DEPARTMENT OF EDUCATION, COMMUNICATION & LEARNING

LMS PRACTICES TO SUPPORT WORKPLACE E-LEARNING

A case study on the potential for improving instruction and evaluation approaches for better job performance.

Charlotte Cohn

Danai Papadimitriou

Thesis:	30 higher education credits
Programme and/or course:	International Master's Programme in IT & Learning
Level:	Second Cycle
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Supervisor:	Thomas Hillman
Examiner:	Åsa Mäkitalo
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Abstract

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Keywords:	Workplace, e-learning, LMS, Learning Analytics

Purpose: The overall purpose of this study is to investigate workplace e-learning in a contemporary setting in order to contribute to companies developing their training and to the research on workplace e-learning. This is approached by scrutinising learning needs and instructional approaches for e-learning, by investigating the potential for evaluating online learning activity based on Learning Analytics data collected by Learning Management Systems (LMS) and by researching the relation between learning goals and job performance. This is examined through the case of an international European corporate organisation with geographically distributed employees that recently implemented a new LMS.

Theory: Anderson's model of Value Learning (2007) is used as a theoretical framework to interpret how learning should be viewed in corporate organisations. According to Anderson (2007), since workplace learning aims to primarily facilitate employees in their working tasks, learning should be aligned with the organisation's strategic business goals. Anderson's model (2007) has inspired us further to investigate the employees' perspective on the relation between learning goals and job performance indicators, such as Key Performance Indicators (KPIs).

Method: A case study was conducted in the settings of an international corporate organisation with a large number of geographically distributed employees during their LMS implementation stage. The study took place in the Swedish headquarters and was divided into three phases including meta-synthesis of literature on e-learning approaches, semi-structured interviews with managers and a questionnaire survey with employees.

Results: The study highlights e-learning approaches that could fit the company's training which consists of onboarding practices, blended learning, mandatory and elective courses. Additionally, it indicates the LMS reports that are potentially useful for the different managers when evaluating the employees' online learning activity. Finally, the study describes the prospects from aligning a department's' KPIs to the learning goals of their digital courses in order to develop workplace e-learning. The study's results aim to promote learning and development and workplace e-learning in corporate organisations.

Foreword

As part of our Master's degree in Information Technology (IT) and Learning at the University of Gothenburg, this thesis is a result of our final semester's work and interest in continuous human development and workplace learning. The workplace constitutes a large part of individuals' lives and, thus, we decided to pursue our thesis project in a corporate organisation that strives to develop workplace learning and to adjust to the technological advancements that the educational field faces. The project was conducted in collaboration with an international company that have established routines for employee training and development and are in the process of implementing a new Learning Management System (LMS).

We would like to express our greatest appreciation and thank the Human Resources (HR) Director and Learning and Development (L&D) Manager for giving us the opportunity to collaborate and expand our knowledge in this research field. This project has been a valuable learning experience and will prove crucial for pursuing our future careers in the field of learning and development. Allowing us to take part of the company's learning processes and strategies in a transparent and trustful manner and giving us the opportunity to express and share our enthusiasm and passion for both IT and pedagogics with professionals were the key components of this successful experience.

Furthermore, this thesis would not be completed without the guidance of our supervisor, Thomas Hillman, that provided us with accurate and constructive feedback. That helped us to improve and further develop our ideas and thinking process throughout this period. Along the way, we had the advantage of discussing our topic and experiences with peers in the industry. We would like to thank Atanas Karadzhov, an alumnus of the Master's programme, for always sharing his knowledge and ideas with us which resulted in examining different evaluation models for workplace learning.

This thesis is an equally divided work between university students Charlotte Cohn and Danai Papadimitriou. The whole thesis is the product of close collaboration between the students and appreciation of each other's work and effort. The division of labour is as follows:

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List of abbreviations

4C/ID-model – 4 Component / Instructional Design-model

AI – Artificial Intelligence

BI – Business Intelligence

HR – Human Resources

ICT – Information and Communication Technologies

IT – Information Technology

KPI – Key Performance Indicator

L&D – Learning and Development

LMS – Learning Management System

SCORM – Sharable Content Object Reference Model

ROI – Return on Investment

WDL – Workday Learning

1. Introduction

In a society where technology and the labour market is rapidly changing, it is necessary to continuously develop employees' knowledge and skills (Depesova, Turekova, & Banesz, 2015; Kyndt, Dochy, Michielsen, & Moeyaert, 2009; OECD, 2007). To be successful, employees in the workplace have to learn effectively and continuously to cope with changes; meanwhile, an organisation itself should be able to learn and adapt to dynamic environments (Wang, 2018). In this context, research and practice on learning in organisational environments have received wider attention, aiming to help employees acquire new knowledge and skills and allowing organisations to achieve continuous transformation and reinforce competitive advantage (Wang, 2018). This study aims to investigate workplace learning in an organisational setting that is currently shifting towards e-learning practices and incorporating contemporary learning approaches and technologies.

In organisational environments, workplace learning is a process of different activities for learning with the aim to increase work efficiency by developing the knowledge, skills and behaviours needed on the job (Brunner, 2012; Doornbos, Simons, & Denessen, 2008; Garavan, Morley, Gunnigle, & Mcguire, 2002; Matsuo & Nakahara, 2013). Within corporate organisations, Human Resources (HR) and Learning and Development (L&D) professionals are instrumental in mediating the various knowledge and skills needed at the individual, group, and organisational level (Swanson & Holton, 2001; Waight, 2015). However, with the rise of digitalisation in the society, organisations and consequently L&D professionals shift the traditional training contexts to workplace e-learning. Such changes have highlighted the need for understanding and incorporating digital tools and practices, including blended and mobile learning as well as educational data mining techniques and Learning Analytics (Rosenberg, 2006; Yoo, Han, & Huang, 2012).

In particular, companies with a diverse workforce demographics, geographically distributed employees and complex managerial structures could benefit from e-learning (Brunner, 2012). In the process of developing the research field for workplace e-learning, an international company operating in six European countries will be examined as a case study. During 2018-2020 the company has implemented a Learning Management System (LMS), called Workday Learning (WDL), in order to enhance existing learning and training activities and facilitate the knowledge transfer in the global organisation. LMS are computer-based applications that support content and information for professional learning at the workplace. They allow people to create, publish, modify, organise and maintain learning content and information on the platform (Wang, 2018).

When including LMS platforms and digital tools for learning, L&D professionals can face challenges to adapt the training and establish routines to take advantage of the new opportunities (Kapros & Peirce, 2014). To ensure both organisational and personal growth, companies need to identify LMS practices to incorporate in the training and align them with employees' individual needs and organisational goals (Burrow & Berardinelli, 2003; Moon, Birchall, Williams, & Charalambos, 2005; Servage, 2005; Tynjälä & Häkkinen, 2005; Wang, 2011). Aspired to enhance the research about improving e-learning implications in corporate organisations, this study seeks to support the company's shift into digital learning technologies by identifying their learning needs that could be addressed through suitable e-learning practices.

E-learning delivered through LMS can also support L&D professionals in the evaluation of the employees' learning process by analysing learners' online activity data. In general, exploiting the possibilities of the

increasing volume and variety of learning data generated in LMS platforms could promote organisations to make data-driven decisions on their learning strategy. The results from analysing digital data can be used to identify learners' needs or problems and provide learners with just-in-time feedback or advice (Wang, 2018). By conducting a case study, further opportunities for analysing LMS-produced data could be uncovered and practical implications could be suggested to promote data analysis in industries and corporate contexts.

Furthermore, as workplace learning in corporate organisations aim to result in increased business performance and profit (Perez Lopez, Montes Peon, & Vazquez Ordas, 2005), it is important that organisations have appropriate plans and strategies to support the e-learning initiatives. In many organisations e-learning is designed without taking into account the business vision, mission, and specific training requirements (Wang, 2018). Investing in workplace training has been criticised in terms of its relevance to key business processes and outcomes, related to a lack of concern in the assessment and evaluation of workplace training and development programmes (Wang, 2018). With the purpose to explore how workplace e-learning can be closer connected to strategic business goals, this study aims also to reinforce and examine this relation in a corporate organisation with established learning routines.

The overall opportunities and alternatives that digital platforms provide for training endorses the need for further research into workplace e-learning which constitutes a complex and fragmented field of study (Servage, 2005; Wang, 2018). As adults spend the majority of their lives working, the workplace emerges as an integral part of an individual's life for self-development and, thus, has the potential to enable lifelong learning for employees. Workplaces could support lifelong learning by enabling employees to develop new skills and knowledge throughout their work lives, which would be beneficial both for individuals and for society (Depesova et al., 2015). In fact, companies that foster lifelong learning, continuous training and development are considered to be more competitive in the modern knowledge-based business world (Kyndt et al., 2009; Lifelong learning, 2013).

Thus, this study seeks to explore the educational and IT field within corporate organisations through the case of an international company with a new LMS. Topics regarding learning needs and e-learning approaches, Learning Analytics and learners' activity data, as well as learning goals in relation to organisational objectives will be examined in the following chapters. The lack of studies and practices specifically for workplaces compared to formal educational settings, i.e. universities, will be analysed further in the first part of the Literature Review, followed by e-learning approaches for workplace settings and Learning Analytics.

2. Literature Review

The focus of this study is technology and learning at the workplace. There is a rich tradition of studies that have examined different aspects of learning as a part of working life. In order to understand which opportunities the technologies offer, this study intends to investigate e-learning possibilities to address the learning and evaluation needs in a workplace setting.

With the intention to scrutinise workplace learning and specifically practices for e-learning, a meta-synthesis of qualitative research was conducted. Meta-synthesis is an approach to synthesise existing qualitative studies to answer the research questions of a new study (Sandelowski, Docherty, & Emden, 1997). According to Sandelowski et al. (1997), synthesising existing research studies are considered essential to reaching higher analytical goals and to enhance the generalisability of qualitative research. Hence, this method allowed us to explore the research field of workplace learning and particularly collect results about various e-learning approaches from numerous qualitative studies on the topic.

First, the method involved using different keywords to search in online search engines, including Google Scholar and Gothenburg University Library, and databases such as IEEE Xplore and Scopus to find research articles on the topic e-learning and professional training at the workplace. Examples of selected keywords are “e-learning”, “mobile learning”, “social learning”, “digital training”, “learning and development”, “professional learning”, “LMS” and keywords relevant to “workplace”, “company”, “organisation” or other synonyms. The selected literature was relevant for workplace settings, specifically studies including different learning technologies used in contemporary companies such as LMS, e-learning, mobile learning and microlearning. Since learning technologies is a continuously evolving field, the focus was placed on recent research, mainly conducted the last five years, and their respective results. The selection of literature was followed by a meta-analysis during which we analysed and synthesised the results of previous qualitative research (Bryman & Bell, 2015). The results from the process of meta-synthesis are presented in this chapter under the section Workplace e-learning.

Thus, in the beginning, e-learning practices and contemporary instructional approaches are presented according to literature about workplace learning. This is considered essential in order to address the needs of a corporate organisation that recently implemented a new Learning Management System (LMS). Additionally, with the use of LMS platforms and similar technologies, contemporary companies have the opportunity to collect data about online learning activity, known as Learning Analytics. The relevant literature on Learning Analytics will also be presented to address the evaluation and analysis possibilities from exploiting learners’ activity data from LMS platforms. The following part introduces the topic of e-learning at the workplace and the importance of continuous learning as part of working life.

2.1 Workplace e-learning

Learning and education in organisations, also known as workplace learning, is considered an effective strategy for performance and quality improvement and knowledge management (Kyndt et al., 2009; Mclean, 2006). As people change jobs more frequently, learning new skills and continuous learning and development is becoming more important (Depesova et al., 2015; Kyndt et al., 2009; Mclean, 2006; Siadaty, Gašević, & Hatala, 2016).

A possible goal of workplace learning is to increase work efficiency by developing the skills and behaviours needed on the job. The workplace context can be considered an arena for authentic learning environments

and also a way of organising flexible work-related training (Georgsen & Løvstad, 2014). To meet the desired business outcomes and considering a diverse workforce demographics, organisations and Human Resources (HR) departments have the responsibility to deliver various activities for learning according to the needs: instructor-led classroom training, e-learning, peer-to-peer learning and mentoring (Brunner, 2012). Although the general purpose of workplace learning is to increase work efficiency, another perspective is individual development.

Researchers have argued for an alternative purpose for workplace learning, to focus on developing individuals rather than producing skills and innovation for the organisation (Fenwick, 2010; Jacobs & Washington, 2003). Studies on workplace value shows that individual development is an important factor for retention at a workplace (Boverie, Grassberger, & Law, 2013; Kyndt et al., 2009). These studies report that there are different aspects and benefits of workplace learning that can lead to increased employee retention, by teaching skills for both job performance and individual development. However, others consider increased business profit as the main objective of workplace learning. Accordingly, learning should not only enhance individual or team performance, but should also have a significant impact on the strategic and financial goals of the organisation (Brunner, 2012).

Considering that many researchers argue for the importance of workplace learning and the related beneficial outcomes mentioned above, the workplace setting is remarkably underrepresented in empirical studies on learning when compared to formal educational settings, e.g. universities (Siadaty et al., 2016). It is evident that there are some significant differences between these two settings, both when it comes to goals and the nature of learning (Margaryan, Milligan, Littlejohn, Hendrix, & Graeb-Koenneker, 2009; Siadaty et al., 2016). In fact, in formal educational institutions learning is an objective by itself and is usually accompanied with well-structured instructional support, while learning at the workplace is often a supplement to the primary work tasks and responsibilities (Margaryan et al., 2009). That means that an employee's objective is to complete a work task and the learning is considered to help complete this task (Illeris, 2011; Ley, Kump, & Albert, 2010; Margaryan et al., 2009; Siadaty et al., 2016).

By perceiving workplace learning mainly as a complementary element, many relevant studies tend to investigate other aspects such as self-regulated learning or scaffolding interventions in the workplace (Bandura & Lyons, 2017; Littlejohn, Milligan, & Margaryan, 2012; Margaryan et al., 2009). Considering, though, that e-learning is increasingly being used in professional learning settings to meet different learning needs (Abdullah, Ward, & Ahmed, 2016; Tarhini, Hone, & Liu, 2013), workplace e-learning emerges as a research field within academia. The European Commission describes e-learning as the use of the Internet and digital multimedia technologies to advance the quality of learning by providing access to resources and services, as well as enabling remote exchange and collaboration (Alptekin & Karsak, 2011; Dominici & Palumbo, 2013; Navimipour & Zareie, 2015). This definition is also used to describe and interpret e-learning in this study about workplace e-learning. Moreover, since companies' settings tend to seek online resources for delivering training and evaluating learning (García-Peñalvo & Alier, 2014), it appears that e-learning at the workplace is at high demand.

Workplace e-learning is an interdisciplinary field of research consisting of pedagogical, social, managerial, and technological domains. With the application of new technologies for improving employees' learning and performance, workplace e-learning has grown into a complex and challenging subject (Wang, 2018). Studies that have been conducted on workplace e-learning highlight the need to further research the topic

across different professions and organisations to benefit learning in specific workplace conditions (Bishop, 2017; Kyndt, Gijbels, Grosemans, & Donche, 2016).

Considering the aforementioned differences in the nature of learning in various settings and the emergence of digital technologies, it is evident why workplace e-learning should be explored and understood according to its own conditions and context. This study aims to fill the research gap by investigating how contemporary companies train their employees and explore how to enhance their training with learning technologies and how to evaluate e-learning at the workplace.

2.1.1 Personalised learning

A particular phenomenon related to the shift toward focusing on individual development in workplace learning is personalised learning. As individuals, people learn differently and have various learning needs in an organisation. Different learning technologies and methods such as e-learning and blended courses can meet the different levels and requirements of employees (Brunner, 2012; Wilson, 2012). Based on research funded by the European Commission, the exploitation of new technologies makes it more urgent to include personalisation of content in e-learning courses (Aceto, Dondi, Mellini, Schmitthelm, & Aguiló, 2010). "Personalised learning occurs when e-learning systems make deliberate efforts to design educational experiences that fit the needs, goals, talents, and interests of their learners" (Klašnja-Milićević, Vesin, Ivanović, & Budimac, 2011, p. 885).

Moreover, personalisation in e-learning can adapt to employees' knowledge level and learning preferences. That way, employees can study in a learning style that is more effective for them and it can also lead to improved learning outcomes, engagement and increased speed of learning (Ashman et al., 2014; Essalmi, Ayed, Jemni, Kinshuk, & Graf, 2010; Klašnja-Milićević et al., 2011). Research shows that providing learners with learning material and activities that fit their learning preferences can make learning easier for them (Klašnja-Milićević et al., 2011).

Hence, it could be beneficial for organisations to include personalisation in e-learning when offering digital activities for training to their employees. One approach to create personalised e-learning material is to offer a variety of choices in online activities for learning (Lister, 2014). According to research conducted in formal educational settings, providing choice in topics allows learners to choose activities that are consistent with their learning interests and needs (Ausburn, 2004; Lister, 2014). At a workplace setting, employees that are aware of their learning preferences could choose and adapt their learning strategy to specific learning situations. This is called adaptive flexibility (Berings, Poell, & Simons, 2005; Berings, Poell, & Simons, 2008) and can be incorporated in a company's e-learning course offering to increase learning efficiency.

New techniques, such as Artificial Intelligence (AI), are increasingly being used to optimise personalisation for learners based on their interests. AI uses Machine Learning technology to collect information from each user, analyse the data and recommend courses based on the individual learners' interests (Ashman et al., 2014). To illustrate, the same way many online companies, such as amazon.com and netflix.com, use recommender system technology to personalise and direct their customers' attention to certain products, LMS and e-learning platforms use AI to recommend relevant courses to learners (Klašnja-Milićević et al., 2011). Recommender systems can contribute to enhance personal learning experiences and may lead to desirable learning outcomes and increase motivation (Ashman et al., 2014; Buder & Schwind, 2012; Yu, Miao, Leung, & White, 2017). Since many corporate organisations use LMSs and e-learning platforms, there are numerous opportunities to explore that could have positive impacts on companies' workplace e-

learning. For instance, it would be advantageous for companies to examine in-depth and be aware of how their learning technologies can contribute to personalised learning and how to analyse learner activity data collected by the LMS that could be used to develop their e-learning further. This is explained more thoroughly under the section about Learning Analytics.

2.1.2 Blended learning

In parallel with recent shifts of workplace learning toward individual development and personalised learning, new technologies have emerged that have given rise to new instructional methods. Online learning and blended courses have rapidly expanded globally, both in formal educational environments and in corporate organisations (Georgsen & Løvstad, 2014; Hilliard, 2015). Blended learning is a combination of online and face-to-face activities for classroom training (Hilliard, 2015; Levy, 2017; Samaka & Ally, 2015). The use of Information and Communication Technologies (ICT) is increasingly applied to support the learning designs in workplace learning in various forms, from complete online-courses (e-learning) to blended learning where digital learning materials support face-to-face teaching or are mixed with different learning designs and activities (Georgsen & Løvstad, 2014). The purpose of blended learning methods in corporate organisations is to help employees develop new skills and knowledge that can be transferred to the workplace environment (Hilliard, 2015).

Blended courses can reduce the amount of time employees have to spend away from the job area (Samaka & Ally, 2015). To illustrate, flexibility to learn individually allows just-in-time training so that employees can access the learning materials, complete activities for learning, and apply what they learn right away (Samaka & Ally, 2015). Considering that individuals have different learning needs as mentioned above, blended courses is one way to meet the different levels and requirements of employees (Brunner, 2012; Wilson, 2012). Specifically, companies should take into account content, learning preferences and teaching techniques and aligning the learning environment to specific learning objectives when designing blended courses (Brunner, 2012). Taking advantage of digital tools in training and offering blended learning can enhance learner engagement by providing opportunities for collaborative learning and participation in online course discussions (Hilliard, 2015). Brunner (2012) also emphasises the importance for companies to adopt new approaches to learning in order to maintain a competitive edge.

As organisations consist of employees with different learning preferences and knowledge levels, blended learning could be examined as a potentially sufficient instructional approach. However, the learning needs can vary between industries and corporate organisations, as well as between departments in the same company. Thus, identifying the requirements for employees' training is important in order to proceed with adopting new learning approaches.

2.1.3 Mobile learning

Besides the aforementioned instructional approaches to learning that are increasingly used for workplace e-learning, technology and digital devices also influence people's learning habits. The use of mobile learning has impacted the development of agile learning in modern working environments and creating new learning cultures (Balula, Dias, & Vasconcelos, 2018). Specifically, learning cultures and how people access knowledge and information is today highly dependent on technology and connectivity. This has resulted in the emergence of new instructional methods and concepts for alternative pedagogical approaches as well as the emergence of new teaching and learning opportunities.

Web-based technologies have influenced the recent change from traditional instruction-centred learning to more learner-centred models. A related consequence is the demand for technology-based methods supporting learner-centred practices, such as mobile devices (Balula et al., 2018). Workplaces should adopt new approaches to learning to maintain a competitive edge (Brunner, 2012; Wang, 2018) and there are many benefits related to mobile learning. According to Balula et al. (2018) mobile devices can support learner-centred instructional approaches and also play a significant role in promoting lifelong learning at the workplace. To demonstrate, mobile learning creates a possibility for organisations to adapt to personal learning needs and preferences, seamlessly adjust training to individual routines and the devices also enable access to affordable learning resources (Balula et al., 2018). Using mobile learning allows employees to learn just-in-time, in their own context, and for continuing professional development (Samaka & Ally, 2015; Zhang, Yin, David, Xiong, & Niu, 2016). Hence, mobile learning initiatives can play a prominent role in promoting active learning strategies at workplaces (Balula et al., 2018).

Recent studies by Balula et al. (2018) on lifelong learning for adults found that mobile learning can also encourage self-regulated learning, meaning to actively understand and monitor one's own learning situation. Mobile devices can contribute to self-regulated learning by providing instant notifications from the learning platform and giving learners access to courses and analytics (Balula et al., 2018). Particularly for organisations with field workers and geographically distributed employees, mobile learning can be an advantageous and cost-efficient tool to provide access to learning (Samaka & Ally, 2015). Furthermore, Samaka and Ally (2015) specifically advise companies to use mobile applications (apps) for training, including various learning materials such as short video clips and pictures to make it engaging, visual and interactive for the employees. With busy employees in different locations, mobile learning could be combined with microlearning to fit their work schedules and shifts and provide efficient workplace e-learning.

2.1.4 Microlearning

Considering the use of mobile technologies in contemporary organisations, recent research emphasise that microlearning, meaning learning conveyed in short and compact formats or "bite-sized" pieces that are designed to meet specific knowledge outcomes, is particularly suitable for workplaces where mobile devices are used on a daily basis (Dolasinski & Reynolds, 2020; Emerson & Berge, 2018). For instance, multimedia, short educational videos and interactive learning events can capture specific topics that are relevant for the employees and can easily be combined with a company's e-learning and blended approaches for training at the workplace. Microlearning can be provided through social media, smartphone technology or internal workplace forums such as LMS, which give employees both access to training and the ability to share knowledge and information throughout the organisation (Emerson & Berge, 2018). Organisations and training departments can incorporate microlearning modules in existing LMSs for on-demand user access (Emerson & Berge, 2018). This means that the Learning and Development (L&D) professionals and training managers in companies can use knowledge management strategies to tag, index and update microlearning modules so they are available to the employees.

Microlearning can facilitate knowledge acquisition at the workplace by engaging and motivating employees through short and personalised just-in-time learning on-demand (Emerson & Berge, 2018). Specifically, for corporate organisations where business is about productivity and not primarily about learning, microlearning can be an advantageous approach to facilitate short learning interventions into a busy employee's schedule. Microlearning can accommodate these challenges of workplace learning by supplying clear and concise well-designed single learning topics for employees to fit in-between tasks when they can

spare 15 minutes (Emerson & Berge, 2018). Ultimately, for different kinds of e-learning approaches and learning material, either designed for short or longer learning modules, researchers state that they should include clear guidelines and accurate descriptions of the content (Berings et al., 2008; Lister, 2014). This is significant to meet the learners' expectations for learning (Berings et al., 2008; Grant & Thornton, 2007).

The different technologies integrated in employees' work lives also provide new opportunities for companies to organise activities for e-learning. Personalisation, blended learning and recommender systems can support various individual learning preferences. Additionally, mobile learning and microlearning can enable geographically distributed employees to access training in a flexible way. Furthermore, these learning technologies such as LMS and mobile devices collect data about online learning activity that can be analysed to understand learners' digital behaviours. Learning Analytics and how to interpret this data will be described further in the following section.

2.2 Learning Analytics

A recent development that is having a growing impact on the use of instructional approaches such as e-learning and blended learning for workplace learning is Learning Analytics. Apart from training, e-learning tools offer possibilities for evaluation and analysis of learners' activity data that is used to understand learners' behaviour. However, in today's digital society the increasing amount of digital data exceeds the organisations' capability to interpret it in a comprehensive way (Siemens, Long, Conole, & Gaševid, 2011). Traditionally, people inform and develop teaching and learning by creating assessments, evaluating the results and following the overall progress of the learners (Society for Learning Analytics Research [SoLAR], 2020). Based on these well-established disciplines, Learning Analytics, an emerging field of research in both academia and business arena, undertakes to exploit the new possibilities of analysing digital data from the learner's activity (Dyckhoff, Zielke, Bültmann, Chatti, & Schroeder, 2012; SoLAR, 2020).

Learning Analytics aims to facilitate the evaluation of learning behaviours and outcomes to advance both the teaching and the learning process in digital environments (Macfadyen & Dawson, 2012). Specifically, when learning takes place on mobile devices, LMSs and social media, a large volume of digital trails is consequently produced (Siemens, 2013). Systems like LMSs include data mining techniques and algorithms that capture, record and maintain learner's data, past and recent, regarding their activity, such as browsing behaviour, login activity, mouse clicks, and activity time (Macfadyen & Dawson, 2012; Siemens, 2013; Teasley, 2017). Learning Analytics is defined as the process through which this data is measured, collected, selected, reported and/or visualised, then analysed and interpreted (Elias, 2011; Macfadyen & Dawson, 2012; Siemens, 2012; Siemens et al., 2011). By analysing the reported data, the learning process could be examined from diverse perspectives and, thus, various learning patterns could be uncovered (Siemens, 2013).

To date, the literature of Learning Analytics has mainly concentrated on formal educational settings (Dawson, Mirriahi, & Gašević, 2015; De Laat, Schreurs, Haythornthwaite, & Dawson, 2013). The results of early research on Learning Analytics suggest that it can support teachers by providing aggregated students' data and, thus, replacing the manual collection of information from past academic terms (Dyckhoff et al., 2012; Elias, 2011). The data represents a type of actionable feedback that highlights learners' preferences and achievements, e.g. the impact of watching an instructional video on student performance (Siemens, 2013). Teachers can then act faster to adapt the material to the learners' needs, integrate this feedback into the updated design of the course and provide different levels of assistance and other personalised services (Dyckhoff et al., 2012; Elias, 2011; Siemens, 2013). Relevant studies have

investigated the analysis of learner's data to provide feedback (Nguyen, Tempelaar, Rienties, & Giesbers, 2016), detect students at risk of failing courses (Arnold & Pistilli, 2012) or increase students' retention (Freitas et al., 2015).

Despite the limited research base when compared to formal educational settings, it has been argued that Learning Analytics can also contribute in the field of professional development at the workplace and lifelong learning, (De Laat et al., 2013). Those studies that have been conducted show that some industries consider analytics to be able to revolutionise economic systems and raise organisational productivity as well as competitiveness (Kiron, Shockley, Kruschwitz, Finch, & Haydock, 2012; Manyika et al., 2011; Siemens, 2013). In fact, Learning Analytics originally emerged from the field of Business Intelligence (BI) that examines the application of computational tools to collect business data from the various organisational systems in order to accelerate the process of reaching strategic decisions (Buckingham & Ferguson, 2012; Goldstein, 2005; Siemens, 2013). Likewise, a primary vision of Learning Analytics in workplace settings could be to address challenges of HR management, knowledge management, and organisational learning, such as promoting skill development, evaluating training and minimising the respective expenses (De Laat et al., 2013; Greller & Drachsler, 2012).

However, without contextual interpretation of the collected data, Learning Analytics capabilities are restricted (Mangaroska & Giannakos, 2017). In other words, further investigation of the data is required to realise, for example, what an extended time for completing a digital course indicates, i.e. if it is related to external distractions, low engagement or mental struggle (Siemens, 2013). Despite the current tendency of implementing Learning Analytics functions in LMS platforms, there is a distinct lack of relevant guidelines for both formal educational and workplace learning "to indicate which (if any) of the captured tracking variables may be pedagogically meaningful" (MacFayden & Dawson, 2010, p. 590). Moreover, the related LMS functions of reports and dashboards are at a relatively early stage of implementation (Dawson, McWilliam, & Tan, 2008; Mazza & Dimitrova, 2007). As a result, much effort is placed on the user's ability, i.e. teachers, instructors and L&D professionals, and their data literacy skills to interpret the learners' activity in order to make data-driven decisions (Ruiz-Calleja, Prieto, Ley, Rodríguez-Triana, & Dennerlein, 2017).

Indeed, insights from learners' activity data could be subject to valuable, though, diverse interpretations. For instance, the rate of learners accessing a course could be an indicator either of the popularity of e.g. the material in an elective digital course or reflect the complexity of the course's content (Dyckhoff et al., 2012). By investigating such information further, the instructor could conclude which type of courses or assignments is accessed more frequently compared to others in relation to the learners' goal. It is typical, for example, that most learners in formal educational settings access mandatory courses or homework assignments because they can impact their final grade (Hangjin & Almeroth, 2010). Hence, the comparison of the resources' access rate could highlight the learners' most urgent needs to accomplish their goal, such as a course or certificate completion. Moreover, the instructor could identify the courses that are not highly accessed although compulsory and proceed either with providing better instructions or motivating the learners with additional exercises (Hangjin & Almeroth, 2010).

On the other hand, the analysis of courses' access rates could be connected to a specific learner's activity. The individual learner's data could prove valuable in order to understand the differences between most, average and least active learners and their learning patterns (Hangjin & Almeroth, 2010). The review of individuals' online behaviour and activity shifts is essential for evaluating different course types, learning

materials and didactic approaches (Dyckhoff et al., 2012). Since data constitutes a type of actionable feedback, the instructor could employ it to enhance learning by applying changes on the course material and following on the learners' behaviour (Dyckhoff et al., 2012). Learners' activity and the number of previous completed digital courses could also be utilised as an index of learners' familiarity with online education. Thus, a learner's withdrawal from a course could be associated with their limited prior experience of learning in digital platforms and the instructor could then proceed with adjusting the course's requirements accordingly (Osborn, 2001).

Another aspect of the Learning Analytics is to examine the learners' activity in relation to time. To illustrate, it is possible to identify which learners were most responsive to a newly uploaded resource in order to review their engagement (Hangjin & Almeroth, 2010). Another possibility is to analyse the access rate to the LMS in relation to a time period and associate it with e.g. teaching events or holidays (Dyckhoff et al., 2012). That could be an important insight for determining the best time to upload new material in order to be viewed by most learners (Hangjin & Almeroth, 2010). According to studies in formal educational settings (Dyckhoff et al., 2012), the instructor could perceive the average time of a learner's activity as an indicator of continuous learning and relate it to exam performance. In particular, Wang and Newlin (2000) indicate that the total number of LMS logins over the first 16 weeks of a course is predictive of final grades. In general, the instructor of formal educational or even workplace settings could identify whether and when learners are accessing which parts of a digital course per week in a defined time span and compare different access rates between teaching events and functions (Dyckhoff et al., 2012).

The functions offered by the LMS, such as download functionality, and the relevant data could also reveal significant insights. Specifically, the download functionality of videos from the LMS could suggest the learners' preference over this type of learning material (Hangjin & Almeroth, 2010). Certainly, this information does not answer the question whether the videos are effective at helping learners study and learn. Nevertheless, it could be considered as an indicator of the learners' primary choice among other learning options (Hangjin & Almeroth, 2010).

It is evident though, that workplace learning has not been significantly addressed through research on Learning Analytics and interpretation possibilities of the learners' data. Apart from the different goals and nature of learning (Littlejohn et al., 2012; Margaryan et al., 2009), shifting the setting from formal education to the workplace implies that the learners' data could differ in terms of quality and quantity. That can be considered a challenge that instructors and L&D professionals in organisations and companies face as part of their job role. Similar to teachers, they are responsible to manage the organisation's LMS platform, deliver training and then use the learners' activity data and LMS reports to inform and upgrade their practices as well as evaluate the employees' learning performance.

Therefore, instructors and L&D professionals along with teachers appear to be confronted by a data overflow relying mostly on their own interpretation skills in an attempt to address it. This raises concerns about the outcomes of their analysis since many factors can affect the way data is understood and examined. Scepticism is clearly expressed in literature about analytics in education regarding data quality and reliability (Siemens, 2013; Slade, Prinsloo, Haythornthwaite, De Laat, & Dawson, 2013).

Indeed, the activity behaviour in an LMS platform, such as clicks and logins, does not sufficiently represent an individual's learning behaviour and process (Tempelaar, Rienties, & Giesbers, 2015). For instance, as Mangaroska and Giannakos (2017) highlighted, future research should not focus solely on data analysis

from a single platform considering that learning takes place in various digital platforms and contexts. Additionally, learning constitutes a complex process that can be perceived as a social activity between the instructor and the learner. However, the social aspect of the process cannot be clearly reflected through simple numeric data (Siemens, 2013). Hence, instructors should analyse the data cautiously and support their interpretations with informed and contextualised data from diverse sources (Macfayden & Dawson, 2012).

Further considerations have been expressed about Learning Analytics as a measure of the learners' performance and the instructor's effectiveness (Boyd & Crawford, 2012). As illustrated previously, data could be used as a comparison measure in order to analyse the learners' online behaviour. However, dependence on digital data could be alarming if the focus is placed on maintaining the indicators and statistics instead of promoting and improving learning. Both learners' performance and the instructor's effectiveness should not be assessed solely based on LMS statistics and numerical data. On the contrary, this data could be used as an additional source of information among the other evaluation tools and methods of the relevant educational setting.

It should be highlighted though, that instructors carry another responsibility for accessing and examining LMS data from individuals' online activity. There have been expressed extensive concerns about ethics and information privacy issues regarding the collection, analysis and dissemination of learners' activity data (Macfayden & Dawson, 2012). Considering, from a global perspective, that every online interaction on any digital platform produces digital data, the approach to data exchange and data privacy requires adopting a global policy (World Economic Forum, 2011). Since relevant issues are progressively addressed legally, any ownership of, and access to data, including that of the learners, should be regulated prior to exploitation (Siemens, 2013).

Thus, instructors have the opportunity to follow-up the learning process in the digital era but are also confronted by the challenge of accessing and analysing the learners' data mindfully. Since our society faces an increase in the LMS usage within companies' settings for delivering training and evaluating learning (García-Peñalvo & Alier, 2014), we attempt to further explore the potentials of Learning Analytics as evaluation indicators for workplace e-learning. This study aims to contribute to the field of Learning Analytics by reviewing the reports and data of a company's LMS platform and examining the analysis and evaluation possibilities.

3. Research Questions

Based on the literature presented in the previous chapter, it is evident that the majority of research about e-learning, Learning Analytics and adult education is conducted in formal educational settings. However, learning and evaluation differ significantly depending on the context. While acquiring knowledge is the primary learning outcome in a formal educational environment, workplace learning aims to facilitate employees to perform their job tasks, acting as a supplement to their work objectives.

Thus, this study aims to fill the research gap by investigating how a contemporary company trains their employees and identifying which needs could be addressed by the presented e-learning approaches. Additionally, part of the study examines the potentials for evaluating online learning activity based on data reports from the company's Learning Management System (LMS). Finally, the study explores the possibility of connecting the goals of workplace e-learning to job performance in order to develop the training evaluation in the company.

Through a case study in a corporate organisation, we intend to answer the following three research questions:

1. What are the learning needs of an international corporate organisation with large numbers of geographically distributed employees that can be supported by e-learning approaches with the LMS?

2. How can the online learning activity of those employees be evaluated through the LMS?

3. How can their workplace e-learning be improved in order to align training with job performance?

4. Theoretical Framework

In order to address the research questions, this study will use a model that was introduced in 2007 by the CIPD institute at the University of Portsmouth Business School (Anderson, 2007) as a theoretical framework. The model, known as Anderson's model of Value Learning, is specifically created for learning in organisations and addresses the need of Human Resources (HR) professionals and decision-makers to ensure that investment in learning delivers strategic value to the organisation (Anderson, 2008). Since a main objective of workplace learning is to increase work efficiency in order to achieve the business goals (Brunner, 2012), the model emphasises the importance to systematically identify and analyse the learning needs of the employees with regard to their job performance, and then proceed to measure and evaluate the impact of the learning interventions to the business (Anderson, 2007).

In Anderson's research, semi-structured interviews were conducted to investigate the different perceptions on the value of learning between top managers and HR executives (Anderson, 2008). The results from the research that took place within 12 different companies in the UK indicate the need for collaboration between HR executives and organisation leaders to match their expectations about the strategic contribution of learning (Anderson, 2008). Hence, Anderson's model proceeds to introduce a three-stage process (see Figure 4.1) to be implemented at the organisational level (Downes, n.d.). The first stage consists of aligning the learning objectives to the organisational strategic priorities - such as driving sales or increasing production (Anderson, 2007; Downes, n.d.). This will lead to efficient regulation of the learning investments according to the defined business objectives.

Figure 4.1: Stages of Anderson's model of Value Learning (2007)

At the next stage, different metrics should be developed to evaluate the effectiveness of learning. As presented in Figure 4.2, the model outlines four approaches to assessing the learning value contribution consisting of Learning function, Return on expectation, Return on Investment (ROI), and Benchmark and capacity measures. Specifically, Learning function measures should be developed and employed to evaluate how efficiently the responsible team operates and delivers training (Anderson, 2007; Downes, n.d.). Another approach is to develop Return on expectation measures in order to estimate and reflect on whether the implementation of a learning programme has successfully led to the achievement of the determined business goals (Anderson, 2007; Downes, n.d.). This estimation could also be justified by examining the ROI of a particular learning programme. ROI is an accounting term that refers to the financial ratio of the business profit in relation to the original investment (Flamholtz, 1985; Mcnulty & Tharenou, 2004). Anderson's model (2007) suggests developing ROI measures in order to compare the cost of a particular learning programme to "the revenue generated and/or costs saved" (Downes, n.d., p.4). A last evaluation approach is to compare the learning processes and performance to internal or external standards by Benchmark and capacity measures (Anderson, 2007; Downes, n.d.).

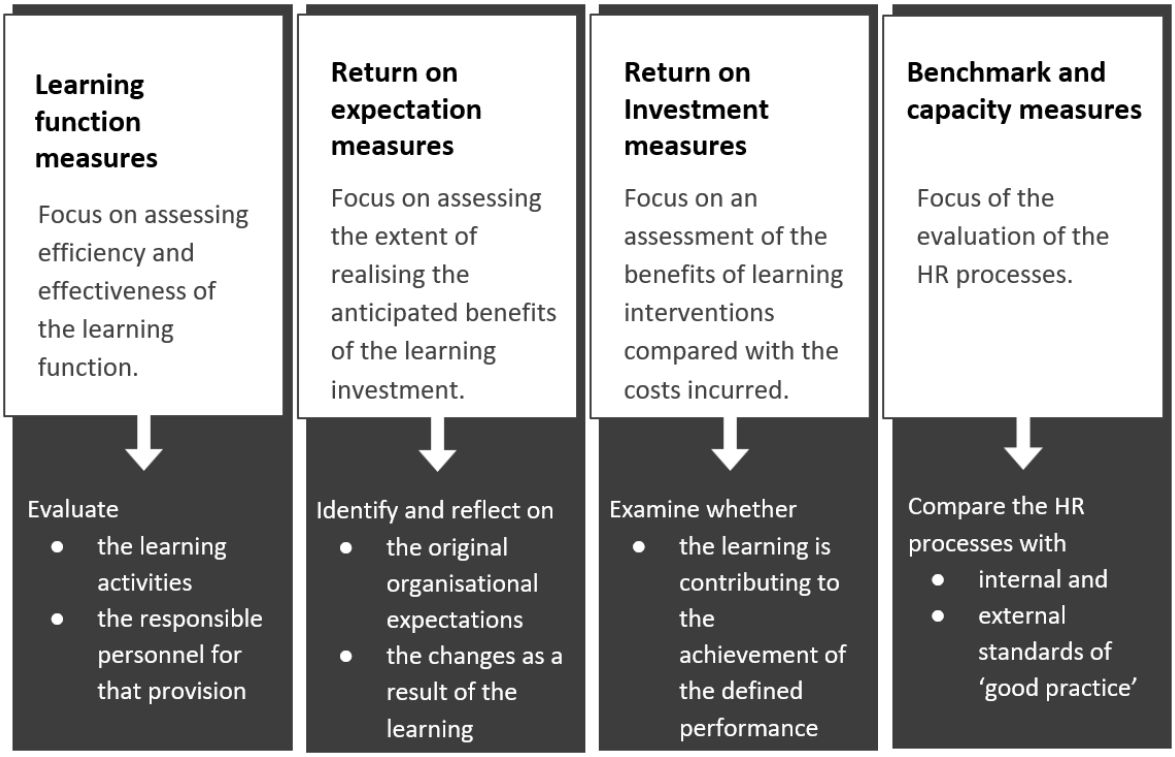

Figure 4.2: Approaches to assessing the learning value contribution

The four approaches are complementary to each other and reflect the different angles that an evaluation of learning can incorporate. They do not introduce practical examples of the suggested measures but rather frame the scope of the measures that an organisation should develop in order to "focus on the organisational priorities rather than (...) on the individual learning event" (Anderson, 2007, p. 8). The aim is to evaluate and establish activities for learning that increase value for the organisation. In the last stage of Anderson's model (2007), the organisation selects and implements the most relevant evaluation methods and approaches. The decision is met based on the short- and long-term organisational strategy (Anderson, 2008; Downes, n.d.).

To address the business objectives through reflection and evaluation of learning is particularly relevant in the case of an international company that is in the early stages of implementing a new Learning Management System (LMS) and producing e-learning material. That is because it is necessary first to understand both the learning requirements and the organisational strategy and then evaluate the e-learning courses based on different measures. Since Anderson's model (2007) is particularly developed for workplace settings and focuses on the alignment between learning and business objectives, this study utilises the model as a theoretical framework to pursue answering the research questions. Furthermore, inspired by both the first stage of the model and the Return on expectation measures, this study attempts to address the third research question about improving workplace e-learning by investigating the possible alignment of the learning objectives to the business goals of a department.

However, some of the evaluation approaches introduced in the second stage of Anderson's model (2007) have also been presented by other models for organisational training. For instance, the Return on expectation measures, which reflects on the changes emerged from the applied learning programmes, resembles to the

third level from Kirkpatrick's evaluation model (2006) regarding behaviour change and on-the-job application of the knowledge gained in training. Moreover, the need to estimate the effect of training on broader organisational objectives is also addressed in Kirkpatrick's level four. However, as it is criticised by other studies (Kearns, 2005) the lack of establishing business effect criteria prior to creating a training could lead to poor evaluation results regarding improved business performance.

Other evaluation models such as Phillips' ROI model (1996) are more business oriented. Similar to the ROI measures presented in Anderson's model (2007), Phillips (1996) has written that evaluation must go beyond level four in Kirkpatrick's model (2006) and, thus, adds a fifth level for measuring ROI. This aims to compare the cost of a particular learning programme to the gained business profit (Anderson, 2007; Downes, n.d.). However, it is not justified if the training programmes have indeed reportable results that can be linked to the business benefits (Rowden, 2005). In contrast, Anderson's model (2007) places the alignment of the learning objectives to the strategic organisation priorities as the first stage, and as a second stage the need to define ROI measures by including job performance indicators in the learning goals, such as Key Performance Indicators (KPIs). KPIs are predefined metrics used to measure job performance and to express profitability to the business, e.g. customer satisfaction score or customer retention rate, and vary among different industries and domains (Schwarzbichler, Steiner, & Turnheim, 2018).

The aforementioned aspects were considered essential for selecting Anderson's model (2007) as the theoretical framework of this study despite possible limitations. Specifically, the validity of the framework should be taken into consideration due to the fact that it was developed based on perceptions from interviews about different organisations' strategies. Hence, it is not ensured that the results from applying this framework will be consistent due to the lack of testing it. Additionally, the framework does not define explicitly how learning is perceived. This could result in possible misinterpretation on behalf of the HR executives and responsible ones for learning and training inside an organisation.

To that it should be added that Anderson's model (2007) does not provide practical guidance to specific evaluation methods either, but rather four high level approaches. This flexibility, however, could make the model more relevant and applicable to different organisations (Downes, n.d.). "In practice, this model could be combined with other models", such as any of the aforementioned ones, "to achieve the detail of individual learning initiatives in order to paint an overall picture of the effectiveness of learning in the organisation" (Downes, n.d., p. 4). In other words, the framework does not restrict organisations from developing different measures so that it can be applied in many different contexts. In terms of reliability though, the measures and results developed by different organisations may be transferable rather than generalisable.

As previously stated, Anderson's model (2007) does not provide an explicit definition of how learning and training are contextualised more than that it takes place at the workplace. Typically, workplace learning can take different forms, such as instructor-led classroom courses, digital courses, practical workshops or peer-training, and can be distinguished into two generic types. In particular, formal learning is one form described as training with a defined learning framework and organised activities for learning (Eraut, 2000). On the other hand, learning can also be informal and take place either intentionally or incidentally through experience and practice by mentoring and networking (Marsick & Watkins, 1997). This study considers both types of learning relevant because workplace e-learning is complex and can include formal and informal elements, e.g. digital courses or open discussion forums.

Moreover, according to Anderson (2007, p. 3), learning consists of "intellectual and knowledge assets" and should be "aligned with the organisation's strategic priorities". This alignment demonstrates the need to associate learning with real-world contexts, such as job performance tasks. From this point of view learning at the workplace could be related to the 4 Component / Instructional Design-model (4C/ID-model) on Complex Learning (Van Merriënboer, Clark, & Croock, 2002). The 4C/ID model emphasises the demand for integrating task-specific skills that have impact on the performance outcomes (Van Merriënboer et al., 2002). In a workplace context, the task-specific skills could be translated into work-related tasks or job performance indicators, i.e. KPIs, that assess the employees' job performance outcomes.

Specifically, according to Van Merriënboer et al. (2002, p. 40), complex learning "is foremost dealing with learning to coordinate and integrate the separate skills that constitute real-life task performance." This is reflected in Anderson's model (2007) where learning at the organisation is perceived as an asset to achieve improved job performance and accomplish the organisational goals. It should be noted that the 4C/ID-model is influenced by constructivism, which also considers learning a process of knowledge that includes problem-solving deriving from realistic situations (Ultanir, 2012). Overall, 4C/ID and constructivism emphasise the importance of task-oriented learning that reflects real-life contexts. This perspective contributes to our understanding of the complex process of workplace e-learning as an asset to improve job performance and to our interpretation of Anderson's model of Value Learning (2007).

Therefore, this study addresses the presented research questions through Anderson's model (2007) in order to understand the company's learning needs and strategy which should contribute to business profit. The study is particularly inspired by the first and the second stage of Anderson's model (2007). Our intention is to shift the focus of traditional measures from the learner and trainer to the organisation's learning needs and specifically to each department's internal standards and job performance indicators i.e. KPIs. Particularly, in order to answer the third research question, we investigate the employees' reflection on the value that learning adds to their department's business goals. Deriving from Anderson's approach of aligning the learning goals to the organisational objectives and inspired by the Return on expectation measures, we pursued to identify the employees' perspective and expectations on how the KPIs of their department are related to the learning goals of a relevant digital course. This is described in the Methodology that follows the next chapter about the Context of the study. In the latter one, the company and their Learning Management System (LMS) are described in detail.

5. Context

A case study has been conducted to investigate workplace e-learning and evaluation opportunities with the use of a Learning Management System (LMS) within a specific company's environment. To understand the context of the study we will first present the company, how they deliver and evaluate training, followed by an explanation of the LMS features, reports and relevant data. A detailed description of the research methods is presented in the next chapter, Methodology.

5.1 Company description

To study the phenomenon in practice we have selected a corporate organisation to explore their workplace learning in a natural environment. The organisation is an international technology company operating in six European countries. In all countries, a large number of employees are geographically distributed field workers, customer service teams and sales people. The company has a global learning strategy and has been working with learning and development throughout the years with various learning materials in the form of classroom training and workshops, presentations, videos and coaching.

Recently they implemented and launched their first LMS to deliver and facilitate training in all six countries. The learning platform is called Workday Learning (WDL) and was purchased as an extension to their existing IT system used by Human Resources (HR) and Finance departments for planning, payroll and employee data. The company aims to enhance learning through the LMS and facilitate the knowledge transfer between the different international offices and the head offices as well as to ensure content quality and to teach uniform working routines.

The LMS implementation has been conducted simultaneously in all countries in three phases. First, the company purchased WDL in 2018-2019. Second, they launched WDL to the managers in all countries during the first half of 2019. Lastly, in January 2020 they launched it to all employees in the entire organisation.

This study takes place in the last phase of the implementation at the Swedish headquarters. The company has 550 employees all around Sweden, and 270 of them are working at the headquarters. All employees in Sweden undergo a tailored training programme aligned to the company's objectives and the learning needs of their department. According to the company's website description, the goal of the training is to support employees in their daily tasks and to promote their future career development within the company with theoretical and practical courses.

This study has been conducted in collaboration with the Learning and Development (L&D) unit, under the administration of the HR department in Sweden. Specifically, the L&D unit is responsible for coordinating the learning material as well as supporting and upgrading the training process in the different departments. A part of this project is to understand the company's training routines and how they could be supported by the new LMS and enhanced through e-learning approaches. Within this collaboration, we will also explore new potential ways to evaluate learning based on Learning Analytics and job performance specifically for the workplace context.

The company itself invests in learning and development in all stages of an employee's work life; from pre- and onboarding of new employees in the company to offering the opportunity to grow and change position

to other departments, offices or countries where the company operates. They also offer comprehensive leadership programmes both for new managers and more advanced for experienced leaders.

Apart from the dedicated L&D unit belonging to the HR department, the organisation has their own Academy for the three main business units (see Figure 5.3). Three managers are responsible for the training and evaluation of the employees within each of these business units. In two of the business units the training managers have support from dedicated coaches and coordinators who plan and conduct training workshops. All of the training managers in the Academy work in close collaboration with the team leaders of each business unit which are directly in charge of the employees. The learning needs of these three business units belonging to the Academy will be examined during the first phase of the research, while the next section describes the overall learning strategy of the company.

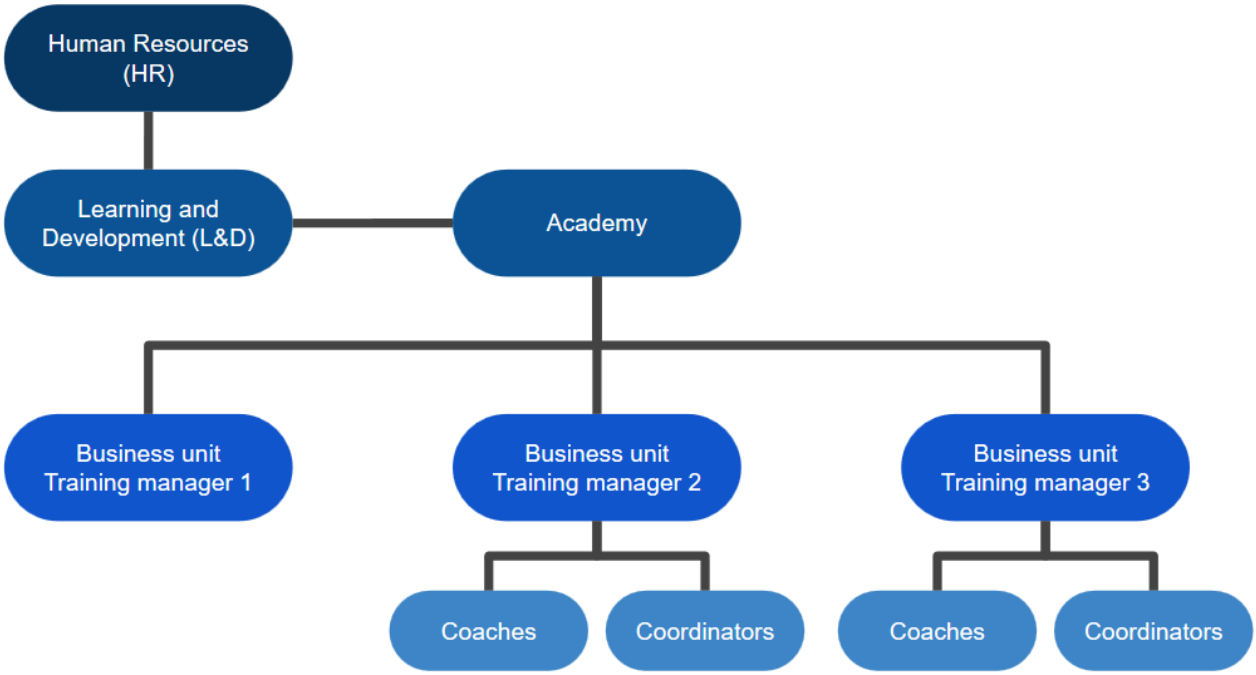

Figure 5.3: Organisational structure of L&D professionals

5.1.1 Instructional approach

The company's global learning strategy is based on the 70:20:10 framework which is used as a foundation for the organisation's training of employees. The 70:20:10 model was developed by McCall Jr., Lombardo and Morrison in 1988 (Johnson, Blackman, & Buick, 2018). Their empirical studies were based on questionnaires with managers and showed that the biggest component of executive managers' development was achieved through challenging on-the-job experiences and relationships with senior managers and peers. The 70:20:10 model suggests that 70% of executive managers' learning is achieved by challenging work experiences and on-the-job tasks; 20% of development takes place through interaction with other people, peers and executives, while only the remaining 10% is based on formal training (Johnson et al., 2018).

Thus, learning comprises three different types: experiential, social and formal that are considered to be particularly effective in management and leadership development (Johnson et al., 2018; McCall Jr.,

Lombardo, & Morrison, 1988; Rabin, 2014). In this company, all three parts of learning are present; formal as classroom courses delivered by instructors through workshops and lessons, social learning as coaching sessions to exchange knowledge, discuss and get feedback from peers, and lastly practical on-the-job training out on the field to practice the acquired knowledge. The formal training takes place in dedicated classrooms at the headquarters where new employees across Sweden physically attend their initial training and onboarding during their first week at the company. Managers and coaches as the instructors deliver workshops, presentations and traditional lecturing.

The core of social learning is learning through interaction with peers (Aehnelt, Ebert, Paschen, Beham, & Lindstaedt, 2008). Specifically, the company fosters social learning approaches such as coaching sessions, shadowing more experienced colleagues and individual manager feedback. These methods can also be considered scaffolding techniques to support employees' individual learning process. Group activities and social discussions are also a part of the workshops and classroom training, presented previously. Hence, the formal and social learning methods can be combined and sometimes even overlap, since they are not necessarily separate activities for learning.

According to the 70:20:10 framework, experiential learning should be organised work-based assignments (Johnson et al., 2018). In this case, part of the learning occurs in a training environment simulating the job situation to practice the job tasks. Furthermore, the experiential learning mainly takes place on the field to practice their own job tasks. For the various ways to deliver training, the company uses a number of different evaluation methods to assess the activities for learning and the employees' performance, which is presented in the following section.

5.1.2 Evaluation

Evaluation of educational activities takes place both during and after the training sessions. Quizzes and tests are frequently used to evaluate whether the employees have acquired the knowledge from the training. An external digital tool is used to create the tests and view the results of the quizzes for each employee individually. These tests and quizzes usually concern the content of the course and the results help the instructor to assess if the employees need additional training in a specific area based on the incorrect answers.

After all training and coaching sessions, the participants answer a survey about the training. The company uses two external digital tools called Questback and Netigate to create, conduct and collect the anonymous responses. The survey questions are adapted manually to the type of training, content and business unit by the responsible training manager or coach. Usually the survey is designed to include both open questions where the participants can answer with free text, and shorter questions to rate on a 1-7 scale how satisfied they were with the course and instructor. Generally, the survey questions are aimed towards how the users experienced the course and the instructor and the results are used to identify what they can change and improve regarding the courses.

Employees also receive individual feedback and follow-up from their managers, team leaders or coaches both during the onboarding period and when participating in courses, workshops and coaching sessions. The personal feedback usually involves detailed reviews of the employee's performance, for instance by illuminating what they did good and discussing specific points they can improve. For example, regarding evaluating communication skills the manager can listen to a recorded customer phone call and guide the employee on how they could answer differently for better results. These different evaluation methods, tests,

surveys and feedback sessions, are combined and frequently used in the different parts of the organisation to assess employees and help them evolve. With the implementation of the LMS, introduced in the next part, the company aims to enhance the evaluation process along with the delivered training.

5.2 Learning Management System (LMS)

This section will cover the description of the Workday Learning (WDL) platform, the company's LMS. The focus is placed upon the platform's functions in order to present the technical possibilities and limitations that can be discussed later in relation to e-learning approaches and evaluation needs. The first part introduces a short overview of the LMS implementation and the company's purposes and proceeds with the LMS features regarding creating and distributing learning content and collecting employees' feedback and online activity information. The latter is separately reviewed in the second part of the section detailing the different types of reports and the collected data sets.

5.2.1 Workday Learning (WDL)

The company selected and purchased WDL as their new and first LMS during 2018-2019. A centralised unit of L&D professionals in the company coordinated the global LMS implementation. They created and provided guidelines to all L&D and training managers of each country. The guidelines document how to produce content and layout design to align the learning material to the company's requirements in connection to the 70:20:10 framework. The L&D managers in each country were the main responsible ones for the LMS implementation in their respective country's offices. They collaborated closely with each other as well as with the central unit. In addition, a dedicated person from the LMS company supported the L&D managers in this immense implementation project.

WDL is an LMS that is added as an extension to the company's existing IT system used by HR and Finance departments for planning, payroll and employee data. This connection of the LMS with the HR and Finance IT system aims to facilitate the company's coordination of training by sharing the employees' relevant data. Thus, receiving tailored learning and training opportunities becomes an integral part of the employees' work life in terms of following-up and supporting their internal career progress, from onboarding and monthly goal setting to job role changes and promotions ("Workday Learning", 2019). This notion aligns with the company's values and strategy regarding training which is considered as an essential component for achieving business profit and growing globally.

Moreover, WDL is an application with both web and mobile versions. This functionality allows employees to access learning material from different devices, e.g. computer desktop, smartphones and tablets. The company provides the employees both versions of the WDL application to adapt to the employees' needs.

Access through different devices is an aspect related to WDL's overall objective for organising "on demand, relevant, and personalised" learning "in a social environment" ("Workday Learning", 2019, p. 1). According to WDL, they deliver employee-centric learning experience. That means that "employees can take control of their own educational experience, set personalised preferences that surface relevant content for current or future roles, view recommended learning, and access required material" ("Workday Learning", 2019, p. 1). Additionally, WDL supports peer learning so that employees can share their knowledge and expertise by creating instructional videos and content which could lead to reducing time and cost of content development ("Workday Learning", 2019).

Specifically, regarding WDL's course types, also known as Learning Content Types, there are four categories, *Stand-alone Lessons*, *Digital Courses*, *Programmes* and *Blended courses*. *Stand-alone Lessons* are independent digital courses with few design functions and are considered an appropriate option for employees that want to create and share their own learning material to promote peer learning. *Digital Courses* consist of step by step lessons in a linear arrangement, and can incorporate various media, while a *Programme* is a collection of several lessons, *Digital Courses* or even *Blended Courses*. The latter could be better described as an administrative function to schedule and enrol employees in classroom training rather than a course type of mixed individual and classroom learning.

Similar to *Blended Courses*, there can be scheduled and offered courses with instructors that take place physically. These are known as *Course offerings* and take place as classroom training. *Course offerings* depend largely on the number of employees that have registered to participate. Therefore, the number of minimum and maximum registrations as well as a waiting list are necessary pre requirements for organising a *Course offering* on WDL.

In the system the ones responsible within the company to create, distribute and update digital courses are assigned to be Learning Administrators. The digital training material they create addresses the needs for the different business units and expands from courses for the top managers and the employees on the field or the sales representatives to general courses regarding communication, IT security and international policies. The Learning Administrators can choose whether the courses provided on WDL are mandatory, elective or on demand and, thus, they can control the participation process as well as monitor the employees' online activity and progress. Within their responsibilities it is also to approve content created by employees in order to make it accessible to their colleagues. In the company authorised Learning Administrators are the L&D and training managers.

To create digital courses on WDL the Learning Administrators can include *Videos*, *Interactions* and *Media*. In particular, WDL allows the upload of video content but does not offer the option to record or edit videos. However, there is the possibility to embed questions or comments into videos or other media types through the function *Interactions* to collect employees' feedback. In particular, *Interactions* consist of the following possibilities: text note by the instructor, multiple choice questions, open questions, and checkbox questions in case there are multiple correct answers. Concerning the term and function *Media* this is not clearly presented by WDL but could be considered as any type of media content such as presentations, videos and pictures. Additionally, the Learning Administrators can attach PDF documents or PowerPoint presentations as downloadable material rather than to be displayed on the platform.

In the case of existing learning material that needs to be incorporated in a digital course, the function *Packaged content* can be applied. This term refers to the Sharable Content Object Reference Model (SCORM) which is an export format for document types, including presentations and videos, integrated in various platforms. Hence, WDL can support and include material produced in other tools, used already by the company to create learning content, as long as these tools offer also the SCORM format to export material.

Regarding functions to deliver digital courses the Learning Administrators could use *Campaigns*. These are a way to advertise courses to selected WDL audience either as optional or as mandatory training. Nevertheless, it should be pointed out that the *Campaign* function cannot be added into a course. On the contrary, the Learning Administrators need to recreate the selected course to be a *Campaign*, thus making

it a distinct version of the original course. Another way to deliver digital courses is the function *Enrolments* where instead of the Learning Administrators the employees can enrol themselves or the team leaders can enrol their team members on an offered digital course.

When employees take a course, WDL provides the function *Survey* to collect their feedback. The Learning Administrators can create a *Survey* and add it at the end of a course either to let employees evaluate their learning experience or as an assessment of the employees' acquisition of knowledge. However, the company's guidelines underline that the employees should not be interrupted with surveys after each completed course. Additionally, it should be noted that the WDL *Surveys* are not anonymous.

Another important aspect for implementing WDL in the company is to manage the learner's activity data and get valuable insights. Therefore, the Learning Administrators can follow the employees' online activity through the *Learning History*. By accessing an employee's profile on WDL they can review the number and types of completed courses and conclude for the employee's next learning step. Besides the *Learning History*, WDL is extensively collecting and providing learners' activity data into *Reports*, such as *Progress and Completion* and *Time spent on training*. That way the Learning Administrators can get information about the employees' online activity on the platform and can export and manipulate the data in Excel documents or even visualise it through WDL *Dashboards*. The topic about learners' activity data in reports is presented thoroughly in the following section about WDL Reports.

5.2.2 Workday Learning Reports

Similar to other LMSs, WDL "takes advantage of underlying technology such as (...) comprehensive reporting and analytics" ("Workday Learning", 2019, p. 1). The analytics are presented into reports and dashboards on WDL that allow the Learning Administrators to reflect on the learners' activity data or results from digital courses. By analysing the learners' data and attributes from the reports, valuable insights could be uncovered in order to support learning outreach. According to Workday Learning (2019), analytics help identify inconsistencies and opportunities in order to optimise the overall learning experience.

The Learning Administrators can select a report and the relevant data will be presented in both tables and graphs, i.e. dashboards. Each report includes a variety of information that are presented by columns, e.g. course title, completion date, completion status, etc. The data is possible to filter by column, for example by course type or title or completion date, in order to define and obtain only the data that are relevant. By filtering the data, the dashboards update accordingly. The Learning Administrators can also export the reports into tables in Excel format, though the exported data will include all the information even after the application of filters on the WDL platform. Despite the option to filter the presented data, WDL data is displayed only on individual level, i.e. per employee and especially the dashboards do not provide the Learning Administrators with an overview of the learners' aggregated data. At this point it needs to be highlighted that companies collecting individual data of their employees should follow the General Data Protection Regulation (GDPR) (EU 2016/679) to take the individuals' ethical implications into consideration.

At the same time, it is essential to clarify another function of the reports in WDL although it will not be examined thoroughly in this study. Based on the company's guidelines for WDL some of the reports are used as a search function. For instance, the Learning Administrators can use the *Campaign audience report* to search and select to which employees they will send a *Campaign* for a specific course. This indicates that the term "report" covers functions that are not always related to analytics and learners' activity data.

Considering that as well as the company's early stage of the LMS implementation, there is an evident need for defining the appropriate usage of each of the offered reports in order to facilitate the L&D and training managers' work.

By the time of this study, WDL offered 29 reports (see Appendix 1). For some of these reports, the company had already proceeded with providing short descriptions of their purpose. Nevertheless, the company was still at the beginning for introducing guidelines to use the reports, as well as the usage and the collected data was rather limited. Additionally, the reported data was either insufficient or unavailable since WDL was launched to all employees for only one month when this study was conducted.

For the purposes of this study nine reports (see Table 5.1) were selected for the first phase of the research (see Methodology). These reports were discussed during the interviews with the training managers in order to identify what data is considered necessary to obtain from the LMS in order to evaluate the employees' learning progress. From those presented, only four reports included a short description offered by the company as guidelines for what would facilitate the L&D and training managers in the use of them. The nine reports could be organised into four categories based on their main objective of their data: course completion, quiz completion, time spent and video activity. In this section the most important data of the reports are presented but for a more comprehensive view of the data of all the nine reports see Appendix 1.

Report Title	Report Description
Progress and Completion	———
Learner engagement by organisation	Used to report on how engaged our employees and managers and job profiles are.
Course offerings (with less than minimum enrolments)	Used to report on upcoming course offerings with less enrolment than the minimum capacity of the course offering. Purpose: To detect which course offerings need more enrolments in order to run the course. The learning admin will need to do some marketing of the course.
Campaign results	Used to report on campaign completion status by employee.
Media interactions	———
Media tracking for packaged content	Used to report on the overall score i.e. did the worker pass or not, as well as to see what they answered wrongly.
Time spent on training	———
Video interactions (overall results)	———
Video tracking	———

Table 5.1: WDL Report descriptions

Regarding information about course completion four reports, namely *Progress and Completion*, *Learner engagement by organisation*, *Course offerings* and *Campaign results*, seem to collect relevant data though from different perspectives (see Table 5.2). Specifically, the report *Learner engagement by organisation* informs about the employees' overall learning status, meaning the number of courses that they are in progress of, enrolled in, they have completed or not started yet. This information consists only of numeric data about the number of courses, even excluding information regarding the course titles and the course type, i.e. Learning Content Type, for example *Digital Course*.

Learner engagement by organisation	Progress and Completion	Campaign results	Course offerings
Employees' data	Employees' data	Employees' data	Course title
Not started	Course title	Course title	Course start and end date
In progress	Completion status	Completion status	Enrolments
Completed	Expiration date	Expiration date	Minimum and maximum enrolments
Enrolments	Completion date		Waiting list
	Drop reason		
	Course grade/score		

Table 5.2: Course completion reports

On the other hand, the reports *Progress and Completion* and *Campaign results* provide data for the employees' learning status on a specific course on which they were either registered or invited through a *Campaign* accordingly. Therefore, these two reports have some similarities because they both include data about the employees' identity, e.g. job position and location office, the course title, their completion status and the course's expiration date if applicable. However, as explained in the previous section, courses that are delivered through *Campaigns* constitute a distinct version of the original course found on WDL. That means that the information these two reports provide do not overlap and, hence, their usage relies on the course itself; if it is of any Learning Content Type, e.g. *Blended course* or *Programme*, or if it was delivered through a *Campaign*.

As can be seen from Table 5.2, the report *Progress and Completion* provides a more detailed picture of the employees' learning status for any selected course. In particular, apart from learners' personal data, course title and type, it also consists of data about completion date, that none of the aforementioned reports offered, drop reason, as well as course grade and score. Interestingly, it also includes information that can be found in the report *Course offerings*, i.e. the instructor, location, registration status and expiration date. In this case, it could be possible to use the report *Progress and Completion* to analyse the employees' learning progress on a *Course offering*. The main difference between the two *Reports* can be found in terms of the data's perspective. The report *Course offerings* concerns data about the course, such as start and end date, minimum and maximum registrations and waiting list, in comparison to the focus on the employees' progression reported by the respective *Progress and Completion*. Overall, the presented reports concentrate on courses rather than quizzes.

WDL offers separate reports about quizzes, also known as *Interactions*. These are *Media interactions*, *Media tracking for packaged content* and *Video interactions* reports (see Table 5.3). The two reports about *Media* relate to each other because they concern data about *Interactions* embedded in any type of media, e.g. videos or presentations. Therefore, they both include data about employees' identity, course title, quiz completion status and date, quiz question, employees' answers and their results, i.e. pass or fail. Their main difference is that *Media interactions* report offer information about the total percentage of the media that was watched and *Media tracking for packaged content* report shows the type of the *Interaction*, e.g. multiple choice or checkbox quiz.

Media interactions	Media tracking for packaged content	Video interactions
Employees' data	Employees' data	Employees' data
Course title	Course title	Course title
Completion status	Completion status	Completion status
Completion date	Completion date	_____
Quiz questions	Quiz questions	Quiz questions
Learner's answers	Learner's answers	Learner's answers
Result	Result	Result
Total percentage watched	Interaction type	Total percentage watched

Table 5.3: Interactions reports

Another difference, though not properly clarified, is that *Media tracking for packaged content* refers to material that is exported in SCORM format from other systems and incorporated into a course on WDL. The significance of this difference could be that the company can use in a WDL course the existing quizzes created on other systems, and also collect the relevant results on the WDL platform. Hence, the report *Media interactions* possibly refers to the quizzes created on WDL while the report *Media tracking for packaged content* refers to quizzes created on external tools.

Compared to these two reports, *Video interactions* report offers similar but rather limited information. Specifically, it only collects data about course title, quiz completion status, quiz question, employees' answers and their results. However, the main restriction of this one other than the data amount is the focus on quizzes in videos entirely. Thus, it is possible to access the same and more comprehensive data from the other two reports instead of *Video interactions*.

However, information about solely video completion appears to be available on one report, namely *Video tracking* (see Table 5.4). This one offers data about the employee, course title, completion status and date, total percentage and time watched. The main factor that differentiates this report from the previous ones does not concern the data amount and quality but rather the focus. Since not all videos need to include *Interactions*, this report is applicable to collect the necessary data. In case, though, the video includes *Interactions*, it is possible to find out about the total percentage of the video watched or the completion date and time through the report *Media Interactions* instead.

Video tracking
Employees' data
Course title
Completion status
Completion date
Total percentage watched
Total seconds watched

Table 5.4: Video tracking report

Considering the time spent on a course, WDL provides the report *Time spent on training* (see Table 5.5). As it appears, the report presents information about the employees' identity, the course title and type, the completion status and the duration in minutes/hours. The data about duration of taking a course cannot be found on any of the previously presented reports. Due to the recent LMS implementation and the limited data availability though, it is not clarified whether the reported time reflects the actual employees' online time activity or just the estimated time that is set by the instructor in the course's description. Since the Learning Administrators are advised to set for each course description an estimated time for completion, it is possible that WDL collects this information and presents it through the report *Time spent on training*. In that case, the reported data about the time can also be found in each course's description instead of the report *Time spent on training*.

Time spent on training
Employees' data
Course title
Course Learning Content Type
Completion status
Duration in minutes/hours

Table 5.5: Time spent on training report

As it is apparent, the presentation of the reports and their relevant data is limited due to the early stage of the LMS implementation. In some occasions, it is necessary to proceed with clarifications about the functions and possibilities. Nevertheless, this is not the case for this study's purpose but rather to analyse the possibilities of the selected reports and their data in order to facilitate the work of the L&D and training managers. The next chapter presents the Methodology that consists of the overview of the case study and the different phases. At first, we conducted a meta-synthesis of the existing literature on workplace e-learning (see Literature Review) followed by interviews with training and L&D managers to identify the needs of the different business units regarding learning material, reports and learners' activity data. In the last phase, we implemented a survey questionnaire to the employees of a specific department to investigate the employees' perspective on job performance outcomes and learning goals.

6. Methodology

This is a case study divided into two phases that implemented both qualitative and quantitative methods. Specifically, in the first phase semi-structured interviews were conducted to investigate the business units' instructional approaches and learning needs as well as the managers' expectations from Workday Learning (WDL) reports. The last phase employed a questionnaire survey to a department's employees in an attempt to investigate the employees' perspective regarding the relation between their digital courses' goals and the organisational business objectives.

6.1 Case study

To study the phenomenon of workplace e-learning in a real setting we have conducted an exploratory case study in a company. A case study provides a unique example of real people in real situations, or a contemporary phenomenon in its real-life context, usually employing many types of data (Cohen, Manion, & Morrison, 2011; Farquhar, 2012). This case study is a specific example that can be used to understand how contemporary companies work with professional training and use technology to meet their learning needs and evaluation methods. An additional advantage of this research method is that it enables the readers to understand ideas more clearly than simply to present abstract theories or principles (Cohen et al., 2011).

Typically, case studies recognise and accept that there are many variables operating in a single case. For that reason, case studies usually require more than one tool for data collection and many sources of evidence and often consist of mixed research methods (Cohen et al., 2011; Farquhar, 2012). Accordingly, different methods for data collection such as semi-structured interviews with managers and surveys for employees will be presented later in this chapter.

Although descriptive and detailed, case studies often have a narrow focus commonly combining self-reported and observational data in their results (Cohen et al., 2011). For these reasons, a case study is not necessarily generalisable or representative for other research scopes of the phenomenon. Therefore, we acknowledge possible limitations of this case study regarding validity for transferability to other contexts or settings, as well as the ability to generalise the results of the research (Farquhar, 2012). However, by presenting literature and previous research about e-learning and Learning Management System (LMS), as well as applying Anderson's model of Value Learning (2007) to analyse the data, this case can introduce an approach applicable to other corporate organisations' workplace e-learning. Moreover, despite different learning needs, the increased use of e-learning and LMS in corporate organisations would make this case study and its findings relevant to other companies.

6.2 Phase I - Semi-structured interviews

In the first phase, it was necessary to obtain information about the learning needs and evaluation processes of the organisation that WDL could potentially address. Semi-structured interview was selected as the research method to collect this type of qualitative data. In order to define each business unit's needs, it was essential to apply an approach with a flexible structure that allows both, in-depth exploration and clarification of each interviewee's responses (Elliot, Fairweather, Olsen, & Pampaka, 2016). Since interviews are prone to subjectivity on the part of the interviewer and, thus, have limited reliability, semi-structured interview provides the flexibility to ask for further clarifications in order to reduce possible bias from the researchers' point of view. On the other hand, structured interview was rejected to be applied in this study since it gives little flexibility to adapt the interview questions to the participants and the particular

conditions (Patton, 1980). Furthermore, regarding reliability of the semi-structured interview as a research method, we proceeded to create interview plans to cover the same topics and ensure that all participants would address the same questions. This along with the participation of two researchers in the interviews and the data analysis are described in detail later in this chapter and were considered advantageous to increase reliability of this method.

By applying semi-structured interviews, we could also obtain information about the purpose and preferences regarding each unit's learning strategy as well as attitudes and beliefs regarding the potentials of WDL (Cohen et al., 2011; Tuckman, 1972). Observation and user testing could also be applicable in order to understand the users' attitude and perception towards navigating and using WDL. Nevertheless, the focus of the study was placed upon discovering the learning needs and evaluation methods rather than evaluating or improving the LMS features. Thus, user testing would not contribute to the study with the necessary data to answer the research questions compared to the potentials of semi-structured interviews.

In fact, the method's explanatory nature would help in analysing the motivations of participants and their reasoning behind their responses (Cohen et al., 2011; Kerlinger, 1973). As an alternative to semi-structured interviews, we considered conducting trace interviews, where the interviewees are presented visualisations, such as graphs and reports, of a user's digital traces (Dubois & Ford, 2015). This method's purpose is to stimulate the participants' attention and evoke reactions from reflecting upon the visualisations. According to Dubois and Ford (2015), trace interviews help increase the reflection process and memory retrieval and can be used to discuss and confirm interpretations of user's activity data. However, due to lack of reliable and useful data from the WDL reports, this method was also rejected. Instead, we concluded to conduct semi-structured interviews and use the reports' titles and descriptions to stimulate relevant responses from the participants. This will be described in detail in the next section after the selection process for the interviewees.

6.2.1 Selection of participants

Based on job role and involvement in WDL, four managers were selected to participate in individual semi-structured interviews. Specifically, three of them are the training managers of the three main business units in the Swedish headquarters and one is the general manager of the WDL implementation strategy. Among their responsibilities are training of the employees, creating the learning content and evaluating the employees' learning progress. Other employees were not considered as potential interview participants since they are not responsible for administering and decision-making regarding the business units' training. These managers had access to WDL already for some months since September 2019 or earlier in comparison to the other employees that got access by January 2020. Some of the managers had already created courses or/and had taken any of the offered digital courses by the time of the study.

Despite the aforementioned selection criteria some considerations should be noted in respect to the interview participants. First of all, the managers' perspective could distinctly differ from the perspective of their employees that get trained as well as from the top management executives. However, in order to obtain an overall understanding of the training process and strategy in the three business units, their managers were considered as the most reliable source of information. Hence, the interview participants were selected in order to provide insights into the different business units of the company. Another significant aspect to be reported is the different levels of the managers' experience as training experts and as WDL users, especially when considering the different business units and their different learning needs and methods.

The Learning and Development (L&D) manager of the headquarters in Sweden helped in providing the contact points for the potential participants. This could have affected their willingness to participate in terms of the professional and personal relationship between the interview participants and the L&D manager. However, since the research was conducted by external researchers, the access point to other departments and participants in the study was through the L&D manager and the Human Resources department with whom the whole collaboration was initiated. Invitations with sufficient information about the study, the interview process and the main interview topics were provided to them when inquiring on willingness to participate. It was also clearly stated the possibility to ask questions related to the upcoming interviews and to request relevant clarifications.

Following the participants' acceptance of the invitations, consent forms were sent to all four managers. One of the participants, the general manager of the WDL implementation strategy, decided to withdraw before conducting the interview. Two other potential candidates were contacted by the L&D manager by sending the necessary information, the interview topics as well as the consent form. Only one of them, the global L&D manager, that is placed outside Sweden, replied and agreed to participate. Naturally, considering that interview participants reflect their personal opinions and interpretation of the company, the study's results and answers from the semi-structured interviews would differ if another individual participated. Nevertheless, the purpose of the fourth interview was to obtain information about the company's global learning strategy and WDL implementation plan and, thus, the latter two contacted candidates would also be a reliable source to provide the necessary information from the global learning perspective based on their job role and position within the company.

6.2.2 Structure

The structure of the interview plans and processes differ due to location restrictions and the participants' job roles. In particular, the interviews with the three training managers took place face-to-face, at the Swedish headquarters, and were voice recorded. On the other hand, the interview with the global L&D manager was conducted as a recorded video call and the L&D manager of the Swedish headquarters was also included as a passive observer as explained thoroughly later in this section. The duration of the interviews varied from 30 to 60 minutes. One researcher acted as the main moderator of the interview and the other one participated partially as an observer and less actively by only asking additional questions.

In accordance to Thomas' suggestion for forming an interview schedule (Thomas, 2017, p. 208), we created two separate interview plans (see Appendix 2) adjusted to the different participants' job roles, i.e. training managers and the global L&D manager. One of the plans was divided into two distinct parts. In the first part some identified topics were discussed with the each of the training managers including their role and department responsibilities, their personal impression and professional expectations about WDL as part of the training, each business unit's learning needs, e.g. employees' skills and relevant courses, and the LMS evaluation possibilities of the employees' training. These topics covered different aspects we needed to explore in order to understand the company's learning strategy per business unit and construct a comprehensive overview of the delivered training.

During the second part, we focused on the WDL reports as one possibility to evaluate the employees' learning progress on the platform. For the purposes of these interviews, we selected nine WDL reports from the 29 in total, namely *Progress and Completion*, *Learner engagement by organisation*, *Course offerings*, *Campaign results*, *Media interactions*, *Media tracking for packaged content*, *Video interactions*, *Video tracking* and *Time spent on training*. The choice was based on our own understandability of the relevance

of the reports for a training manager's responsibilities. Although our familiarity with the reports was limited, we had the chance to access different reports prior to the interviews in order to compare the different categories of data. The names and available descriptions of the nine selected reports were provided to the training managers in separate cards. No relevant digital data of learners' activity or graphs/tables were offered due to unavailability, as explained previously (see Context).

The participants were asked to read the cards and place them in order of priority based on their needs and own interpretation of the reports' content and potential data. It should be clarified that none of the training managers had yet accessed any of the WDL reports when the interviews took place. In many cases, they requested further explanations regarding some reports' purposes and functionality. In general, they followed the interview instructions and proceeded to interpret the reports on their own and to express whether relevant data would be valuable for the evaluation of their business unit. Occasionally we also provided additional information but always emphasised that our perception was very limited as well and, thus, we did not want to interfere and possibly create any misinterpretations.

The interview plan with the global L&D manager differs significantly on the topics and the actual process from the previously described one. Apart from the job role and responsibilities, the interview questions addressed the organisational strategy for implementing the LMS to support the existing learning approaches, the challenge of investing in digital tools and proving the Return on Investment (ROI) from the training, and any identified LMS limitations. The objective was to collect relevant information from the organisational point of view in contrast to the perspective of each business unit's training manager.

Regarding the evaluation of learning though the LMS and the WDL reports, we did not include cards with the reports' names. Instead we discussed in general the interviewee's opinion and preference on collecting learners' activity data as well as the organisational strategy for using WDL reports. In comparison to the other managers, the global L&D manager had already accessed some of the reports and was relatively familiar with their titles and descriptions as well as presented data. The interviewee's overall experience with the reports, though, was rather limited due to the recent LMS implementation.

Additionally, as already pointed out, during the above described interview the L&D manager of the Swedish headquarters took part solely as an observer. Only a few times the interviewee expressed questions to the L&D manager to ask for some clarifications. None of these questions were initiated by the researchers or the L&D manager themselves. Possible ethical considerations regarding the attendance of the L&D manager and the confidentiality of the interview should be taken into account. However, the interviewee was asked for confirmation for the L&D manager's passive participation and had confirmed it prior to the interview process. It is essential, though, to point out as a limitation that the specific interview was conducted with one main moderator and two observers which could place more pressure on the interviewee to freely express their opinions. For clarification, the L&D manager's participation in this interview was necessary due to the need to set up the video call and record it by using the company's communication tools for confidentiality reasons. As the researchers were external, they did not have access to these tools which resulted in including the L&D manager as administrator of the video call and passive observer of the interview.

6.2.3 Data analysis

The data analysis following the interviews is described as a thematic one. According to Braun and Clarke (2006) thematic analysis is a method used for identifying, analysing, organising, describing, and reporting themes found within a data set obtained from interviews among other research methods. In this case, the

four interviews obtained via voice and video recordings were transcribed manually and printed into two copies. As part of the analysis each researcher read thoroughly every transcription and separately highlighted some emerging topics and common themes of the interviews.

Afterwards, we discussed and compared the different topics to identify the main ones that could address the research questions. That is an advantage of this type of analysis because it is flexible and enables to examine the participants' perspectives and highlight similarities and differences that could generate unexpected insights (Braun & Clarke, 2006; King, 2004). This process iterated three times before concluding to the topics presented in the Findings for the first and the second research questions in order to ensure consistency of the reported results. Indeed, it has been argued that thematic analysis is characterised by lack of coherence when developing themes derived from the research data (Holloway & Todres, 2003) The two broad concepts that were identified consist of the learning approaches and needs of the different business units, and the opinions on the learners' activity data and WDL reports. Afterwards, the results were categorised into separate groups under the two broad concepts of learning needs and report preferences. The division into two broad concepts is aligned with the first and second research questions and, thus, the data are presented in the Findings accordingly.

6.2.4 Ethical considerations and Limitations

The consent form that was sent to the interview participants followed the regulations by the Swedish Ethical Review Authority and the General Data Protection Regulation (GDPR) (EU 2016/679) and was formulated in Google forms. Given that interviews may involve personal and sensitive matters (Cohen et al., 2011), the consent form stated explicitly that the participation is voluntary with no compensation offered, and that the participant is free to withdraw at any point. It was clarified in advance that the interviews will be voice or video recorded, how the data will be stored and processed, and the participant's rights regarding requesting data access or removal. Additionally, confidentiality was addressed when presenting the data reported in this study to limit traceability risks. Regarding data security, the consent form affirmed that only the researchers have access to the recordings that are stored in their personal mobile devices and computers. The complete consent form that the participants signed is attached in Appendix 4.

The consent form was employed in order to address confidentiality issues for the presented data, company and participants outside the company's context. In terms of internal confidentiality, the consent form could not promise full confidentiality for the managers participating in the study, but the access to the recordings and interview transcriptions were strictly limited to the two researchers. The only exception was the video recording of the fourth interview that was recorded by the L&D manager with the approval of the interview participant, as explained previously. Additionally, the company itself aims for transparency among their managers and employees and, thus, informed them about the occurrence of the study on internal communication channels. Hence, the company's strategy was to be transparent with all the employees regarding the study of the company but to remain unidentifiable externally. Considering the employees' overall awareness of the study, this could imply that the interview participants would provide a more positive image of their work, company or business unit which is challenging and difficult to resolve as external researchers.

Concerning other limitations, it should be pointed out that the participants are considered individual subjects and, thus, they provide limited data that represent their personal opinions and perceptions (Cohen et al., 2011). Regarding the internal validity of the research method, data from interviews could be prone to bias on behalf of the researchers in terms of selecting, organising and analysing the data (Cohen et al., 2011). In

this study, the interviews were conducted to collect the managers' opinion on their business units and organisation's learning needs and their perception on the new LMS and the respective reports. The corresponding results and the relevant suggestions could be applied in addressing the learning and evaluation needs, however, they certainly do not pose the employees' perception on the training they receive and their learning needs. In the next phase, the questionnaire survey is described that was conducted in collaboration with one department's employees.

6.3 Phase II - Survey questionnaire

The next phase of the study intends to explore the third research question regarding improving workplace e-learning by connecting the learning goals to the job performance. Inspired by Anderson's model of Value Learning (2007), that argues for the importance of connecting workplace learning to strategic business goals, we investigated this relation further in the company. Specifically, in order to understand the relation between training and job performance from the employees' perspective, a survey was conducted with a specific department's employees.

Considering that much of the literature on e-learning is based on research in formal educational settings such as schools and higher educational institutions, it is necessary to investigate e-learning in a workplace environment. Anderson's model of Value Learning (2007) is one of the few evaluation frameworks created for workplace learning. Although it does not provide a specific method for improving the learning itself, we decided to interpret some of the model's suggestions and investigate the employees' perspectives with the aim to enhance the evaluation of the company's training. The latter is considered essential since being able to evaluate the training could generate a better base for improving activities for learning.

Furthermore, Anderson's model (2007) suggests workplace learning to be aligned particularly to the strategic business goals, such as a department's Key Performance Indicators (KPIs). As the company's employees are the target group for the training, we considered it significant to probe workplace learning from the employees' perspective and, therefore, decided to select survey participants who are employees in the company. Asserting employees as study participants adds a new perspective to Anderson's model (2007) which was based on interviews only with HR and top management executives. Additionally, this method contributes to achieving the study's aim, to explore and introduce alternative approaches to improve their e-learning.

Conducting a survey was selected as an appropriate method to explore the employees' perspectives regarding a completed e-learning course from WDL after excluding other alternative research methods, e.g. interviews. Self-completion questionnaires are convenient in terms of time and flexibility for the respondents to answer individually, while the absence from researchers can make it easier for the participants to provide honest and in-depth answers to a higher extent than structured interviews (Bryman & Bell, 2015), which is critical for understanding the employees' opinions about the company's digital training.

Additionally, questionnaires can provide the possibility to mix quantitative and qualitative data which is a valuable addition to the qualitative interviews. However, surveys have some weaknesses, such as low response rates and "respondent fatigue", which are not uncommon if questionnaires contain too many questions (Bryman & Bell, 2015). With a small sample group, this research would be particularly vulnerable for low response rates which could leave us with limited data to analyse. Being aware of these risks in

advance we were able to take some actions, suggested by Bryman and Bell (2015), to increase the chances of higher response rates. These actions included creating a short survey with few questions, writing an informative survey description, letting the participants' team leaders send out the survey and also to send out several reminders to follow up. On the contrary, the employees' participation rate in interviews was debatable in this case compared to the questionnaire's respective one.

Furthermore, since the selected employees are geographically distributed, the interviews as an alternative data collection method would take place as video calls. This could cause complications, especially considering the need to include the L&D manager to administrate the video calls. Instead, survey questionnaires on the employees' perspective could also produce relevant qualitative data. Nevertheless, similar to interviews, the reported data from the questionnaire would represent the employees' subjective opinions based on questions created by the researchers while also the data analysis would be conducted through the eyes of the researchers. Thus, taking into account the factors of the response rate and reliability issues, a survey questionnaire was considered more appropriate compared to the interviews in the context of this study.

Moreover, according to Bryman and Bell (2015), a survey questionnaire allows researchers to collect quantitative data as well, without individual variability from the researchers since the questions are the same for all participants. This means that the survey is scalable, if sufficiently and properly tested, and can be used again with larger sample groups for later research, which would be particularly useful for the company or other workplace settings, and can therefore be considered a beneficial research method for a context with limited data available. However, it should be highlighted that the survey participants might interpret the questions differently without having the possibility to ask for clarifications (Bryman & Bell, 2015), which is a main concern of this study. Thus, we proceeded with the testing of the survey as described later in this chapter after the presentation of the selection process for the participants.

6.3.1 Selection of participants

First, we selected a department with e-learning as part of the employee training. Two of the criteria for choosing a department was that they use digital courses for training the employees and also have specific ways to measure job performance using KPIs. To find a reasonable sample size, we used the WDL reports for the different digital courses to receive information about the number of employees who completed the courses, which would equal the number of potential participants. After that we were able to select a specific course and create a survey for the employees who had completed this digital course. Questionnaire is an advantageous method for collecting data if the sample is geographically widely distributed (Bryman & Bell, 2015) such as in this case. The digital course is completed by employees of the particular department in all six countries the company operates in and, therefore, a survey questionnaire is a convenient tool to collect data considering the geographical conditions.

Taking into account that the LMS was launched to the employees in January 2020 when this study was initiated, the digital courses are new and the number of potential participants is very limited. Some courses only had very few individuals who had completed the training at the time of conducting this study which is a limitation for the data to be valid and representative for the company and workplace learning phenomenon. The limited participants challenge the reliability of the data, but according to Cohen, et al. (2011), a smaller sample size allows the questionnaire to be less structured and to include open and word-based questions. This creates a possibility to receive more expressive and descriptive data from the participants.

The selected course had ten employees who had successfully completed the digital course. Although the sample group is minimal, this was one of the few courses with a two-digit number of completions due to the recent LMS implementation, and the reason for why this course was selected. Out of the ten potential participants we received eight responses in total, which equals an 80% response rate. Bryman and Bell (2015) states that a survey response rate of 70-85% is good and above acceptable, which is agreeable considering the limited potential participants available.

6.3.2 Design of questionnaire

The company provided us an account with access to the external digital survey tool Questback which is normally used to evaluate their internal training. An advantage of using the company's tools is that the employees are familiar with the tool which is beneficial when aiming to collect their opinions.

After defining the aim for the survey, the questionnaire was detailed planned by creating a diagram with the formulated questions and the aim for each question, as well as the possible answers (see Appendix 3). This process would help us increase the validity of the research tool by making sure to obtain the correct data that will lead us to answer the research questions. Furthermore, the survey questions were tested with a pilot group consisting of three external volunteer participants with no connection to the company or project. The intention is to make sure that the questions are understandable and to identify potential challenges to avoid misunderstandings. An additional purpose is to check the estimated time for completing the survey for new participants in order to provide accurate information when sending out the survey to the participants. Piloting the questionnaire is according to Cohen et. al. (2011) a strategic way to refine items in the questionnaire. The pilot testing allowed us to get detailed feedback to revise the questions and also provided information that it took approximately five minutes in total to both read the instructions and answer the questionnaire.

However, it should be clarified that the people that tested the survey were not familiar with the department's course and the respective KPIs, since we did not have access to representative participants from the company. Therefore, it was not possible to determine whether the survey content was accurate and understandable by the employees in advance. This leads to another possible implication because in the context of the survey, KPIs are perceived as an integral part of the employees' job performance development which could not be confirmed with the employees before distributing the survey.

The survey was sent out to ten employees by their team leaders with information about the purpose of the questionnaire and a short description about the thesis project and the student-company collaboration. The participants also received an informed consent form at the beginning of the survey that they had to read and accept before proceeding to the survey questions. The informed consent included details about how the data will be used, stored and that their participation is voluntary. Two reminders were sent out to the participants by email the following two weeks after being invited to contribute to the study.

6.3.3 Data analysis

Questback provides different types of reports to present answers from the survey, including possibilities to export the numeric data to Excel and to receive a PDF including visual diagrams of the answers of each question. The PDF report was considered more useful for the purpose of data analysis because diagrams are helpful to see patterns and themes in the respondents' answers (Bryman & Bell, 2015). The data that was analysed included bar charts and percentages of the answers for each quantitative question, as well as the respondents' answers from the open-ended question. Out of the 10 potential participants who received the

survey, eight employees answered the questionnaire. Notably, only six of the eight participants answered the open question with free text, accordingly there was less data available to analyse one of the seven questions. The results are presented in the Findings and provided useful information about the participants' perspective of workplace learning outcomes. The individual answers were correlated and analysed in relation to the different survey questions. Combining the qualitative and quantitative data from the survey led to an increased understanding of the participants' answers because they provided their reasoning for answering certain questions.

6.3.4 Ethical considerations and Limitations

Before starting the questionnaire, the participants received a consent form following the regulations by the Swedish Ethical Review Authority and the General Data Protection Regulation (GDPR) (EU 2016/679). Transparency is an important ethical consideration when doing research (Bryman & Bell, 2015), thus, the consent form included detailed information about how the data will be used, stored and that their participation is voluntary and with no compensation offered. It should be noted, though, that their participation might have been influenced by their team leaders who distributed the survey questionnaire. In particular, the voluntary aspect of the survey should be considered within the frame of the phenomenon known as "impression management" (Goffman, 1959). This implies that the employees could have participated in order to satisfy the management rather than because of their own genuine initiative.

Regarding the confidentiality of the obtained data and integrity of the participants, this is addressed externally when presenting the anonymised results of the study outside the company. At the same time, access to the participants' answers was strictly limited to the two researchers since a personal account on the company's survey tool, i.e. Questback, was created on their behalf and used specifically for this study only. As Questback registers the survey answers anonymously, it is not possible to withdraw the answers after completing the questionnaire because it cannot be traced back to the individuals. Therefore, the consent form explicitly explained that the participation is voluntary and anonymous, and that the participants could cancel their participation at any time during the questionnaire before submitting the answers.

In addition, the participants are considered individual subjects and it is acknowledged that they provide limited data and can only represent their personal opinions and perceptions (Cohen et al., 2011). Regarding the internal validity of the study's evaluation tool, it should be pointed out that the survey reports the participants' perception and that the data could be prone to bias on behalf of the researchers in terms of selecting, organising and analysing the data. In this context, the survey was conducted to obtain the employees' opinion on the relation between learning goals and KPIs. The corresponding results and the relevant suggestions could be applied in the design of the courses' content and goals, but they certainly do not pose implications about the employees' transfer of knowledge on their job tasks.

Overall, during the presented phases of the study relevant information was collected to address the research questions. The different research methods included semi-structured interviews to identify learning and evaluation needs of the company, and a survey questionnaire to include the employees' perspective on the relation between learning goals and job performance. The results and collected data from the two research methods are introduced as findings in the next chapter.

7. Findings

After employing two different research methods, the results are presented by their ascribed relevance to each of the research questions. In the first section, information regarding the different business units' learning needs and goals are presented thematically in order to identify opportunities for introducing and adapting the Learning Management System (LMS) possibilities. The data from the interviews regarding the LMS reports and learners' activity data are described in the second section. Finally, the survey results about the employees' perception of the relation between Key Performance Indicators (KPIs) and learning goals are reported in the final section.

7.1 Learning needs that can be supported by e-learning approaches

The interviews with four training managers in the company provided detailed information about the learning needs and training routines of the different business units. To understand their needs and recent e-learning practices, the interview data is analysed and thematically presented below. The main topics identified are categorised by different routines for training, including onboarding practices, courses for technical and soft skills, practical learning on the job, mobile devices for online training, elective courses and video materials. The findings of these topics will help us suggest improvements for how to utilise technologies for learning based on literature on instructional e-learning methods that fits the needs of a corporate organisation with geographically distributed employees.

7.1.1 Onboarding training

Onboarding new employees is an essential part of the role of all managers we interviewed. One manager explained that their business unit offers a comprehensive onboarding programme for new employees consisting of 15 days of training, that the manager individually is responsible for. It consists of classroom training and workshops, smaller tests and a written exam at the end to assess if the new employees have obtained all the necessary knowledge to start working and handle real customer cases. At this stage, the onboarding has not changed much after the implementation of the LMS, other than that Workday Learning (WDL) is used as an administrative tool for course registration. The blended courses will still be held in classrooms as before. However, another department uses WDL to watch educational videos as part of the onboarding. For instance, new employees have homework to watch videos on WDL to be prepared for the classroom training the next day. Hence, that department is indeed using blended learning according to its academic term by combining digital and classroom training in their onboarding.

The company has invested in creating new digital content for onboarding new employees, and according to the global Learning and Development (L&D) manager, onboarding is considered an important element for retaining employees: "The learning need is [placed] in general in the onboarding (...) that is because of the retention overall". By investing in onboarding and increasing retention, the company estimates that they will save resources and costs from recruitment. Another manager also mentioned retention as an objective for their business unit, considering it as a demographic challenge since the business unit consists of many young employees. This shows why onboarding is a priority for several managers and which other benefits that could come out of this investment.

Although the company has provided digital onboarding material, one manager mentioned that the majority of the onboarding process is still held as formal training in classrooms or workshops. WDL offers the Learning Administrators the possibility to schedule classroom courses as blended courses. While blended learning is widely known as the combination of e-learning material with traditional face-to-face teaching,

in the company's context and WDL platform, *Blended course* is used as an umbrella term and categorisation for any education that is not digital. In other words, to organise a classroom course and register it on WDL, the managers have to create a blended course on WDL and set the time and place for the classroom education. This means that the managers use the term blended learning to actually describe a classroom course even though there are no mixed or blended educational methods. Hence, their perception might differ from the academic understanding of the term blended learning.

7.1.2 Training for technical and soft skills

Regarding skills that are important for employees to have, all managers pointed out that both technical and soft skills are essential. One manager explained that the employees should have high proficiency in Microsoft Office programmes and Excel that they use on a daily basis, while two other managers rather focused on technical knowledge in terms of knowing the company's products and features. The soft skills would vary depending on the business units and job tasks. For instance, the employees working as coaches should be offered courses in rhetoric, how to train and coach people and stress management, while other managers considered soft skills as communication, sales skills and social skills with customers. Another manager expressed the importance of developing soft and technical skills this way: "Of course the social skills are important, but it is a mix for them to have knowledge about the technical part (...) but also of course the sales part and social skills when it comes to the customers". Similarly, the other managers considered that employees need various skills to be successful in their jobs.

For the instructors working with educating employees, one manager considers it important to teach them how to create courses and training content. The global L&D manager confirmed that the company has a global focus on supporting trainers and management training in all units. They use a concept called "train the trainer," meaning to teach instructors skills and methods to train others. Accordingly, they offer support in creating and designing training as well as digital tools to facilitate the instructors' work. "We have quite many trainers all around our countries, and make sure that they have good training and support when it comes to creating and designing a training". These insights and quotations show that the company is working with upskilling, meaning to teach employees additional skills, in different parts of the organisation. Hence, the company is actively striving to develop employees on different levels in the organisation, from new employees to coaches and managers.

7.1.3 Training for practical learning on the job

Two of the managers expressed the importance of on-the-job learning to train new skills, and one of them considered "learning by doing" a significant part of the training in the company. Parts of the training in the organisation is based on reconstructing authentic environments to have training based on real situations. One business unit also has workshops with role plays as part of the learning to facilitate practical training. Scaffolding is another method that is widely used in the company in terms of coaching sessions, manager feedback and analysis of their performance to improve skills. "It is a lot on-the-job training. Almost all, everyone in the business, they have practical work, or they deal with customers and they need to practice (...) mirror someone's work. (...) they also have to train and practice themselves. (...) I would say most of the training and learning part would be learning by doing".

As the global L&D manager expressed in the quote above, observation methods and social learning such as shadowing is another technique that is commonly used in several business units. New employees normally learn from more experienced colleagues by participating in their work tasks and interacting with other colleagues. This is called peer learning and is based on interaction between employees to learn from each

other. According to one manager, the 70:20:10 framework is used as a foundation for the educational approach in the company and explains why work practice and peer learning is such a substantial part of the training. Additionally, the manager highlighted that the transfer of learning is a significant part of the company's learning strategy, "the strategy is to make sustainable training, (...) a good and reliable transfer of learning". This could be achieved by focusing the training on the business objectives and aligning the topic of the courses to the organisational goals, "they [referring to the business goals] always decide our [learning] strategy."

7.1.4 Devices for online training

During the interviews, new details about how employees use mobile devices for workplace learning were discovered. Two of the managers revealed that the majority of employees in their business units use WDL's app on their smartphones rather than computers to do digital courses. One of them indicated that approximately 90% of employees in their unit use their smartphones or tablets to take courses in WDL. An explanation is that these employees are out on the field and do not use personal computers in their daily job tasks. Instead, they have tablets and phones available and therefore, mobile devices are of significant importance to the fieldworkers' training.

The other manager considered the demography to be a reason for the mobile use, since the unit mainly consists of young employees of many 19-20-year olds. Because mobile devices are widely used, both managers agree that it is important to have a good visual view and a well-functioning mobile version of WDL app to meet the needs and expectations of the target group. A third manager reflected that small quizzes or tasks and homework could be appropriate utilities for smartphones as part of the training and can see the potential of incorporating mobile devices in the training. This would be particularly useful because the employees do not have personal computers to take courses, compulsory or elective, during their shifts.

7.1.5 Mandatory versus elective training courses

The company offers some general courses that all employees should take such as the digital onboarding courses and IT security and also advanced courses for communication and Excel that employees can sign up for. Additionally, each department and business unit have specific courses for their employees, both for onboarding and more advanced for specific skills. Whereas one manager stated that all their courses are mandatory training, the other units offer different courses that are elective or optional for the employees. Hence, employees are encouraged to take responsibility for their own learning and development and can search and enrol in courses of their interest and learning needs.

Additionally, the concept of implementing WDL is to make learning available and accessible, this means that employees can take digital courses from other business units and countries. Some managers considered this an opportunity to share knowledge across the organisation. Contradictory, one manager clearly stated that it can be problematic to use training material from other countries because they have different national laws and working routines, hence the content might be incorrect. However, the same manager highlighted a positive aspect with delivering courses through WDL. Since many of the employees in some business units work in shifts and the manager usually organises all educational activities individually this is time consuming and requires dedicated time for training. Instead, now with WDL the manager can enrol the employees in digital courses so they can do training when they have time. This way, WDL provides an opportunity to make training an individual activity for employees that was not possible before when the manager had to be physically present to deliver training.

Several managers pointed out that one of the benefits of WDL is that the training becomes more available for the employees. For example, one manager expressed it this way: “It will make the employees more aware of what you actually could learn. So, if you get like some courses presented when you are logging in, it makes you curious and you want to learn”. Another manager commented on the variety of courses available through WDL and that they are easy to find for employees. With the variety of e-learning courses available for employees, they also have the flexibility to individually select courses they are interested in and do it on their own time, using mobile devices. Other aspects of the digital platform and the different opportunities to design and deliver training will be presented in the following section.

7.1.6 Video material for training

All managers mentioned videos as a convenient tool to provide training. One manager stated that the learning material “that gave us real effect on the field every day are videos”. However, it is not clear what the content of the videos are or how they give results. Some business units already use video material frequently as part of the learning process. However, one manager still tends to focus on traditional classroom training like before the LMS implementation. Notably, that manager has a positive impression of videos and can see the potential of creating educational videos about some of the company’s products that are less common among customers in order to save time from the training, “it would be fantastic!”

As two of the managers mentioned previously, the employees often use mobile devices and, thus, videos would be an appropriate method to deliver training. Moreover, since the training is also addressed to a young target group, visual and interactive educational material appears to be necessary. Hence, WDL provides new opportunities to deliver digital training through video content that was not standardised before the LMS implementation.

Based on the findings presented above, it is evident that the learning needs, training routines and teaching methods differ between the business units. A number of different instructional approaches to e-learning can meet these needs and will be analysed further in the Discussion chapter. Before that, the LMS is an asset that collects learners’ activity data and provides reports based on Learning Analytics. The next section will describe this further and analyse how the LMS data can be used to evaluate online learning activity for the different business units.

7.2 Evaluation of learning activity data

Comprehensive and well-fitting reports are crucial for an effective and successful application of an LMS within an organisation that invests in learning and development. Therefore, we conducted semi-structured interviews with four managers who are responsible for training and education in different parts of the organisation. During the interviews with three of the managers, selected reports were presented by titles, some including short descriptions that were provided, and were discussed with the participants to collect information and opinions. The aim was to facilitate improvement of the learning and evaluation process by enabling them to explore the reports individually and to arrange them in order of priority for their business unit. In the fourth interview with the global L&D manager the topic of reports was also discussed, though without the use of the reports’ titles and descriptions.

By the time of this study, three of the interview participants had not yet accessed and used the reports, except for historical data of the employees’ learning progress, meaning which courses they had completed prior to the LMS implementation. This means that they were not aware of the exact type of data the different reports provide, which could have implications for how they prioritised the reports. However, on several occasions

they proceeded with explaining and arguing about the potential data they would obtain from the presented reports. Therefore, the interviews provided detailed information both on the preferable reports and the required data for evaluating their employees' online learning activity.

In general, all managers agreed that access to reports regarding employees' learning activity data would be desirable. At least two of them have already been using reports of test results from another tool used for creating and distributing tests to the employees. In addition, the global L&D manager who was familiar with the reports, stated that the LMS reports have the potential to support the ones responsible for learning and training within the organisation. Specifically, by analysing the quantitative data into useful insights they could better understand the current situation of training and plan for future development.

Despite the interest they expressed, the overall impression from the presented reports' titles and descriptions was that it was difficult to comprehend the meaning of several of them. In many occasions they encountered confusion while arranging the titles in order of importance or describing their content. To add to this, one manager shared their scepticism and stated that numerical data is most useful when there is a pre-defined purpose; otherwise, they will not add value. Nevertheless, the three participants that conducted the activity as well as the fourth global manager finally managed to provide a clearer picture about what data they considered necessary to obtain from the system.

The following Table 7.6 demonstrates the order of priority for the reports as they were ranked by each manager. The colour green refers to the reports that the managers considered important and potentially useful for their business unit's needs. The reports presented in red colour are not considered necessary information although according to a manager would be "nice to have". Finally, the blue colour illustrates the reports that the managers could not understand their potential purpose and usefulness.

Manager 1	Manager 2	Manager 3	Manager 4
Media tracking for packaged content	Course offerings	Video tracking	Learner engagement by organisation
Campaign results	Media tracking for packaged content	Video interactions	
Progress and Completion	Campaign results	Media interactions	
Course offerings	Progress and Completion	Time spent on training	
Time spent on training	Time spent on training	Progress and Completion	
Learner engagement by organisation	Learner engagement by organisation	Media tracking for packaged content	
Video tracking	Video tracking	Learner engagement by organisation	
Video interactions	Video interactions	Course offerings	
Media interactions	Media interactions	Campaign results	

Important reports Not important reports Unclear report description

Table 7.6: Managers' prioritisation of WDL reports

7.2.1 Course completion data

Specifically, the interviews revealed that it is essential for the managers to monitor their employees' completion rate of the courses. Indeed, the report that was selected by most participants, three in total, was *Progress and Completion*. This is indicated on Table 7.6 where the report *Progress and Completion*, presented in green colour, is ranked among the important reports according to three managers. One of the interviewees highlighted the importance for quickly finding employees that did not complete their training or tests in order to proceed with reminders. The principal point of following the completion rate of the courses is to ensure that the course content is acquired by the employees for both compulsory and elective courses.

At the same time, though, the LMS collects additional completion data regarding *Campaigns*, i.e. mandatory or elective *Digital Courses* or *Programmes* advertised to a defined group of employees (see Context). Two of the managers seemed to consider using campaigns for their business unit's training. Hence, the relevant report, *Campaign results*, was thought to be well suited for getting a first impression of the employees' completion status for a campaign. Another interviewee though rated this report as not helpful by placing it at the bottom of their list, but this could also be due to the limited description and understanding of the term *Campaign*.

Despite the possibility of distributing courses via *Campaigns*, the number of potential participants in general can be affected by the course type, i.e. compulsory or elective. As it was pointed out by one manager, it is necessary to obtain information regarding the number of employees' enrolments. This is possible to concern the *Blended courses* offered through the LMS since the manager wants to determine whether the course has enough participants to take place. On the contrary, another interviewee stated that their units' courses are mandatory and, thus, do not depend on self-enrolment. As a result, the assessed usefulness of the report *Course offerings* for the managers appears to rely heavily on the course type and their business units' needs.

7.2.2 Quiz completion data

Since all of the business units evaluate employees' knowledge acquisition through tests or quizzes, the relevant learners' activity data was discussed during the interviews. Two of the participants found it necessary to get informed about the employees' overall score, i.e. pass or fail as well as their answers. However, only one report was perceived as a relevant one because of the provided description. Specifically, they assessed the report *Media tracking for packaged content* as helpful to obtain data from test completions. Another manager placed it at the bottom of their rating list, although they stated that this report could be used to improve the learning material. This could be related to the emphasis that is placed on the evaluation of employees' satisfaction rather than knowledge acquisition, which could contradict their accountability as training managers that organise and deliver training.

7.2.3 Time data

Managers also expressed divergent opinions on examining the relevance of the time spent on learning on the LMS as an evaluation measure for a course or an employee's learning progress. Thus, one participant considered the report *Time spent on training* as an important indicator for the usefulness of the learning material, without further clarifications. However, when explained that the report possibly shows the time set by the instructor and not the time period of an employee's activity, the participant removed it from the top of their list and expressed their need to get data about the employee's actual activity time.

According to another manager's opinion this information would be "nice to have", rather than necessary, clearly presented with red colour on Table 7.6. The third one rated it as less important, because of lack in explanatory information about the reason an employee would spend more or less time on a course or video, "it depends on if you're a fast learner or a slow learner, it doesn't say". As the same manager explained further, if an employee has watched a video several times, it is not self-evident how to interpret it, "Was it that good or did you not understand?" This implies the need for additional employees' feedback in order to avoid arbitrary interpretations of their activity data.

7.2.4 Learner engagement data

The report *Learner engagement by organisation* was interpreted variously by all of the participants. The reason can be found in the ambiguity of both the title and the provided description, i.e. "Used to report on how engaged our employees and managers and job profiles are". Hence, the report was rated based on the managers' understanding of the term "engagement", which is not clearly defined, and the relevance that each of them ascribed to it.

For instance, one participant considered the report about engagement as an index of employees' satisfaction and included it in the top part of their list. On the other hand, two managers placed it at the bottom of their lists with contradicting statements. Accordingly, one claimed that it would be nice to see the engagement rate, but cannot add any additional comments, probably due to absence of additional information. The other one found it not useful since their offered courses are mandatory and they need to focus on the results and not the engagement.

The manager familiar with the reports, i.e. global L&D manager, found the report about the engagement very useful and argued that it provides a wide range of data regarding number of employees, names as well as employees' progress and completion status. But the posed question, how it can measure the level of engagement, remained unanswered, underlying the challenge of correlating LMS data to learner engagement.

7.2.5 Video and Media data

Regarding data about video or media consumption, the reports namely *Video tracking*, *Video interactions* and *Media interactions* were in general perceived as similar ones. It should be pointed out though that the function Interactions in WDL refers particularly to quizzes embedded in videos and other media rather than media consumption. In respect to their perceived usefulness of the aforementioned reports, only one manager considered them valuable for their business unit, since most of the learning material they produce is video content. Thus, information related to the number of employees that watch the videos and amount of views for each video could be important indicators for future creation of learning material. However, two other managers found the difference between the reports unclear, which is indicated by the blue colour on Table 7.6, and proceeded in placing them further down on their lists. This does not indicate that they do not use videos as part of their learning material but rather that their focus is not placed only on this learning material format.

7.2.6 Time plan for using the reports

During the interview process some of the participants also explained their time plan for consulting the reports' data. One manager expressed the need to get the results from monthly quizzes within a week, while the results from exams should be made available immediately in order to proceed with the feedback to the employees. The weekly use of the LMS data was also reported by another participant so that they are

informed on a frequent basis especially considering the need for a high retention ratio among employees. The time plans show the managers' demand for exporting and analysing LMS data to organise their training.

7.2.7 Summary

Overall, the managers provided us with valuable insights in order to identify their various needs for following up employees' online learning activity in the LMS. In this last section we proceeded with identifying the necessary types of data for each manager based on their reasoning and higher rated reports presented in Table 7.6. For instance, if a manager prioritised the report *Progress and Completion* and explained their need to obtain data about the number of completed courses, we considered the latter one as a high-valued indicator for the manager's evaluation needs. Based on this analysis on the requested data sets per manager, all nine reports selected for this study (see Context) are examined in the next chapter, Discussion, as to which ones are most appropriate for each manager.

The purpose of analysing and focusing on the requested data sets instead of the requested reports is to eliminate cases where reports have been misinterpreted due to the ambiguity of their titles and descriptions and the managers' limited access to data in the reports. Therefore, considering this limitation that could affect the study, this section will present the identified data sets that each manager considers valuable to evaluate their employees' online learning activity (see Table 7.7).

Manager 1	Manager 2	Manager 3	Manager 4
Course completion	Enrolments on offered courses	Course completion (number of employees)	Enrolments on offered courses
Quiz completion and scores	Course completion	Quiz scores	Course completion
Learner's answers to quizzes	Quiz scores	Number of employees that watched a video	Quiz scores
Activity data on individual and group level	Learner's feedback	Time spent on completing a course/watching a video	Learner status
Learner's feedback		Learner's feedback	Number of created courses within the organisation
			Learner's feedback

Table 7.7: Managers' requested data sets

In particular, the data from the interview with the first manager indicates that information from the LMS regarding completion of courses and quizzes as well as quiz scores and employees' answers on tests or videos would be considered helpful. Additionally, the same interview reveals the manager's preference to collect employees' feedback or questions regarding the learning content and the importance of obtaining data for an individual's and/or a group's activity in the LMS. According to the information collected from the second manager, their focus is placed on the following data sets: enrolments on offered courses, course completions, quiz scores and employees' feedback regarding course and training satisfaction.

Similar to the latter one, the interview with the third manager shows the manager's prioritisation for acquiring course completion data, quiz scores and employees' feedback regarding satisfaction. Besides this

information, there is an apparent demand on identifying the number of employees that completed a course or watched a video and the respective amount of time spent on these activities. Even more, the trend of the views and/or the time spent on a course or video was also considered relevant information. From the fourth manager several similar data sets were pointed out including enrolments on courses, course completions, quiz scores and anonymous feedback regarding course and training satisfaction. However, an additional need is identified for reporting on the learner status and the number of created courses from an individual's, department's or organisational point of view.

The identified data sets will be examined further in the Discussion in relation to all nine selected reports. From the presented interviews it appears that some reports are not easily understandable regarding their purpose and potential data. As the managers had limited or no experience with the WDL reports, this study will attempt to provide suggestions for using the reports that suit each manager's requirements for data. The next section of the Findings presents the results from the survey with a department's employees about their perspective on the relation between KPIs and learning goals.

7.3 Learning goals in relation to job performance

The following section presents the results from the survey that was distributed to ten employees of a particular department, from which eight responded. The survey answers consist of both quantitative and qualitative data and included point Likert scale, multiple choice and open-ended questions. According to the survey results, all eight participants (100%) are familiar with KPIs either through their previous jobs or after their onboarding in their current position. Hence, it is evident that their work is connected to KPIs and that they are aware of the KPIs for their job role and department.

7.3.1 Reasons for taking a digital course

The participants were asked regarding the reasons for taking digital courses on WDL and were allowed to select multiple answers, e.g. "it's mandatory to take" or "to help me to reach my bonus". As can be seen in Figure 7.4 and Table 7.8, the majority of the participants, seven out of eight (87.5%), considers being able to do their jobs as the main objective for taking a digital course. Additionally, the second highest result of five respondents (62.5%) concerns two KPIs; "to get more satisfied customers", and "to be more efficient in solving customers' problems by phone." These two aspects indicate that they primarily complete WDL courses in order to do a better job and perform according to the KPIs.

However, half of the participants also selected the options "personal development" and "it's mandatory to take" as a reason for taking a digital course. Thus, there are multiple factors to consider, such as the variety of course content, the job role's requirements as well as personal interest. An equally low percentage (37.5%) i.e. three respondents, selected two other KPIs namely "to be able to handle more issues" and "to be more time-efficient on tasks and emails", along with another option, "to help me reach my bonus". Interestingly, these KPIs seem less important for the participants compared to the aforementioned KPIs about customer service and problem solving. Overall, it appears that the participants have different expectations for completing e-learning courses from which the highest rated one was to perform better at their work.

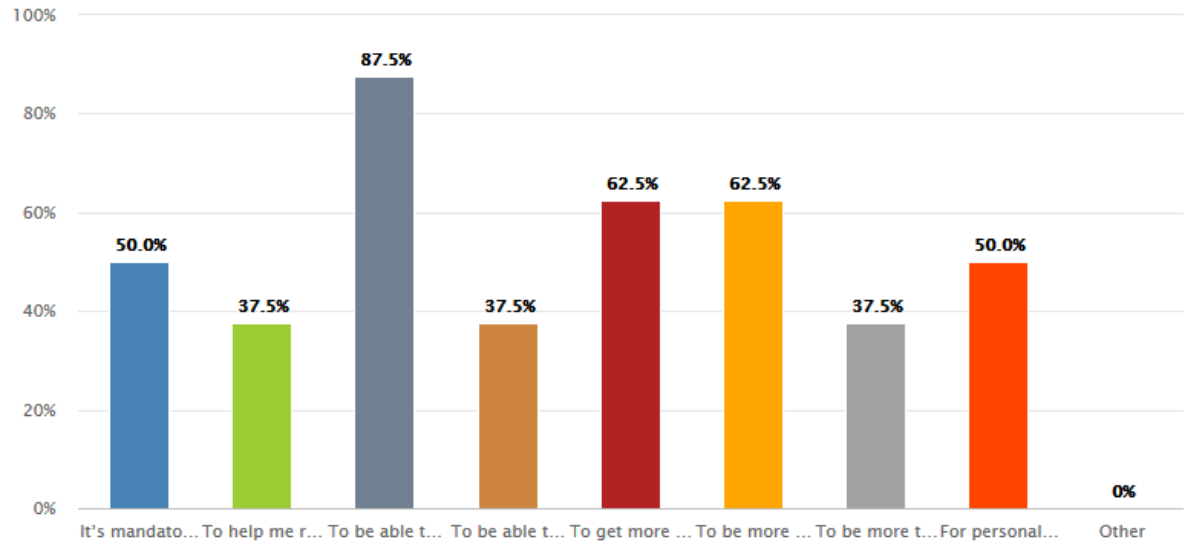

Figure 7.4: Reasons for taking a digital course in WDL

Name	Percent
It's mandatory to take.	50.0%
To help me reach my bonus.	37.5%
To be able to do my job.	87.5%
To be able to handle more issues.	37.5%
To get more satisfied customers.	62.5%
To be more efficient in solving customer's problems by phone.	62.5%
To be more time-efficient on tasks and emails.	37.5%
For personal development.	50.0%
Other	0.0%
N	8

Table 7.8: Reasons for taking a digital course in WDL

7.3.2 Perceived correlation between learning goals and KPIs

To understand whether a course's learning goals would help the learners achieve their KPIs, the participants were asked to rate how they considered the relation between KPIs and two separate learning goals from the same digital course. Each KPI was rated about constituting a potential outcome of the two learning goals on a five-point Likert scale "not at all", "slightly," "moderately," "very," and "extremely." Regarding the learning goals, the following ones were selected: "Troubleshooting tools for the app" and "What you should ask the customer and what you can do to solve the problems".

As presented in Figure 7.5, it seems that the employees consider both learning goals strongly aligned to the KPIs, considering that the average ratings are "very" to "extremely" important. When comparing the two learning goals, the lowest average rating (4.4) is found on the KPI "Handling time on emails". This is consistent with their reasoning for taking a digital course since only three respondents (37.5%) selected the particular KPI as an expected outcome for e-learning. However, the lowest rating being 4.4 on a scale of 5 is still a notably high score. This indicates that all KPIs are considered very important by all the participants.

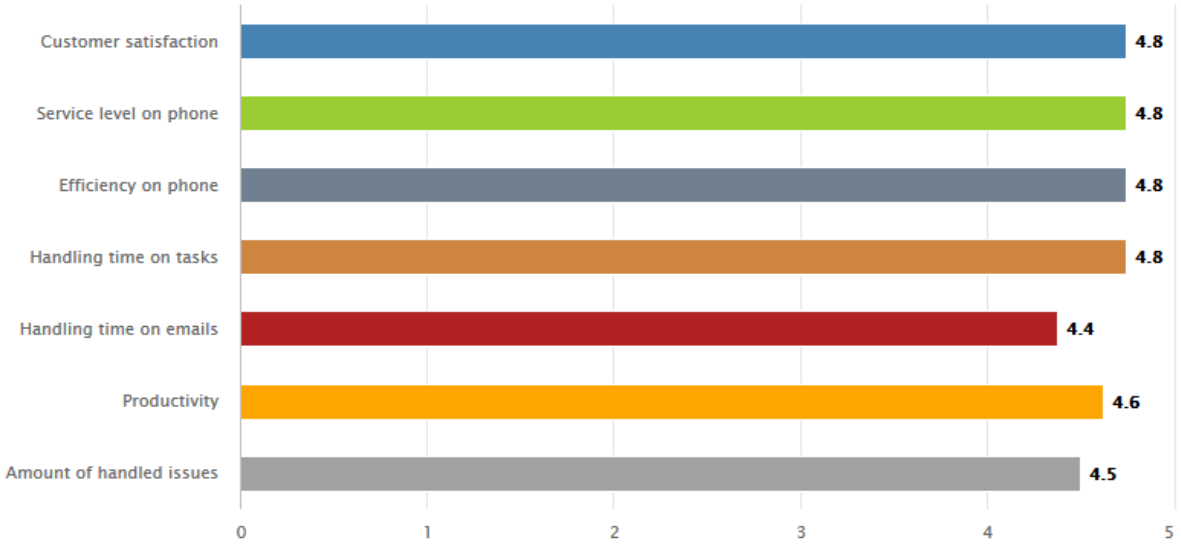

Figure7.5: Participants' perspective on the relation between KPIs and learning goal

7.3.3 Employees' preferences on learning goals

Following the employees' understanding of the relation between KPIs and learning goals we investigated the participants' preference on different course goal descriptions by providing some suggestions, i.e. the original learning goal, a KPI or a combination of the two in different versions (Table 7.9).

Type of course goal description	Options of course goal descriptions
Original learning goal	You will learn about common problems that customers have.
Combination of Key Performance Indicator (KPI) with the original learning goal	To handle tasks and email more efficiently, you will learn about common problems that customers have. / You will learn about common problems that customers have, to handle tasks and email more efficiently.
KPI as learning goal	After the course you will be able to handle tasks and email more efficiently.

Table 7.9: Different versions of course goal descriptions

Interestingly, the answers are equally divided among the eight participants (50%) between the original learning goal, i.e. "You will learn about common problems that customers have", and the two versions combining KPI and the original learning goal, i.e. "To handle tasks and emails more efficiently, you will learn about common problems that customers have" and "You will learn about common problems that customers have, to handle tasks and emails more efficiently." The division of the participants' answers between the original learning goal and the KPI as part of the learning goal shows that there are different opinions and preferences that could have implications if considered in the design of e-learning (see Discussion).

When requested to elaborate on their previous selection, it appeared that the employees that chose the original learning goal as the most appropriate description of the course objectives, expected a goal that solely described the content of the course. They expressed the following statements: "(...) know what problems every customer can have…", "since the course is about..." and "I think it's better adapted to phone calls" (Table 7.10). These explanations clearly reflect their request for receiving information that is related only to the course content. One of the presented answers, "[this course is] better adapted for phone calls", revealed an interesting aspect of the specific course that could explain how they valued the KPIs in Figure 7.5. Specifically, if they consider the course more relevant for helping customers by phone, it could explain why the email KPI got a lower score for importance in the survey.

Participants' answers for choosing the existing learning goal
Because when you are new you never know what problems every customer can have. It can be so various.
Since the course is about troubleshooting the app.
I think it is better adapted for phone calls.

Table 7.10: Participants' reasoning on selected learning goal

On the contrary, three employees reflected on their selection of the KPI combined with the original learning goal (Table 7.11). As explained by one respondent, they prefer this type of description that shows "what is the aim and how do we get there". Based on their selection, in this case the "aim" is interpreted as to help the employees perform their job. That is also in accordance with their reasoning for taking a digital course as reported in Figure 7.4 and Table 7.8. Another one even included KPIs in their explanation. As they reasoned, by learning about the common customer problems, they aim to "help more people faster". This can be related to two KPIs namely "To be more efficient in solving customer's problems by phone" or "Number of handled issues". Similarly, another participant aims to help the customers, in correspondence to the aforementioned KPIs; they stated that at the end of the course they are knowledgeable to offer help to the customers, i.e. "After course .... I have knowledge to help them". Only two of the participants did not provide any answer about their reasoning of their response in the previous question.

Participants' answers for choosing the learning goals in combination with the KPIs
If I am aware of the common problems customers have, I can help more people faster.
After course I know the common problems and solutions, so I have knowledge to help them.
I like the; what is the aim and how do we get there, type (of) description.

Table 7.11: Participants' reasoning on selected learning goal

Finally, in order to understand the main aspects of how employees considered learning goals relevant for the course, they were asked to answer a multiple-choice question (Figure 7.6, Table 7.12). Interestingly, four respondents, constituting 50%, stated that they aim to do a better job, which correlates with the answers presented in Figure 7.4. Since no participants selected the 4th option (Figure 7.6, Table 7.12), the 50% could

indicate that the primary focus is to increase their job performance regardless of practical applications described in the course goals. Opposed to these respondents, three participants (37.5%) are satisfied with the presentation of the original learning goal solidly. Notably, only one employee (12.5%) considers the length of the description a significant factor for choosing the original learning goal without the KPI. Thus, the preference of the original learning goal without the KPI could revolve around the length of the sentence rather than its content.

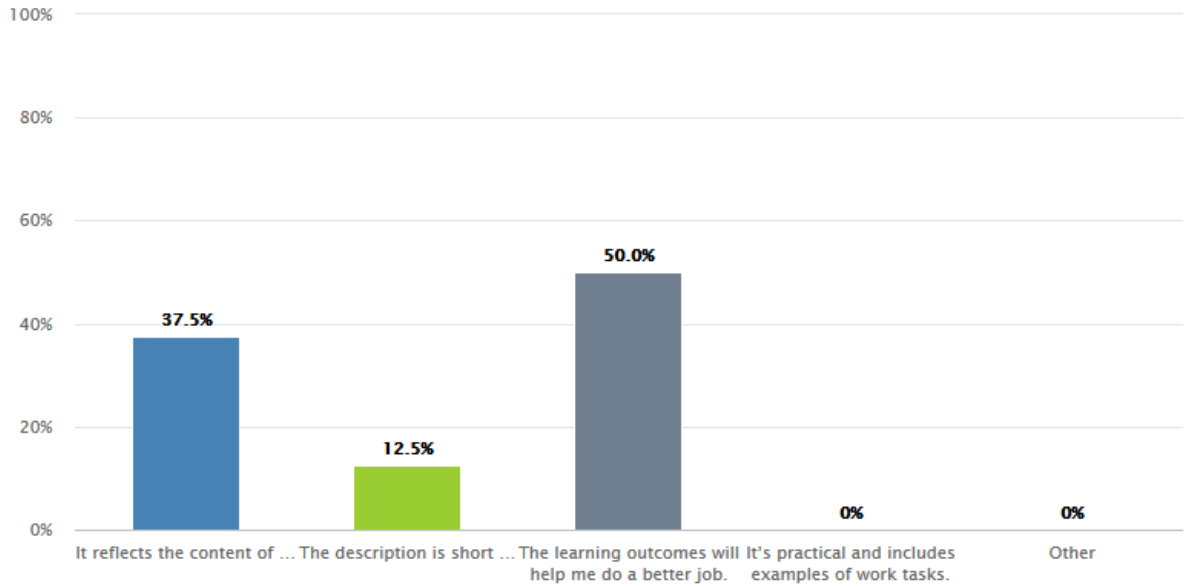

Figure 7.6: Reasons for selecting the learning goal description

Name	Percent
It reflects the content of the course.	37.5%
The description is short and simple.	12.5%
The learning outcomes will help me do a better job.	50.0%
It's practical and includes examples of work tasks.	0.0%
Other	0.0%
N	8

Table 7.12: Reasons for selecting the learning goal

In general, it appears from the survey that the KPIs could have a significant impact on the participants' learning purpose for taking digital courses on WDL. Many employees' perspective is aligned with the purpose of workplace learning, according to which learning should lead to better job performance. How to relate learning to job performance will be discussed in detail in the next chapter in order to identify practical implications to improve e-learning at the workplace in relation to job performance.

8. Discussion

The analysis of the results presented in the Findings will contribute to the field of workplace learning by introducing new approaches to e-learning, Learning Analytics and learning in relation to job performance that are particularly relevant for workplace settings. This is significant for workplace e-learning in corporate organisations where existing research is limited, despite the increased use of learning technologies (García-Peñalvo & Alier, 2014). However, due to the recent implementation of the Learning Management System (LMS) in this case study, some limitations should be considered regarding the obtained data from the interviews with the managers, the Workday Learning (WDL) reports and the survey questionnaire that was conducted with a small sample group of employees who had completed digital courses. Thus, the results and potential practical implications discussed in this chapter should be perceived within the study's presented time frame and context.

Following the structure of the presented Findings, this chapter will introduce the contextualisation of the previously presented data in relation to literature and the theoretical framework. At first, e-learning approaches that could be incorporated into the company's learning strategy are discussed in order to enhance workplace e-learning that meets the needs and training routines of the business units. This section is followed by the discussion about Learning Analytics data in the LMS that each manager could explore to improve the evaluation of their employees' online learning activity. Finally, possibilities and advantages from aligning learning goals to business objectives are investigated based on the participants' responses on the survey.

8.1 Learning needs that can be supported by e-learning approaches

After discovering some main topics about the business units' different learning needs and training routines, literature about contemporary e-learning approaches that could meet these needs will be discussed. This discussion attempts to lead to specific examples and suggestions of how a company with geographically distributed employees could enhance e-learning through various instructional methods.

The interview findings showed that several business units still tend to organise traditional classroom training and face-to-face learning, although WDL is offering a number of different online learning possibilities. This could indicate that it takes time for the instructors and training managers to shift teaching methods to e-learning or online environments as well as possible constraints of the LMS that might not fully support their needs. The findings revealed that the managers could see the benefits of online learning possibilities with WDL, while they still seemed hesitant to change their teaching behaviour. There can be many reasons for this, and the participants did not provide any reflection regarding the possible explanations. The LMS implementation is fairly new and has only been used for a few months. Hence, it requires the instructors to get used to several new tools to start using the learning platform and develop e-learning material, for instance to produce digital content and create new routines for incorporating digital learning methods and blended learning to their teaching procedures. This process of getting used to new systems and changing behaviour might be similar for the employees. Therefore, it seems reasonable to expect that it will take some time to institutionalise the LMS and utilise fully digital and blended courses on WDL considering that behavioural change is a process that takes time.

The findings suggest that the majority of employees in all three business units use mobile devices to take digital courses in WDL. Mobile devices bring flexibility in time and place for learning, which is essential for an organisation where employees work different shifts and are geographically distributed. One

explanation for the extensive mobile use is that the majority of employees in certain business units do not have personal computers for their work, however they all have smartphones or tablets available. Availability is a key concept for mobile learning and the company aims to make learning feasible and easily accessible for the employees through WDL. Correspondingly, research presented in the literature also highlights that delivering workplace training through mobile technology allows employees flexibility to complete the training from any location and at any time (Samaka & Ally, 2015), which is suitable for this company with a geographically distributed workforce.

Samaka and Ally (2015) also suggested that mobile technology supports employees to learn just-in-time and according to their individual situation. Similar statements were made by one manager during the interviews who expressed that employees now have the ability to learn when they have time and select courses individually based on their needs and interests. Nevertheless, this should be primarily verified from the employees' perspective in order to understand how they consider e-learning courses as a support for their own training routines and time management. This could also free time from the manager who otherwise is physically present during the training; therefore, mobile technology can be considered an efficient asset for workplace learning. Since time for training was considered a challenge for the training managers and their employees, we want to emphasise the utility of blended courses to spend the time more efficiently and enhance individual training and preparation for the employees. For instance, if employees could do a number of digital courses on WDL mobile application (app) individually when they have time, then the time at the office together with colleagues and managers could be spent on practical training or discussions to transfer the knowledge.

Samaka and Ally (2015) confirm that blended courses reduce the amount of time the employees have to spend away from the job area and is, therefore, a learning method we would recommend the training managers to utilise more as a solution for the limited time for workplace training. On the other hand, when learning is expected to be an individual responsibility with mobile devices, not dedicating working time for training could potentially cause employees to have to use their free time to complete courses if they prioritise work tasks during their working hours. Although blended courses and using mobile devices is said to save time for employees and instructors, the quality of the training and learning outcomes are not considered in the calculations. There could possibly be a number of consequences when changing from instructor-led classroom training to individual e-learning that should be taken into consideration or researched further. Hence, it is important that the e-learning courses are well-designed to be valuable, effective and meaningful for the learners (Lister, 2014).

Based on analysis of the interview data, the company works strategically with social learning as coaching sessions and group activities in workshops, but usually as activities for formal learning. However, the peer interaction that mainly takes place through physical meetings could be expanded to the digital environments. For instance, it is possible to include digital peer interaction in the e-learning and blended courses to enhance transfer of learning. According to studies in both formal educational and workplace settings, blended courses offer the possibility for employees to participate in course discussions and benefit from collaborative learning (Hilliard, 2015; Samaka & Ally, 2015). To achieve this, the company could extend their social learning and incorporate educational activities for peer learning within the digital and blended courses. They could utilise WDL as a platform to have online discussion forums with peers to reflect upon their knowledge from completed courses, ask questions or write summaries to share knowledge. Processing the knowledge through interaction with peers is an approach that could support the managers' need for reliable transfer of learning and aligns with their global learning strategy. Reward systems for completing courses or

competitions with colleagues could make the individual e-learning more social and also promote learning in digital conversations that will create awareness about learning opportunities in the company and the courses available on WDL.

Furthermore, WDL provides a function where all users can upload and share content and learning material and create their own courses. For an organisation that promotes learning and development, this could be an additional opportunity for employees to actively participate in the learning and share knowledge and expertise with their peers (Aehnelt et al., 2008; Hilliard, 2015). To illustrate, an employee with good knowledge in sales or another specific topic, could make a short video or film themself presenting the main concepts, key elements or their personal sales pitch and upload the video on WDL. After being approved by the manager, the video will be available for other co-workers and the employees will have a new way of exchanging knowledge in the organisation and other peers can take advantage of the knowledge existing in the company. According to Emerson and Berge (2018), access to training and the ability to share knowledge and information throughout the organisation is advantageous for employees' learning and could be implemented in this organisation since WDL has the features where employees can create and share learning content.

Various learning materials available for employees also contribute to more personalised learning opportunities. As the findings demonstrate, each business unit is organised differently and the employees who work shifts or are field workers have specific needs regarding learning preferences, content, time, accessibility and mobile devices. Additionally, the meta-synthesis of the Literature Review illustrates that different instructional approaches such as e-learning and blended courses can meet the different levels and requirements of employees in an organisation (Brunner, 2012; Wilson, 2012). WDL already uses Artificial Intelligence (AI) technology and embedded recommender systems to direct relevant courses to the individual employees. In combination with the technical feature where employees themselves can register topics they are interested in, these possibilities can according to literature be considered an additional way to strengthen the personalisation and relevance for individuals' learning experiences (Ashman et al., 2014; Buder & Schwind, 2012; Yu et al., 2017).

WDL provides various types of training available and the flexibility to choose among multiple topics, which can make the employees more active, involved and engaged in their own training (Berings et al., 2005; Berings et al., 2008; Lister, 2014). According to the principles of adaptive flexibility and personalised learning, individuals who can choose courses and training methods that suit their learning needs, interests and preferences can lead to higher engagement, increased speed of learning and improved learning outcomes (Ashman et al., 2014; Essalmi et al., 2010; Klašnja-Milićević et al., 2011). For that reason, it is important for the company to offer a selection of courses and topics, both through WDL and also face-to-face and blended learning, individual and collaborative activities for learning to meet the employees' learning needs and preferences. The importance of providing learning and development opportunities for employees at different levels in the organisation can also be argued for in terms of the concepts of lifelong learning. Organisations that enable employees to develop new skills and knowledge throughout their work lives contribute to reinforcing lifelong learning, which is beneficial both for individuals and for society (Depesova et al., 2015).

To make mobile learning more effective at the workplace it is necessary to consider how the learning material and relevant activities are presented and designed. As mentioned by some interview participants, the WDL mobile app should be useful and have a good visual view. To fulfil the needs of visual and

interactive educational material to meet the needs of employees who prefer accessing material on mobile devices, instructional videos can be appropriate learning material that is easily accessible via mobile devices. Videos can effortlessly be used individually by employees with access to a mobile device, anytime and anywhere without any specific preparations or external equipment necessary. The videos should be short and interactive to be engaging and can, for instance, be combined with multiple choice quizzes to increase interaction and include assessment opportunities that are appropriate for mobile devices (Emerson & Berge, 2018; Samaka & Ally, 2015).

The findings revealed that some managers are already utilising some of the contemporary e-learning approaches available with the technologies, for instance mobile devices, e-learning courses and various learning materials on WDL, such as videos, quizzes and microlearning. However, considering that the LMS is newly implemented and one of the managers tends to stick to formal, instructor-led classroom training as before the LMS implementation, there is a potential in the organisation to further develop and implement the different digital opportunities that are available. Exploring the various instructional approaches could help the managers to establish suitable routines and find learning approaches that fit the needs for their respective business unit.

Moreover, since the training managers have access to multiple instructional learning approaches and technologies, they could improve the course offers by adding more video material and include interactive activities on WDL. As microlearning is considered a convenient instructional approach for environments with geographically distributed employees, microlearning could be enhanced by providing more short, educational videos. Organising learning in short, "bite-sized" pieces to optimise mobile learning can be particularly useful in this corporate organisation where mobile devices are widely used, and a large number of the employees are field workers or geographically distributed. As presented in the meta-synthesis of instructional approaches for workplace e-learning, researchers state that microlearning is particularly suitable for workplaces where mobile devices are used on a daily basis (Dolasinski & Reynolds, 2020; Emerson & Berge, 2018).

Furthermore, educational videos can easily be combined with contemporary learning trends such as activities for microlearning to be formulated in short, "bite-sized" pieces to optimise mobile learning and meet specific knowledge outcomes. Considering that busy schedules were pointed out as challenges for both training managers and employees, microlearning sessions could facilitate short learning interventions when the employees have time. Hence, it provides flexibility and can be adapted to the needs of the organisation, and the content can be designed to address specific learning goals.

The technologies available provide a number of different instructional approaches that could be suitable for workplace e-learning. Mobile devices, e-learning and microlearning are particularly relevant to corporate organisations with geographically distributed employees, and also blended learning, recommender system technology and personalisation can address the various needs of employees and business units. However, it should be taken into consideration that the different approaches suggested above are based on the meta-synthesis of literature on the topic and have not been tested in this study (see Literature Review). A further step to evaluate the most efficient instructional e-learning approaches should, therefore, be to test and receive user feedback and include results from the different activities for learning. Additionally, the research from the presented literature has mainly been conducted at the workplace but also in some occasions in formal educational settings. That could be problematic for the implications of this study that are partly

supported by research in formal education since the context of learning differs significantly between these two settings.

The interviews revealed that practical on-the-job training is widely used in all business units according to the 70:20:10 framework. This framework is the foundation of the company's learning strategy and is also presented in the company's WDL instruction guide for Learning and Development (L&D) and training managers. The 70:20:10 framework is created based on data from a survey conducted on a number of successful senior executive managers to understand how they learned and developed. Their job tasks and work environment is completely different from the majority of young field workers in the organisation, hence the model and its data might simply not be applicable for a company with geographically distributed employees. Furthermore, other researchers have criticised that the model is lacking empirical evidence (Clardy, 2018; Johnson et al., 2018) referring to the limited number of survey participants, low reliability and validity of the study. It is notable that McCall Jr. et al., (1988) created the 70:20:10 framework as a way to inspire new learning techniques rather than constructing a model to use prescriptively. Since the 70:20:10 framework presents different types of learning, it can be used as a guide to design learning and development programmes, particularly to be aware of different learning techniques.

Furthermore, the empirical data from the interviews in this study does not disclose how the ratio of formal, social and practical on-the-job learning is distributed proportionally in the company. Therefore, it is still unclear exactly how the 70:20:10 framework is being used in the company, if they consider it the ideal learning techniques and are aiming for the exact division of 70:20:10, or rather use it as inspiration or guidelines for offering different learning methods. It is important to state that the on-the-job practice should be organised with practical activities in authentic environments rather than considering ordinary job tasks as training. Taking into account that the model could be interpreted differently, we suggest further research to study how other companies apply the framework and take inspiration from their practices.

As discussed, there are multiple technical opportunities that can enhance e-learning in a corporate organisation. The LMS provides opportunities to implement blended learning, digital activities and interactive videos for using mobile devices to fit the needs of an organisation with geographically distributed employees. At the same time, though, the LMS collects data regarding the employees' online learning activity that could be used to evaluate their learning process. This will be analysed further in the following section.

8.2 Evaluation of learning activity data

The Findings from the interviews highlight the diversity of the managers' opinions for evaluating employees' online learning activity through the WDL reports. In order to examine how the WDL reports could meet the managers' distinct evaluation needs, this section will include a discussion based on the identified data sets for each manager (see Findings) in relation to the Literature Review on Learning Analytics and the data that the nine reports provide (see Context). It is important to highlight that despite the different opinions and evaluation needs, all four interviewees recognised the potentials of LMS reports to assess employees and develop the company's and the different business units' training. This discussion will lead to specific suggestions of WDL reports that contain the data sets the managers have requested.

The suggestions as described in this section are the result of identifying the necessary data sets based on their evaluation needs rather than the higher rated reports, e.g. the number of completed courses instead of

the report *Progress and Completion*. This focus aims to eliminate cases where reports have been misinterpreted due to the ambiguity of their titles and descriptions and the managers' limited access to the data in the reports. After determining the managers' requested data sets, the reports selected for this study are examined as to which data they provide. The ones found applicable are suggested as potentially useful for the managers in their attempt to make sense of the employees' online activity data. Therefore, the suggested reports seek to address each managers' data requirements without restricting them though from possible alternatives.

8.2.1 Reports for manager 1 - Mandatory courses and quizzes

In particular, the data from the interview with the first manager indicates that information from the LMS regarding completion of courses and quizzes as well as quiz scores and employees' answers on tests or videos would be considered helpful (see Findings). Additionally, the same interview reveals the manager's preference on obtaining data for an individual's and/or a group's activity in the LMS. This empirical data will be discussed thoroughly in terms of practical implications according to literature on Learning Analytics and the data that the reports contain, which is presented in the Context.

To begin with, the manager needs to follow up on employees' course progress, i.e. started, completed or in progress. After investigating the available data, it appears that the *Progress and Completion* report offers a vast variety of information including employees' completion status (see Context). The main advantage of this report is that it provides data about the completion status for all Learning Content Types, i.e. *Digital Courses*, *Programmes* and *Course offerings*. This possibility is not applicable in other reports such as *Course offerings* that focus only on one Learning Content Type. Thus, to collect data about learners' completion status the manager could directly use the *Progress and Completion* report.

As stated in the interview with the manager, the courses offered in their business unit are always mandatory. That means that the data about the completion status is important mainly for keeping track of the employees that have completed their training before taking on their job tasks. However, by accessing the report *Progress and Completion* the manager could also monitor the day and time that most employees prefer to take the *Digital Courses* or *Programmes*. This is valuable information since the employees in the specific business unit work on shifts with no scheduled time during their shift to do training. Therefore, the manager or their team leaders could identify based on the report's data the optimal time to ask their employees to complete the courses. This is in accordance with the literature in formal educational settings, where teachers are recommended to determine the best time to upload new material based on time activity data of the students (Hangjin & Almeroth, 2010). The deeper reflection on the learners' data on behalf of the training manager could lead to the establishment of a structured continuous training for the employees and the formulation of defined learning habits.

Moreover, the manager recognised as a positive effect of WDL the accessibility to elective courses. Since the elective courses are by default an individual learner's initiative, the manager could perceive the number of completed optional courses as an indicator of the employee's high engagement in their personal career progression. In this context, the manager in collaboration with the respective team leader could prepare such employees in their next step on their job role, thus creating an environment of meaningful and continuous learning and development. Although, Dyckhoff et al. (2012) have proposed online time activity as an indicator of continuous learning only for educational settings, such as universities and schools, the workplace could also be examined as an environment that fosters lifelong learning. That could be considered challenging for the role of instructors and L&D professionals in organisations since the employees need to

invest more time on the job tasks rather than on training. However, organisations that acknowledge the potentials of continuous learning seek to provide to their employees various opportunities for development, including pre- and onboarding activities.

Indeed, the specific manager also carries on the onboarding of the new employees for this business unit. Due to the LMS implementation it is possible to reorganise the onboarding by creating digital content that employees will access on their own time, or blended courses to combine digital and classroom training, followed by the employees' assessment. In that case it is essential to collect the relevant data during and after the onboarding courses, including time and date course completion, time spent on watching videos and quiz answers. The analysis of these results could correlate with the employees' job performance. This would be achievable by comparing the average Key Performance Indicators (KPIs) of the new employees to the employees that experienced the onboarding processes prior to the LMS implementation. In fact, the significance of linking learners' performance data to their job performance outcomes should be accounted for in order to prove training effectiveness to the business, as highlighted by Anderson's model of Value Learning (2007). Even more, the reconceptualisation of the onboarding due to the LMS implementation should be followed by consistent collection of LMS data to add in the evaluation of the learning integrations' Return on Investment (ROI).

Additionally, the report *Progress and Completion* provides information about course grade and score; however, the specific manager highlights the importance of accessing both the employees' answers and the questions of the quizzes and tests. Therefore, the *Progress and Completion* report is insufficient for this type of data. Instead *Media tracking for packaged content* would be a potential choice since it provides the aforementioned information but also includes the data about the type of *Interaction,* i.e. multiple choice or checkbox questions. This information was requested by the manager in order to obtain an overview of the employees' learning outcomes before proceeding with detailed individual feedback. Nevertheless, the *Media interactions* report also seems relevant because it includes information about whether the answer is correct as well as the total percentage of the media that was watched. Both reports include data about *Media* in general, meaning images, videos and presentations. Including different media types is considered an advantage compared to the *Video interactions* report whose focus point is narrowed to data about quizzes embedded in videos.

By accessing the reports *Media tracking for packaged content* and *Media interactions* it can be identified which questions are more frequently answered incorrectly. This may indicate either that the question is not easily understandable, that the learning material has not explicitly addressed the question, or even that the employees do not seem to pay attention to this information. Similar to suggestions from research in formal educational settings (Elias, 2011; Siemens, 2013), the manager could use the learners' data as a type of actionable feedback. By critically considering the fact that data interpretation may vary considerably, the manager could proceed with reforming the question or the quiz or even upgrading the learning content to adjust it to the learners' needs.

The manager's last request about getting data for individuals is possible with the previously suggested reports, i.e. *Progress and Completion*, *Media tracking for packaged content* and *Media interactions*. Regarding group data, this appears to be more complicated because the reports do not present data about a group of learners but rather on individual employee level. Alternatively, it would be suggested to export the relevant reports into Excel format and then apply suitable filters to the results, such as completion status or

completion date. This step is essential to identify the right group of employees so that the final number of employees from the filtered data is correct and representative.

The above described implication is perceived as an LMS limitation that could affect the manager's confidence in using the WDL reports. Although past research (Dawson et al., 2008; Mazza & Dimitrova, 2007) has pointed out that LMS's function of reports is under development, it is difficult to currently justify such restraints due to the rapid technological advancement in the last decade. Considering that the analysis of the data is a complicated process alone, encountering such limitations could hinder the prospective organic integration of the reports in the learning strategy of organisations.

8.2.2 Reports for manager 2 - Enrolments and quizzes

To start with, the focus of the second manager regarding data sets is placed on the enrolments on offered courses, course completions and quiz scores (see Findings). Indeed, data regarding enrolments on offered courses would be useful to determine whether the course has enough participants to take place. Among the reviewed reports presented in the Context, three of them include information more or less extensively about course enrolments. Specifically, the report *Progress and Completion* shows only if an employee is enrolled on a *Course offering*, which is not sufficient information for the manager that needs to know the total number of enrolments on a single course. Similarly, the report *Learner engagement by organisation* presents simply the total course enrolments of one employee. Again, this could be helpful when examining a single employee's learning progress but not the total number of enrolments. Hence, it is suggested to use the report *Course offerings* which includes data about a selected course regarding number of enrolments, maximum and minimum number, waiting list and further details.

The affordances from the report *Course Offerings* show the overview of employees' responsiveness on an offered course. In particular, the number of enrolled employees implicates whether the course will be conducted eventually while also if it has reached the maximum or minimum number of enrolments. The latter could be perceived as an indicator of the popularity of the course among the learners especially when examining the number of employees in the waiting list. However, this indicator can also be correlated to factors such as time period as explained by Dyckhoff et al. (2012) or audience traits, e.g. low employees' attendance due to summer vacations or due to limited number of new employees.

Regarding course completion data it is suggested to use the report *Progress and Completion*, similar to the previous manager. As already explained, this report shows the employees' progress on any selected Learning Content Type, e.g. *Digital Course* or *Programme*, thus saving time from accessing the different reports for each Learning Content Type. From a long-term perspective, establishing a clear perception of the available data from each report is helpful in order to organise a concrete learning evaluation strategy for the learners' activity via the LMS reports. For instance, since the particular business unit also relies on elective courses, it could be beneficial to regularly collect data about the total number of employees that completed a *Digital Course* or *Programme* in order to estimate whether there is a need to promote it to the employees in order to motivate them (Hangjin & Almeroth, 2010). For instance, the manager can create a *Campaign* to advertise the course on the employees' WDL homepage. By simply making the course visible it is possible to increase the number of course completions and reinforce learning opportunities to the employees.

Furthermore, regarding data about the employees' quiz scores the manager could access the previously recommended reports namely *Media tracking for packaged content* and *Media interactions*. The relevant data can contribute to the manager's understanding of which employees have acquired the theoretical

knowledge and which ones would need further training. In this case the report *Progress and Completion* could also be an option for getting course scores or grades since the manager's main requirement is the employees' score rather than their answers. However, according to the company's LMS guidelines it is advisable to exclude the features *Course grade* and *Course score* when creating courses, meaning that there is no available data for these sections.

8.2.3 Reports for manager 3 - Video and time data

As presented in the Findings, the third manager prioritises the need for acquiring course completion data and quiz scores. They also expressed their need for identifying the number of employees that completed a course or watched a video and the respective amount of time spent on these activities. These needs will be discussed in relation to the content of the nine WDL reports (see Context) in order to proceed with identifying the most suitable reports for practical implications.

As it was explained during the interview, their business unit mainly relies on learning content in video format. Taking this into account, it would be suggested to analyse the results from the report *Video tracking* because it provides a wide range of data. In particular, the manager could examine how many employees have watched a video by reviewing the learners' completion status. This could be an indicator to distinguish which videos are consumed more compared to others. From there, the manager could proceed with publishing a survey about the less watched videos to inquire employees' feedback and then update the videos accordingly.

Additionally, the report *Video tracking* follows up on the employees' total time spent on the video. Although this information is not self-explanatory, as expressed in the interviews by another manager, it could be beneficial though to monitor the average watch time of the employees in relation to the video length. Extended time could indicate difficulty to understand the content or even distracted learners. Based on these scenarios the manager could examine the possibility of creating shorter videos that provide "bite-sized" information or embedding interactive quizzes in longer videos that aim to engage the employees in the learning process.

In fact, the time indicator was a particular request from the specific manager, that rated the report *Time spent on training* as potentially useful. However, as explained to them during the interview, it is not understandable whether the reported time reflects the actual learner's time activity or just the estimated time that is set by the instructor in the course's description. This confusion should be clarified by comparing the report's presented results to the time set in the courses' description. Furthermore, the report *Time spent on training* provides information per Learning Content Type and not Media. This might be a barrier for their business unit, since they are mainly interested in data about time spent explicitly on video material. Therefore, the suggested report *Video tracking* appears to be more suitable for the manager's needs.

Moreover, in this business unit the vast majority of employees are largely distributed on the field and therefore it is a clear challenge to retain the oversight of their development. With special emphasis on taking advantage of the affordances that WDL reports can provide, the manager could use the report *Progress and Completion* to obtain data about field-based employees learning progress. Specifically, by comparing the number of employees from different teams that completed the courses, the manager can identify patterns of the team leaders' different approach on promoting learning in their teams. This may call for a request for feedback from the team leaders in order to understand their needs and investigate ways to help them reach out to more team members to complete courses. It is essential to point out that WDL data should be exploited

with the greater aim to raise more questions and cross-examine with other sources of information in order to facilitate learning and development.

Similar to the previous business units, the field-based employees also complete quizzes and receive scores as part of their training. Since the manager highlighted the extended use of educational videos in their unit, they could revise data from the *Video interactions* report that simply presents the employee's name, the quiz questions embedded in the video, the employee's answers, and indicates whether they are correct. However, this report includes quite limited information compared to the *Media interactions* report. The main advantage of the latter one is that it reports the total percentage that was watched from the media, i.e. videos and presentations. The total percentage watched may help the manager develop a clearer insight into which videos have indeed been watched completely and which ones are skipped before the end. This can be subject to different interpretations, for example low engagement by the end of the video, and could be addressed variously, such as by adding an additional quiz at the end of the video so that the employees cannot miss the final part. At the same time, it should be noted that a validation of the accuracy of the LMS data, such as total percentage watched, should take place before proceeding with using the aforementioned data as indicators.

8.2.4 Reports for manager 4 - Course completion and organisational data

As presented in the Findings, the fourth manager pointed out their demand for several data sets including enrolments on courses, course completions and quiz scores. An additional need is identified for reporting on the learner status and the number of created courses from an individual's, department's or organisational point of view. To address these needs identified in the empirical data, a discussion on practical implications according to the data that the reports contain will follow.

In addition to the single business units' needs and data from the reports, accessing information from an organisational perspective is also a requirement for purchasing an LMS. Indeed, the global L&D manager emphasised during the interview the opportunity that WDL offers to collect data about the learning process from all the offices that are distributed in six countries. Specifically, data such as course completion, enrolments and learner status, e.g. not started or in progress of a course, were reported useful to inform the top management of the company about the employees' learning efficiency. In this case, the report *Learner engagement by organisation* would be a suitable option because it presents an overview of each employee's learning progress (see Context). In contrast, other reports, such as *Progress and Completion*, acquire information about a specific course, and thus do not encapsulate a complete picture of the employees' learning progress.

However, the managers should be cautious when comparing the employees' learning progress between different departments or offices. Factors, such variation in the number of the offered digital courses for each department or the number of employees, can affect the data presented on the reports and the managers' perspective when viewing them. Therefore, the differences between departments and offices should be taken into account before drawing and generalising conclusions. Otherwise, the managers might take decisions on the organisational learning strategy based on insights that do not reflect the departments and offices' reality. That highlights the need to adapt their expectations of the LMS data possibilities on facts rather than speculative interpretations. In order to avoid the latter, they could implement other ways to collect information, e.g. employees' surveys or managers' feedback, in order to cross-examine the results with the data presented in the reports.

Equally important to the learning progress of the workforce in all countries is the creation of learning material on WDL on individual, departmental and organisational level. According to the same manager the number of created courses on WDL is a key indicator for ensuring that the employees have access to updated or new courses and that the training managers improve the educational material consistently. Nevertheless, this data is not corresponding to any of the selected reports of this study and hence it is not possible to proceed with a specific suggestion on this issue. It is possible that among the 29 reports offered by WDL there will be a suitable fit for the requested data about the number of created courses.

Regarding employees' quiz completion and scores from an organisational perspective both reports *Media tracking for packaged content* and *Media interactions* seem to be applicable. Although these have already been presented, clarification about how they differ from each other would be essential. That is because some departments may upload just the quizzes they used previously while others could proceed with creating additional ones. Therefore, it could be suggested that the manager responsible for the organisational learning strategy would access both reports to identify which offices seem to struggle and need help in developing new learning and assessment material.

8.2.5 Report for employees' feedback

In respect of acquiring employees' feedback, as requested by all the interviewees, there are two options, WDL Survey or the company's current external tool, Questback. The main difference constitutes that the employees' responses in the latter one are anonymous. Therefore, it could be perceived as a disadvantage of WDL Survey, confirmed by another manager as well, the fact that the collected individual's feedback can be linked to the exact survey participants. As a result, the company's external tool seems to be more appropriate for the purposes of collecting feedback about course satisfaction.

8.2.6 Considerations and alternatives to WDL reports

As the WDL reports and their respective data consist not only of possibilities but also limitations, an even greater responsibility lies on this study for addressing the identified restraints. A principal issue is the ambiguity of the reports' titles and descriptions that was reported by several managers during the interviews. That caused misunderstandings and complications in interpreting the reports' purpose and had an overall impact on the managers' evaluation of the reports. An explicit example is the title *Learner engagement by organisation* which raised questions on behalf of the interviewees and the researchers and generated scepticism whether an LMS can measure the learners' engagement and how. Even more, the respective data about employee's name and their number of enrolments and courses that are in progress, completed or not started, appears to be an oversimplification of the term "engagement". Thus, the concern for misinterpretation of the reports' purpose and possibilities is real but could be resolved through collaboration between the LMS company, Workday, and the users of the platform, meaning the responsible managers.

Another difficulty presented previously is the lack of anonymity in WDL's feature namely Survey. The fact that managers can distribute Surveys where the participants are not anonymous, is problematic because it prevents them from using the full potential of WDL. Additionally, it forces them to use another platform instead that collects the data in another system. Collecting and analysing data regarding learning from different systems, i.e WDL and the external survey tool, is impractical and could cause additional administration on behalf of the managers. This time-consuming process could be prevented by developing WDL Survey in order to collect anonymous responses.

Additionally, the managers are restricted from obtaining aggregated data about a group of employees due to the platform's limitation. It is self-evident that capturing the overall performance of a group of learners is a requirement for the ones responsible for training. However, this is not possible with the current services offered by WDL since the presented data in the majority of the investigated reports, e.g. *Progress and Completion* or *Media interactions*, concern individuals and cannot be aggregated into groups on the actual platform. The dashboards on WDL display analogous data, meaning individual information rather than collective (see Context). The issue for developing these LMS functions has been already addressed in literature of 2007 (Dawson et al., 2008; Mazza & Dimitrova, 2007). As it suggested previously, a preliminary solution at this stage could be the possibility to export the reports in Excel format and manipulate the data using the filter options. Nevertheless, in the context of adapting the technological advancements to the needs of the learners and the ones responsible for training, easy and immediate access to group data is considered prerequisite.

From a pragmatic perspective though considerations should also be articulated about the validity of any LMS data as an evaluation method. The absolute reliance on LMS data can contribute to the adoption of faulty assumptions and evaluation practices especially where the employee's overall assessment is concerned. Considering that the employees' learning activity consists of multiple aspects, the data interpretation is often volatile due to external factors, for example to work shifts or job tasks prioritisation, that are not represented on a one-dimensional report. Without neglecting that WDL constitutes a source of actionable information, workplace learning is and should be perceived as a dynamic entity and learning activity as a complex process that cannot be mapped out on simple quantitative results. As Mangaroska and Giannakos (2017) highlighted, data analysis from a single platform is a limited measurement of the learners' progress since learning takes place in various contexts and digital platforms. This is also apparent in the description of the training programme of the company where many activities for learning take place in a classroom or even on the field and thus cannot be recorded and reported by an LMS.

Even more, there are still gaps in our knowledge that may curtail the benefits of the Learning Analytics as opportunities for developing the learning progress if not appropriately addressed. In relevant literature (Macfayden & Dawson, 2012; Siemens, 2013; Tempelaar et al., 2015) there have been expressed concerns regarding the quality of the LMS data, the issue about legal authorisation of people to access and analyse it and the General Data Protection Regulation (GDPR) (EU 2016/679) on exploiting personal data, the debatable dependence on numerical data, and the demand on respective interpretation and data cross-examination. The latter one regarding data interpretation and investigation was the main research focus of this study.

In particular, the study attempted to investigate in an exploratory context the possibilities of Learning Analytics data as provided by a commercial LMS, i.e. an extension platform of a Human Resource (HR) system. A main issue that rose during this attempt was the limited research about analysis guidelines for Learning Analytics which is also reported by MacFayden and Dawson in 2010. Even more, we were challenged by the absence of comprehensive literature regarding Learning Analytics in workplace learning. Drawing parallels in terms of data interpretation between Learning Analytics in formal educational and workplace settings was demanding and, in some cases, not possible. Although the context of learning and employing an LMS platform are similar in both settings, the identity of the learners themselves distinguishes clearly between students and employees. In addition to the learners' identity and traits, the goals and setting where learning takes place also differ distinctly and create new conditions and restrictions for example time limitations (Littlejohn et al., 2012; Margaryan et al., 2009).

However, the exploratory nature of the study allowed us to present our suggestions and propositions. These should certainly be explored further and in-depth in order to evaluate their perceived usefulness. Hence, the contribution of this study affirms the need for future research in the field of Learning Analytics in workplace learning with an emphasis on the data interpretation. Investigating learners' data in relation to both employees' learning progress and their job performance would be beneficial for the work of instructors and L&D professionals in companies from various industries. Long-term outcomes of such research could include adopting an organisational mentality towards lifelong learning and improving job performance through continuous training and development.

Similar to the academia's responsibility to address the research gaps, the industry experts in the field of workplace learning are also responsible to initiate and advance their knowledge accordingly. In the frame of this study this translates into readiness on behalf of the managers to work and explore the possibilities of Learning Analytics. Considering the recent LMS implementation and the time restraints for organically adapting the new platform in the company's reality, it is reasonable that the managers had little or no involvement in the WDL reports. Thus, their understanding was based widely on their perception about the reports' content and LMS possibilities as well as their business units' needs. However, taking the initiative to research the available reports in detail in combination with their work experience will prove to be a valuable contribution to the phenomenon of learning evaluation in the digital era.

Since many companies have been utilising Business Intelligence (BI) systems, it could be proposed to the managers and L&D professionals to apply BI strategies and tools in Learning Analytics. Indeed, the field of BI has developed in terms of collecting and visualising data in comparison to Learning Analytics. Thus, an alternative to the WDL reports could be to transfer the data from the LMS to the company's system connected to BI, known as Data Warehouse. By defining the right condition in the BI system in order to identify and organise the LMS data into groups, e.g. per location, time, business unit and others, the managers could use the advanced report and visualisation BI tools to analyse the learners' activity data. Although this suggestion would be helpful to save time, it should be pointed out that LMSs need to advance more to reach the necessary requirements.

On the other hand, it is understandable that the results of this study and the suggestions are presented in acknowledgement of the study's limitations. As stated previously, the available data on WDL were very limited due to the recent implementation. That caused two separate issues, lack of data in some of the examined reports and arguable accuracy of any available data. That means that our interpretations of each report's collected data might not correspond in some cases to the actual information, as stated for example for the report *Time spent on training*. An additional result of the recent implementation was that the access to the reports was limited at that stage. Another concern can be expressed towards the selection of nine reports out of the 29 offered in total. This should be taken into consideration especially for the cases of requested data that we did not proceed with any suggestions for.

Considering ethical issues for examining the reports, it should be pointed out that for the purposes of the study we did not collect or analyse any data of the employees' online learning activity. The reports and their data were presented without referring to employees' information retrieved from the system. However, this is a critical consideration for both public and private industry sectors. Future research that seeks to exploit users' data and analyse it should handle the data as sensitive personal information and in accordance to the policy from the GDPR (EU 2016/679).

To conclude the exploitation of learners' activity data is an emerging topic in the field of education. The main objective should be to improve and promote learning rather than pursuing to monitor the learners. Especially lifelong learning could immensely develop at the workplace through Learning Analytics and could be established as a main objective of organisations and companies to achieve higher job performance. The latter one is analysed in the next section that presents the results from the survey with the employees. In that section the relation between learning goals and job performance is reviewed and relevant suggestions are provided.

8.3 Learning goals in relation to job performance

Aspiring to develop workplace e-learning, we conducted a survey to investigate the relation between a department's KPIs and a digital course's goals. Inspired by Anderson's model of Value Learning (2007), we intend to introduce an alternative approach for the company to improve the e-learning courses and consequently the employees' work evaluation. As Anderson (2007) introduces, training should aim to support the organisational strategic goals, such as increased sales or number of solved tasks for customer service. Accordingly, each department of an organisation has a specific set of goals and relevant job performance indicators to evaluate the employees' efficiency, e.g. KPIs.

The perception of workplace learning and training under the perspective introduced in Anderson's model (2007) is in line with the company's viewpoint. As stated by the global L&D manager in the interview, the organisational goals should dictate the training and learning topics of the departments. By reflecting and establishing a clear and constructive connection between learning and organisational or departmental goals, the aim of the study is to improve the digital courses and the employees' work evaluation after completing the training. Therefore, we proceeded to explore through a survey the employees' perspective regarding their KPIs in relation to learning goals.

As the study's results reveal, the majority from the eight participants (seven employees, 87.5%) take a digital course at the workplace in order to do a better job. On the contrary, individual development as a factor received significantly lower responses from only four employees (50%). This is a substantial differentiator between workplace and formal educational settings. In the latter one learning is an objective by itself as literature suggests (Littlejohn et al., 2012; Margaryan et al., 2009) since learners' focus is placed largely on knowledge acquisition and exam completion to acquire the required final grade. These aspects could be connected to individual learning ambitions among other factors. However, the employees' responses from the survey indicate that workplace learning is primarily expected to facilitate the job tasks and improve job performance (Illeris, 2011; Ley et al., 2010; Margaryan et al., 2009; Siadaty et al., 2016). Hence, a challenge emerges for connecting KPIs and course goals in order to improve workplace e-learning and the company's evaluation of training and employees' performance.

According to the participants' perspective there is already a connection between the original learning goals of a digital course and the department's KPIs. The relation could indicate that the employees might recognise job performance and KPIs as the expected outcomes of a digital course. That could mean that the instructors and training managers provide clear learning goals connected to the job tasks or offer a suitable onboarding process since many employees were introduced to KPIs that way. Nevertheless, the relation does not confirm whether both instructors and employees evaluate learning through job performance results. This is a main consideration addressed by Anderson's model (2007) regarding HR and top management executives that

need to strive for a complete alignment between learning and organisational strategy. That way they could easier associate learning to business profit and proceed with designing and applying suitable assessments.

The eight survey participants provided equally divided answers (50/50%) about their preference on course goals including KPIs or not. Those four employees who selected the existing course goal without KPIs possibly demonstrate that the course description is sufficient, as long as the learning goal clearly states the content and expected learning outcome. However, when looking further into these participants' reflection of their choice and by correlating the answers from the fifth and seventh questions of the survey questionnaire, three employees (75%) selected the description because it reflected the course content. One employee (25%) though, considered the length of the description, i.e. short text, as the decisive factor for choosing the aforementioned course goal.

Regarding the three participants (75%) who selected the original learning goal, their argument about reflecting the course content is consistent with the literature on best practices for e-learning content design. Specifically, studies (Berings et al., 2008; Lister, 2014) highlight the importance of clear guidelines and expectations for learners as well as good descriptions of the course content. The literature and survey results imply the importance of precise and descriptive learning goals that are relevant for the employees and reflect the course content, regardless of KPIs. These established principles are applicable for other learning methods such as blended and social learning as well as instructor-led classroom training since learners usually benefit from having a correct understanding of the course content and expected learning outcomes.

However, much of the related research on e-learning content design is conducted in formal educational, rather than workplace settings. This creates implications regarding the applicability of the instructional guidelines in workplace learning. Future research should address this topic by introducing appropriate guidelines for learning conducted at the workplace. Models that are adapted for such learning environments, for instance Anderson's model of Value Learning (2007) or Phillips' ROI model (1996), could be used accordingly because they take into account the workplace conditions and the organisations' aim for business profit.

On the other hand, four employees (50%) selected course goals including KPIs, because they reflect their aim to perform better at work. Even more, no participants selected the option "practical examples of work tasks" as important for describing the course goal. That means that all four respondents selected course goals including KPIs which is an indicator for their demand on learning goals that reflect job performance outcomes. This supports the answers on the first survey question where the employees' primary focus for taking digital courses is to perform their job tasks.

The company could meet the four employees' expectations by changing the learning objectives of the existing courses to be more aligned with the KPIs and job-related goals. The outcomes and benefits could be that employees perceive the training as more relevant for helping them perform better at work. Aligning learning goals with KPIs applies for both redesigning existing courses as well as creating new learning material. The aim is that the learning goals will reflect the organisational strategic priorities, according to Anderson's model (2007) and the interpretation of employees' preference. Following these guidelines could ensure that the focus of the training is meeting the organisational goals. Moreover, implying some of these changes and clearly communicating the job performance outcomes could allow the employees to have a greater understanding of the learning expectations set by the organisation.

Further organisational benefits of the actions suggested above is that learning awareness could reinforce the focus on improving the organisational learning strategy. By redirecting the focus of learning to job outcomes, the training managers might be more conscious about the company's business strategy and hopefully also contribute to developing the global learning strategy further. Since the local training managers work close to the employees and field workers, they could obtain valuable information about how to develop the organisation's training. For instance, they could redesign and use an adapted version of the survey to uncover detailed feedback about the learning expectations for each course. That way they could discover what the employees need to accelerate in their job, rather than measuring their satisfaction over a course. The process of shifting the focus could lead to deciding on required training that fits the organisational goals and improves workplace learning.

Moreover, the ROI of the LMS implementation and learning interventions could be easier to measure by connecting the training to specific measurable job performance indicators. As the interviews demonstrate, the current evaluation is focused on knowledge acquisition and user satisfaction but not on the training's impact on job performance. In general, it is challenging to connect workplace learning to financial outcomes because the investment in learning and knowledge is difficult to transfer into profit numbers (Downes, n.d.). Therefore, aligning learning with business goals and KPIs could help the training managers define relevant evaluation measurements. It would be possible, for example, to compare results between employees' performance before and after completing courses (pre/post testing) by measuring their KPIs. This might be applicable for comparing the ROI of different educational activities that take place in the company, e.g. blended courses or field training.

In general, it would be beneficial to use the available digital tools, such as Questback, and the existing evaluation methods to develop organisational training constructively and efficiently. Feedback on user satisfaction, job performance and KPI results collected from surveys, tests or managers' feedback could ensure that learning addresses the needs of both employees and the organisation. Having access to digital tools and collecting data to evaluate also requires that the results are analysed with the aim to take further actions for. This a main concern that could be addressed through regular collaboration between training and L&D managers of the company.

However, the presented suggestions should be examined with regard to the study's limitations. In this case, the study was challenged by the recent LMS implementation which affected the amount of available digital courses. As a result, the number of potential participants was limited since only a few employees had completed digital courses by the time of the research. Thus, the results are based on a low number of participants and should, thus, be considered in relation to the particular contexts of other departments or companies rather than simply generalised.

Although with few participants, it should be highlighted that the study uncovered some important aspects to consider when creating new courses and goal descriptions. Future research could escalate the study's approach by conducting a survey with a more substantial number of participants and between different departments or in the same department in different companies. This would lead to a more detailed and accurate understanding of workplace learning with higher validity and transferability.

It should be pointed out though that the survey as a research tool demonstrates mainly the participants' perspective. In this context, the survey was conducted to obtain the employees' opinion on the relation between learning goals and KPIs. The corresponding results and the relevant suggestions could be applied

in the design of the courses' content and goals, but they certainly do not pose implications about the employees' transfer of knowledge on their job tasks.

Additionally, the results should be examined in respect to the study's frame, i.e. the selected department, their KPIs as job performance indicators and the chosen course. It is possible that other departments of the same company or other companies in general have different job performance indicators that could be difficult to correlate to the learning goals. Indeed, it would be rather challenging to conduct the specific survey in case there are not clearly defined measures for a department's employees' performance. On the other hand, this could indicate the need for defining clearer connections between learning goals, job tasks and relevant evaluation measures.

Moreover, the participants' answers concern the learning goals of a specific course and could differ if asked about another course offered by their department. Besides, it should not be assumed that every organisational strategic goal and the relevant courses are related to job performance indicators. For instance, security awareness and knowledge about the GDPR policy are included in the strategic goals of the presented company. Despite the availability of related digital courses, these goals do not address any department's job tasks or KPIs but rather general working procedures that the company is obliged to provide to all employees.

A final point to consider is about whether KPIs are perceived by the employees as an integral indicator of their job performance development. According to the survey results though, four employees (50%) responded that they chose the combination of the learning goal with the KPIs because it reflects their purpose to do a better job. Thus, it seems that KPIs could be perceived as indicators of their improvement on the job tasks.

An overall point highlighted by the survey results is the potentials from connecting the learning goals at the workplace with the job performance outcomes. The greater aim is to establish the impact of the workplace learning on the business goals. That way, the value of learning would be recognised within organisations and hopefully could lead into investing on the right training interventions to facilitate the organisations' strategic goals and growth. The last chapter summarises the results of the research questions by separately addressing their practical implications and the possibilities uncovered by this study.

9. Conclusion

This study has investigated the case of Learning Management System (LMS) based e-learning in a particular international organisation with large numbers of distributed employees. With new LMS and digital tools for learning, it is critical to explore how these can be best adapted to the learning needs at the workplace. This aspect is not represented in educational research and, therefore, provides a new perspective addressing the aim of workplace learning, i.e. to increase job performance as a result of the training (Illeris, 2011; Ley et al., 2010; Margaryan et al., 2009; Siadaty et al., 2016).

To encapsulate the main results of this study, the most essential findings and implications are presented in the next section of practical implications in order to address the challenges of workplace learning from a social point of view. This is followed by implications for future research to address some key points from the previous chapter and lastly, from a short summary of the whole study.

9.1 Practical implications

As the recent global impact of the Covid-19 pandemic highlights, digital devices and environments play a critical role in our society and for the majority of organisations that promote learning and development. The digital paradigm shift emphasises the importance of well-structured online solutions and efficient use of available technology, both regarding learning and in other aspects of communication and management.

Considering the existing training activities in the company they could be improved by exploiting the digital tools they have available, such as Workday Learning (WDL) web platform and app for mobile learning. Mixing learning methods and utilising the opportunities for digital and blended learning can be more efficient for organisations with geographically distributed employees, field workers and for employees working different shifts. Taking advantage of WDL for mobile learning could free time from the instructors and managers who normally organise the training in classrooms.

Regarding learning at the workplace in relation to job performance, this study adds a different angle to Anderson's model of Value Learning (2007) by including employees' perspectives and expectations from taking digital courses. In particular, the study contributes by highlighting the potentials of aligning training to a specific department's business goals. Afterwards the training managers and instructors could proceed with designing applicable measurements and evaluation practices for job performance prior and post training. According to Anderson (2007) that could prove beneficial for organisations in order to value the contribution of learning to the business objectives.

There are many different ways to use digital technologies and existing collaboration tools to enhance learning. For instance, peer interaction and knowledge sharing could be institutionalised by providing online discussion forums. Especially, regarding the geographical distribution among employees, this is a way to encourage knowledge sharing and support in different parts of the organisation. Providing various learning opportunities, access to knowledge and social interactions is a significant part of lifelong learning. Learning is an ongoing process and the transfer of learning takes place through different activities and structures, both formal and informal from which any organisation could benefit.

Within organisations that aspire workplace learning, Learning and Development (L&D) and training managers value quality feedback and view instructional materials as being subject to continuous evaluation and revision. The LMS data could assist them in refining the way evaluation of training takes place. This

study sought to identify learners' data collected from the LMS as possible indicators for the employees' learning process. Commercial LMSs and relevant extensions from Human Resource (HR) systems present data about learners' activities that can help the training managers assess and evaluate learning and performance if they are presented in a comprehensive way. Applying methods directly from the field of Business Intelligence (BI) would expand the possibilities of commercial LMSs in regard to the reports and dashboards' functions. In the era of big data, more organisations have the chance to visualise and understand learning patterns based on aggregated data of their employees' activity. Investing time in analysing learners' data could facilitate training managers to address the employees' preferences.

Creating learning material according to employees' needs could have the potential to give them more learning options to select from. Individual learning with adaptable training material could be even applied prior to classroom training so that employees are better prepared, thus, making the training more relevant and valuable for them. In addition to delivering activities and opportunities for learning through digital channels, companies could also offer mixed learning methods and continue supporting personalised learning through a variety of courses that are a valuable resource so that employees have an active role in their learning (Brunner, 2012; Lister, 2014; Wilson, 2012). Therefore, identifying the learners' activity patterns and preferences would enhance the opportunities for providing personalised learning for employees.

Overall, the practical implications presented is the product of analysing the results from this study in relation to literature on the different topics. Corporate organisations, though, that wish to improve their e-learning and evaluation methods should first investigate their learning needs before proceeding with applying the practical implications.

9.2 Further research

Workplace e-learning is an evolving field with a rapid expansion of digital learning tools and approaches. Considering that the majority of adult education research takes place in formal educational settings, it is essential to conduct more research in workplace environments; both regarding employees' learning needs and expectations, effective learning environments and efficient use of digital tools. These emerging topics could be incorporated and further investigated through available models for organising workplace learning. Nevertheless, relevant models including the 70:20:10 framework, that have significant weaknesses regarding their validity, need to be re-evaluated through large scale testing.

To address another challenge for businesses about evaluation of learning, Anderson's model of Value Learning (2007), Phillips' ROI model (1996) or other models could be applied and examined further. Taking into account that particularly Anderson's model is created on limited research material, we recommend additional research to validate the model's suggestions. However, we also consider it critical to include employees' learning preferences in the research, as they are the target group for the learning interventions. The survey questionnaire in this study could be used with a larger sample group to investigate the relation between course goals and job performance. The next stage could be to align the learning goals to the appropriate job performance indicators and create suitable evaluation measurements for prior or after a training activity (pre- and post-testing).

Other evaluation approaches such as Learning Analytics should also be addressed in future studies. For instance, research could explore how to use LMS data in different workplace settings as predictors for workplace e-learning success and possibly correlate it to job performance or employees' retention rate.

Similar to studies conducted in educational settings (Dyckhoff et al., 2012; Wang & Newlin, 2000), LMS data from employees' online learning activity should be collected from various industries and job roles, e.g. sales and managerial, and analysed according to the different workplace conditions to identify patterns of e-learning that fit the different contexts. In order to examine the data understandability as well as Learning Analytics' potentials and limitations, trace interviews could be conducted with managers and employees. That way researchers can obtain in-depth knowledge of the users' perception regarding online learning activity on digital tools. Additionally, commercial LMSs and relevant extension platforms should be designed based on research conducted in workplace settings following the well-established design principles as other studies have indicated (Hangjin & Almeroth, 2010).

The aforementioned research suggestions could benefit many companies of different industries to improve their learning interventions' ROI, evaluation methods and increase learning value. Providing clear guidelines for practices and assets for workplace e-learning would motivate and facilitate organisational adoption of strategic training routines. That is of great importance to promote lifelong learning in a sustainable way for professionals. Employees' work life expands over a significant period of their adult life and, thus, opportunities to learn and develop at their workplace are considered essential in today's competitive labour market. Considering the rapid technological changes, it can benefit society as a whole to invest in people's knowledge and development to have access to necessary skills and competencies.

9.3 Summary

This study addressed different aspects of workplace e-learning by investigating a specific organisation. Since international corporate organisations with geographically distributed employees tend to institutionalise digital tools such as LMS platforms, the aforementioned topics could be subject areas for future research. As imposed before, the practical implications would be applicable to promote organisational growth as well as lifelong learning within workplace settings. The emerging field of numerous learning technologies, instructional approaches and Learning Analytics data requires further research for companies to be able to evaluate and utilise the learning opportunities. Thus, we would highlight the importance of promoting collaboration between educational institutions and organisations in various industries in order to investigate workplace e-learning from a scientific point of view. Our aspiration is that through this collaboration, the industries could benefit from scientific research while educational institutions would enrich their research on e-learning in different social contexts.

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Appendix 1

Reports of the Workday Learning (WDL) platform

Presentation of the 29 reports' titles and the respective descriptions followed by the display of all of the nine selected reports' data.

WDL report descriptions

Title	Description
All digital courses with integration ID	Digital courses containing reference ID, which is required for loading historical enrolments.
All past course offerings with integration ID	Past course offerings containing reference ID which is required for loading historical enrolments
Campaign audience report	Used to create campaign audiences. Can be run ad-hoc to validate the campaign audience before actually launching the campaign.
Campaign results report	Used to report on campaign completion status by employee.
Count of content types created in date range by Business Unit	Used to report on the total amount of blended course offerings per Business Unit (activity level) within a chosen time period.
Course offerings (with less than minimum enrolments)	Used to report on upcoming course offerings with less enrolment than the minimum capacity of the course offering. Purpose: To detect which course offerings need more enrolments in order to run the course. The

	learning admin will need to do some marketing of the course.
Courses and lessons created (last 12 months)	
Learner engagement by organisation	Used to report on how engaged our employees and managers and job profiles are.
Learning – Find workers for learning mass enrol	
Manage learning content	
Media interactions	
Media tracking for packaged content reporting	Used to report on the overall score i.e. did the worker pass or not, as well as to see what they answered wrongly.
My course offerings	Course offerings as an instructor. Capacity and waiting list. Learners attended.
My enrolments	
Progress and Completion	
Status by learner	
Status by learning content type	

Survey answers	
Survey responses	Results of the survey.
Survey responses reports	User satisfaction from feedback survey.
Time spent on training	
Total number of courses run in all countries in all years	
Total number of enrolments of digital courses versus course offerings	
Upcoming course offerings	
Useful reports	
Video interactions (overall results)	
Video interaction reports	
Video tracking report	

Course completion reports – complete data

Learner engagement by organisation	Progress and Completion	Campaign results	Course offerings
Employees' data	Employees' data	Employees' data	Course title
Not started	Course completion status	Course title	Instructor-led course
In progress	Course Learning Content Type	Expiration date	Course instructor
Completed	Course content title	Learning-registering	Course location
Enrolments	Course title	Registration	Course start and end date
Total	Completion status	Course offer	Enrolments
	Completion date	Learner's registration date	Minimum and maximum enrolments
	Course grade/score	Completion status	Waiting list
	Registration status		Capacity of waiting list
	Drop reason		
	Completion date		
	Expiration date		
	Instructor		
	Course location		

Interactions reports – complete data

Media interactions	Media tracking for packaged content	Video interactions
Employees' data	Employees' data	Employees' data
Course title	Course title	Course title
Completion status	Completion status	Completion status
Completion date/time	Completion date	Quiz questions
Created	Created	Learner's answers
Results	Result	Result
Total percentage watched	Interaction type	
Quiz questions	Quiz questions	
Learner' answers	Learner's answers	
Correct	Result	
	Timestamp	
	Delay	

Video tracking report and Time spent on training report – complete data

Video tracking	Time spent on training
Employees' data	Employees' data
Course title	Course title
Completion status	Course Learning Content Type
Start date	Completion status
Completion date	Duration in minutes/hours
Total percentage watched	
Total seconds watched	

Appendix 2

Interview plans

Presentation of the interview plan and questions for the training managers and the global Learning and Development (L&D) manager.

Interview plan for the training managers

Introduction and presentation of researchers
Consent form - How the data will be used - Voluntary participation - Anonymity for company and sensitive information - Voice recording transcription - Participant's questions
Introduction questions - Which department/business unit and how many employees? - Your role, daily tasks and department responsibilities - Experience with training and using Workday Learning and creating content/courses on WDL?
LMS Expectations as a training manager - What are your expectations for training? (The Learning Management System (LMS), as users or for their employees, from the top management). - After using the LMS for some months, what kind of support do you need/expect from the organisation (regarding the LMS)? (L&D, top management)

Learning needs LMS

- What do you consider important to focus on in terms of learning for your business unit?

- Which skills are most valuable for your employees to succeed in their role (to have or to obtain)?

- How can the LMS facilitate or offer courses to enhance these skills?

Personal impression of the LMS (as a user)

- What is your impression of the new LMS after taking some courses?

- Which features that the LMS offers do you consider efficient to address the needs for learning.

LMS learning evaluation

- How do you evaluate learning efficiency for your employees? (before and now)

- After using the LMS, how could you evaluate learning efficiency for your employees? Job performance after completed courses.

- What kind of reports or data/information would you like to have?

LMS reports – ranking activity

Explain the purpose of the exercise.

- The LMS offers different reports.
- New for you, difficult to know what is relevant or not.
- Limited information, titles and few descriptions.
- We want to help you find out which reports that are important/relevant for you

- These are some of the reports offered by the LMS. Based on the titles/descriptions and your understanding, can you rank/prioritise these different report categories based on what you think is more relevant/important to assess learning?

- Please reason, think out loud and explain your thinking process.

- Why is this top or bottom? Why do you consider these report categories very/little important?

- Are there any of these categories you consider unimportant, misperceiving, irrelevant or confusing?

- What is your impression of the categories available for taking out reports?

Report improvements

- What kind of reports or data/information would you like to have?

Other questions or additional information you would like to add?

Interview plan for the global Learning and Development (L&D) manager

Introduction and presentation of researchers

Consent form

- How the data will be used
- Voluntary participation
- Anonymity for company and sensitive information
- Voice recording transcription
- Participant's questions

Introduction questions

- Your role, daily tasks and department responsibilities (L&D?)

- How do you work with L&D in the organisation?

LMS Strategy

- As the global L&D manager, what are the learning needs in the organisation?

- Can you tell us a bit about the learning strategy?

- How is the LMS a part of this strategy to fulfil the learning needs?

- How do you intend to use the LMS on a long-term perspective?

- What has been your main focus during the implementation?

LMS features and learning theories

- In your opinion what is the recipe to create an effective learning environment?

- What do you consider the most efficient learning methods (with use of the LMS or general, practical and useful learning methods)

- Tools, assets, activities to boost learning

LMS challenges/limitations

- Which limitations would you point out regarding learning with the LMS?

- What challenges do you face today?

- How are you promoting and encouraging learning in the organisation?

LMS learning evaluation - Which methods do you use to evaluate learning after finishing the training? (Job performance after completed courses?) - What kind of reports or data/information would you like to have from the LMS? - It's a challenge for companies to see the results and Return on Investment (ROI) of investing in learning. How do you assess the ROI for the LMS?
LMS reports - Is WDL providing any more information about the reports? (Description or purpose for each report?) - How do you use or intend to use the reports? - What is your impression of the reports and data/statistics/information available by the WDL?
Report improvements - What kind of reports or data/information would you like to have?
Other questions or additional information you would like to add?

Appendix 3

Survey questionnaire

Presentation of the survey questions and the purpose for asking each of the questions.

<table>
<tr><th>Survey questions</th><th>Purpose</th></tr>
<tr><td>1. How were you introduced to Key Performance Indicators (KPIs)? (multiple choice)

- I am not familiar with KPIs
- Previous work experience
- From a Manager/Team Leader at my current company
- Onboarding or current work experience
- Training or Education at my current company (course/workshop)
- Other</td><td>Are they familiar with the term KPIs and how?</td></tr>
<tr><td>2. What is your goal or expected outcome for taking digital courses on Workday Learning (WDL)? You can select multiple options. (multiple choice)

- It’s mandatory to take
- To help me reach my bonus
- To be able to do my job
- To be able to handle more issues
- To get more satisfied customers
- To be more efficient in solving customer’s problems by phone
- To be more time-efficient on tasks and emails
- For personal development
- Other</td><td>What are employees’ expectations for taking a digital course? Are the expectations related to job performance?</td></tr>
<tr><td>3. One of the course goals is learning about “Troubleshooting tools for the app”. To what extent is this goal important for helping you achieve the following Customer Service KPIs? (matrix)

<table><tr><td></td><td>Not at all</td><td>Slightly</td><td>Moderately</td><td>Very</td><td>Extremely</td></tr></table></td><td>How much does the goal of this course align to the business strategy and their department’s KPIs in their opinion?</td></tr>
</table>

KPI 1					
KPI 2					
KPI 3					
KPI 4					
KPI 5					
KPI 6					
KPI 7					

KPIs

- *Customer satisfaction*
- *Service level on phone*
- *Efficiency on phone*
- *Handling time on tasks*
- *Handling time on emails*
- *Productivity*
- *Amount of handled issues*

4. Another course goal is learning about "What you should ask the customer and what you can do to solve the problems". To what extent is this goal important for helping you achieve the following Customer Service KPIs? (*matrix*)

	Not at all	Slightly	Moderately	Very	Extremely
KPI 1					
KPI 2					
KPI 3					
KPI 4					
KPI 5					

How much does the goal of this course align to the business strategy and their department's KPIs in their opinion?

<table><tr><td>KPI 6</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>KPI 7</td><td></td><td></td><td></td><td></td><td></td></tr></table> *KPIs* ● *Customer satisfaction* ● *Service level on phone* ● *Efficiency on phone* ● *Handling time on tasks* ● *Handling time on emails* ● *Productivity* ● *Amount of handled issues*	
5. Which option best describes one of the learning goals for this course? (*multiple choice*) - You will learn about common problems that customers have. - You will learn about common problems that customers have, to handle tasks and emails time-efficiently. - To handle tasks and emails time-efficiently, you will learn about common problems that customers have. - After the course you will be able to handle tasks and emails time-efficiently.	Which learning goal do most employees prefer when taking a course? Comparison of different titles for a learning goal including/excluding KPIs 1. Learning goal 2. Learning goal + KPI 3. KPI + learning goal 4. KPI
6. Explain why you selected this description. (*open question*)	Reflect upon their choice from the previous question. Understanding their perspective.
7. If you have to prioritise, which explanation is most suitable for the course goal you selected in question 5? (*multiple choice*) - It reflects the content of the course. - The description is short and simple. - The learning outcomes will help me do a better job. - It's practical and includes examples of work tasks. - Other	Help them specify what they prioritise in the selected learning goal. Do they focus more on the content, aim or phrasing of the goal?

Appendix 4

Consent forms

Presentation of the consent form for the interviews with the managers and the consent form for the survey questionnaire with the employees.

Informed Consent Form for the Interview

Introduction

We would like to ask you to participate in a research study on (company's name) (hereinafter the "Company") about the implementation of the Learning Management System, known as Workday Learning (hereinafter "WDL"). This document contains information about the study and what your participation would involve.

What is the study and why do you want me to participate?

The research study is conducted by Charlotte Cohn and Danai Papadimitriou, students at the University of Gothenburg (hereinafter "Researchers") as part of their Master's Thesis. The purpose of the study is to identify learning practices and evaluation methods that fit the Company's learning needs. Your participation is important because you have knowledge about the learning needs of the Company/your Business Unit and experience using WDL.

How will the study be conducted?

- As a participant in the study you will:
- Participate in a one-hour interview held in English
- Be voice-recorded (if interviewed face-to-face) or video-recorded (if interviewed through video call) to best document the interview
- Answer demographic questions including current job position in the Company

Which data will be collected and analysed?

We will collect and analyse the following "User Data" for the study:

- The Participant's interview
- The voice/video recording from the interview
- The transcription of the interview

The interview data will be transcribed, analysed and reported as qualitative results. The Researchers undertake that this User Data will only be used for the purposes of the study, during the retention period defined below.

What will happen with my personal data?

All data collected as part of the study will be handled confidentially according to the General Data Protection Regulation (2016/679). Voice/video recordings and transcriptions from the interview will be stored in such a way that no unauthorized persons can gain access to them.

The personal integrity of all participants will be protected in the reports from the study that could be published as follows:

> The Company's name and the participants' name will not be declared in the study. Sensitive information will be removed/anonymised. However, the interview transcription including demographic information such as job position and Company's Business Units/departments will be disclosed.

In accordance with the General Data Protection Regulation, you have the right to request access to the data collected about you in the study and to request its deletion or modification. If you would like to access your data, contact the Researchers or the Research Supervisor within 6 months from the date stated on the signed consent form. Johanna Wallin (dataskydd@gu.se), data protection officer at the University of Gothenburg, can also be contacted if you have concerns about the way your data is handled. If you are dissatisfied with the way that your personal data is handled, you also have the right to report your concerns to the Swedish Data Protection Authority, which is the relevant regulatory agency.

For how long will my personal data be stored?

The original voice/video recording will be retained from the Researchers for a maximum period of 6 months from the date stated in this consent form, beyond which time this User Data will be destroyed.

However, transcribed data from the interviews and reports from the study could be published as part of the Thesis.

Participation is voluntary

Your participation in this study is voluntary, no compensation shall be offered. It is up to you to decide whether or not to take part in this study. If you decide to participate, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason by contacting the Researchers.

You are free to contact the Researchers to seek further clarification and information about the study. The Researchers might contact you to request a clarification or a follow-up interview which you then will decide to accept or decline.

How can I get information about the results of the study?

You are not required to engage with the results of the study but you are welcome to contact the Researchers listed below to discuss the study results.

Responsible Contacts

Researchers:
Charlotte Cohn (guscohch@student.gu.se)
Danai Papadimitriou (gusdanaipa@student.gu.se)

Research Supervisor:
Thomas Hillman (thomas.hillman@ait.gu.se, +46 31 786 2205)

Educational Institution:
University of Gothenburg

Department of Applied Information Technology
SE412 96 Göteborg
Address: Forskningsgången 6, 417 56 Göteborg

Department of Education, Communication and Learning
Box 300
Address: Läroverksgatan 15, 40530 Göteborg

Consent to participate in the study

I have received written information about the study and have had the opportunity to ask questions. I can keep the information provided to me.

I declare that I have read the conditions for participating in the study:

I agree to participate in the study.

I agree that my User Data may be used for the purposes of the study by the Researchers in accordance with the terms defined above:

I agree to participate in the study.

Informed Consent Form for the Survey Questionnaire

Survey for digital course on Workday Learning

The aim for this survey and your participation is to understand (1) how you experience digital courses and (2) how the learning goals are related to your department's KPIs. We kindly ask you to answer 7 short questions that should only take about 5 minutes.

The results of the survey will be made available to participants upon request and you are welcome to contact us for more information about the survey or the thesis.

Thank you for your participation!

Information about data processing

Your participation is anonymous and voluntary, and you can withdraw at any point while answering the survey. The results of the survey will be analysed and presented anonymously, without mention of the company or information that could reveal the identity of participants.

All data collected as part of the study will be handled confidentially according to the General Data Protection Regulation (GDPR 2016/679) and will only be used for the purposes of the thesis. Johanna Wallin (dataskydd@gu.se), data protection officer at the University of Gothenburg, can be contacted if you have concerns about the way your data is handled.

How to contact us

University of Gothenburg, Sweden
Charlotte Cohn (guscohch@student.gu.se)
Danai Papadimitriou (gusdanaipa@student.gu.se)

University supervisor:
Thomas Hillman (thomas.hillman@ait.gu.se, +46 31 786 2205)

I agree to the processing of my personal data in accordance with the information provided herein.