping content updated and maintaining user engagement. Future studies could explore strategies for maintaining and scaling m-learning programs over time.

Environmental Impact: The production and disposal of mobile devices have environmental implications. Research could examine the environmental impact of m-learning and explore sustainable practices for the use of mobile technologies in education.

Addressing these barriers will be crucial for the success of future m-learning initiatives in the workplace.

CHAPTER 5. Conclusion

5.1 A Reminder of What the Research Was About

This research explored the factors contributing to the acceptance and utilisation of mobile learning applications (MLAs) by adult employees within a prominent retail firm in South Africa. The study was grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Self-Directed Learning (SDL) model. It aimed to examine how self-directed learning behaviours, alongside organisational factors, influence the adoption and effective deployment of mobile learning technologies in a corporate environment. The retail sector, being a significant contributor to South Africa's economy, provided a critical context for understanding the dynamics of mobile learning adoption among employed adults.

5.2 How the Research Questions Were Addressed

The research was designed to answer two primary questions:

- (1) What conditions within the mobile learning application influence its usage and adoption?
- (2) To what extent do self-directed learning behaviours impact the use of the MLA?

These questions were addressed through a quantitative research methodology involving a survey distributed to employees who actively use the MLA within the retail organisation. The survey instrument was developed based on the constructs of the UTAUT model—performance expectancy, effort expectancy, social influence, and facilitating conditions—augmented by SDL components such as motivation, self-management, and self-monitoring. The analysis of the survey data provided insights into the specific factors that drive the adoption of mobile learning technologies and the role that self-directed learning plays in enhancing employee engagement and learning outcomes.

5.3 Limitations of the Study

This study faced several limitations that should be acknowledged. Firstly, the research was conducted within a single retail organisation, which may restrict the generalisability of the findings to other sectors or geographical contexts. The use of self-reported data introduces the potential for biases, including social desirability bias and inaccuracies in self-assessment, which could affect the validity of the findings. Additionally, the study's focus was primarily on the factors influencing immediate adoption and usage of the MLA, without extending the scope to explore the long-term impacts on employee performance and career development. Moreover, demographic variables such as age, gender, and educational background were not included in the analysis, which may have provided a deeper understanding of the influences on mobile learning adoption.

5.4 Further Recommended Studies

Future research should consider expanding the scope to include multiple organisations across various sectors to enhance the generalisability of the findings. Longitudinal studies would be beneficial in assessing the long-term effects of mobile learning on employee performance, skill development, and career progression. Incorporating demographic factors such as age, gender, and educational background could yield a more nuanced understanding of the variables influencing mobile learning adoption. Additionally, future studies could explore the integration of advanced technologies, such as artificial intelligence and data analytics, within mobile learning platforms to enhance personalisation, engagement, and overall effectiveness. These avenues for further research could contribute to a more comprehensive understanding of mobile learning in diverse corporate environments.

Appendix 1

Table 8: Consistency table: research questions, propositions, data collection and data analysis

RQ #		State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
1		Which conditions on the Mobile Learning Application influence usage and adoption	H1: Performance expectancy has a positive influence on behavioural intention. H2: Effort expectancy has a positive influence on behavioural intention and use behaviour. H3: Social influence has a positive influence on behavioural intention and use behaviour. H4: Facilitating condition has a positive influence on	An identification of elements on the mobile learning application that encourage usage and adoption may be identified using the 4 components of the UTAUT Model (Venkatesh et al. 2003) The data may also provide guidance on elements within the application that limit its usage, thereby provide insight on potential updates or changes that can be made to enhance the application thus increase adoption.	Online Survey	Likert scale

RQ #		State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
			behavioural intention and use behaviour. H5: Behavioural intention has a positive influence on usage behaviour.			
2		To what extent does the employees SDL behaviour impact the usage of the Mobile Learning Application	H6: Motivation has a positive influence on performance expectancy. H7: Motivation has a positive influence on effort expectancy. H8: Self-monitoring has a positive influence on performance expectancy. H9: Self-management has a positive influence on behavioural intention.	The aim is to identify how learners use initiative in determining their learning requirements, strategies in implementing learning goals, and evaluating their results	Online Survey	Likert scale

Appendix 2

Survey Questions

Construct and Code Item

Performance Expectancy

PE1 Mobile learning assists with improving my workplace knowledge.

PE2 Mobile learning assists with improving my workplace skills.

PE3 Using mobile learning will improve my work performance.

Effort Expectancy

EE1 Mobile learning is easy to use.

EE2 I can access what I need to learn easily.

EE3 The content is easy to understand.

EE4 The bite-sized learning is just enough.

EE5 I prefer short learning content.

EE6 Learning to operate mobile learning applications is easy.

Social Factors

SF1 My co-workers use mobile learning.

SF2 Store managers encourage me to use mobile learning.

SF3 I like being recognised on the learning leader board.

Facilitating Conditions

FC1 My organisation supports and encourages mobile learning.

FC2 Having access to zero-rated data encourages my use of mobile learning.

FC3 I learn during breaks when I am at work.

FC4 I learn as I travel to and from work.

FC5 I learn when I am home.

Behavioural Intention (use behaviour)

UB1 I will continue to use the mobile learning application as long as it is available.

UB2 I complete all the courses I download.

UB3 I would learn more if all on-the-job learning were available on the mobile learning application.

Self-Directed Learning

Motivation

MOT1 I make sure I find time to learn.

MOT2 Learning is necessary for improvement.

MOT3 I prefer learning on the mobile learning application.

Self-management

SMAN1 I complete all my learning on the mobile application.

SMAN2 Completing the assessments on the application allows me to test what I learnt.

SMAN3 I would learn more if the mobile learning application offered more content.

Self-monitoring

SMON1 Having access to the mobile learning application furthers my learning goals.

SMON2 I like that I can control my own learning.

SMON3 Getting alerts as a reminder to access learning on the application helps me with my goals.

Scale labels: 1 – Strongly disagree , 2 – Disagree, 3 – Neither Agree nor Disagree, 4 –Agree, 5 –Strongly Agree

Appendix 3

Data analysis sent as a separate attachment

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