Competence development through the lens of structuration - Does age matter in Finnish IT workplaces?

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ABSTRACT

This thesis is about existing employees' competence development, with a particular focus on middle-aged and late-career employees in the Finnish information technology field. Research on adult education, workforce development and workplace learning has traditionally relied on economic, psychosocial and learning theories. The lower participation rate of older workers in skills training is explained in terms of lowered abilities and willingness to learn, or through employers' cost- driven strategies, which prioritise younger employees. While earlier studies tend to focus on either the employee or the learning environment, this thesis emphasises the relationships between an employee's agency and the enablers and constraints apparent in the work environment.

The aim is to understand differences in employees' participation in competence development activities within the workplace and the significance of various factors involved. A pragmatic ontology is applied and a methodology of mixed methods, integrating data collection and analysis of a structured survey across industries (*N*=1,119) and face-to-face interviews (*N*=27). Theoretically, a novel approach is developed by building on key concepts of structuration theory (Giddens, 1979, 1984).

The core argument in this thesis is that the frequency of competence development activities is an outcome of the pre-existing interaction between the employee and the learning environment. The thesis contributes to theory by providing an empirically grounded and theoretically informed conceptualisation of employees' competence development, firstly, in the form of an analytical framework, and secondly, in the novel categorisation of agentic orientations.

The thesis proposes that employees engage in competence development activities at different levels as a result of their agentic orientation, which may be proactive, reactive or restricted. Following these orientations, employees perceive factors in the learning environment as either enabling, supportive or constraining, leading to the agentic actions to initiate, accept or reject opportunities for competence development.

Empirically, the study demonstrates that late-career employees are as active in their competence development activities as middle-aged employees are but face specific challenges of indirect age discrimination related to on-the-job learning. The holistic framework and the categorisation of proactive, reactive and restricted employees supports policymakers and practitioners to adjust their adult education and training offerings by observing individual agentic orientation rather than chronological age. In addition, these serve to avoid age and gender biases related to on-the-job learning.

List of appendices

List of abbreviations

AI	Artificial Intelligence
BBA	Bachelor of Business Administration
CEO	Chief Executive Officer
EU	the European Union
HR	Human resources
HRD	Human resource development
HRM	Human resource management
ICT	Information and communication technology
IoT	Internet of Things
IT	Information technology
MBA	Master of Business Administration
OECD	Organisation for Economic Co-operation and Development
RQ	Research question
SME	Small and medium-sized enterprise
UAS	University of Applied Sciences

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In Helsinki 30 January 2020

Niina

DECLARATION

I hereby declare that, except where explicit attribution is made, the research presented in this thesis is entirely my own.

Niina Jallinoja

1. Introduction

This thesis explores well-educated employees' participation in competence development activities in Finnish workplaces—a subject not necessarily recognised as being of importance for an inquiry. The topic arose from everyday observations related to redundancies and competence development in Finnish labour markets over the past decade. Even though Finland can be understood in many respects as a learning society, with multiple enablers for lifelong learning (Eurostat, 2016; Silvennoinen & Nori, 2017), high numbers of employees have been laid off on the pretext of a lack of competences required in their workplace. For instance, the Chief Executive Officer (CEO) of Tieto, one of the largest information technology (IT) employers in Finland, argued publicly that the reason for the wide-scale redundancies was that the skillsets of employees were not maintaining pace with advances in technology (Central Organisation of Finnish Trade Unions, 2014). This thesis thus began in 2014 by asking the following question: 'How has it been possible that existing employees in Finland lack the competences required at their workplace in such a facilitative learning environment?'

Prior research recognises that in this era of continuous technological development, further education and training are particularly crucial in the IT industry (Jovic & McMullin, 2016; Official Statistics of Finland, 2017b; Tarafdar, Pullins, & Ragu-Nathan, 2015). Simultaneously, the workforce is ageing in Finland and the official pension age has been raised (Kannisto, 2015; Oksanen, 2014). Consequently, more IT employees are labelled 'older workers' than before and they must maintain their professional competences to remain employed (Official Statistics of Finland, 2018a). Drawing on these trends, the empirical focus of this research is on employees aged between 40 and 64 years who face particular issues in their competence development. In addition, the field study focuses on employees who hold Bachelor of Business Administration (BBA) and engineering degrees. These employees form one of the largest occupational groups in Finland, and they are experiencing rapid changes due to technological development at work.

1.1 Debates on competence development in the literature

Research in various disciplines has been conducted to understand how much employees participate in education and training, what their role in continuous learning is, and what individual, organisational, and institutional factors enable or constrain their competence development activities. Three debates of particular interest exist in earlier research, which this thesis engages with.

The first debate concerns older employees' lower participation rates in education and training compared with the younger workforce (de la Maisonneuve, André, García, & Koen, 2014; Felstead, 2011a, 2011b; Organisation for Economic Co-operation and Development [OECD], 2015). The most common explanations for this in the literature relate to (older) age in one way or another. Economic approaches refer to a better return on investment with younger employees (Boeren & Holford, 2016; Lazazzara, Karpinska, & Henkens, 2013); motivation approaches refer to older workers' aims and interests in participating in training (Kanfer & Ackerman, 2004; Kooij, 2010); whilst psychosocial theories refer to the belief in older workers' lower ability to learn (Maurer, 2007; Truxillo, Cadiz, & Rineer, 2017). The second debate is related to employees' role in their competence development as well as the following question: What is agency in a workplace learning context? (Billett, 2008; Eteläpelto, Vähäsantanen, Hökkä, & Paloniemi, 2013; Evans, 2007). Finally, the third debate deals with the organisational factors in an environment that affect the frequency and means of competence development and the optimal learning environment for supporting workplace learning (Kock & Ellström, 2011; Fuller & Unwin, 2005; 2011).

It can be concluded that a major flaw in the literature is that there is a limited view of how the roles of the employee (approached through motivation and the ability to learn) and the workplace (approached from economic or learning environment viewpoints) are related, as well as how this relationship influences employees' competence development. In other words, a need exists to understand the relationship between employees' agency, on the one hand, and the institutional, organisational, and individual factors on the other, which together influence the frequency and means of employees' competence development activities.

Because this doctoral thesis can be positioned at the intersection of the fields of organisational workplace learning and adult education, each of which uses different terminology, a brief description of the term 'competence development' is provided here. Various studies refer to 'workplace learning' or 'workforce development' when discussing employees' adult and further education, training, and learning in the workplace (Billett, 2004; Ellström, 2011) as well as to informal learning at work (Eraut, 2004; Illeris, 2011). This thesis, however, employs the term 'competence development', which addresses the observable activities through which employees learn and are educated and trained at work. These activities include further education in the university and adult education institutions as well as training organised by employers, partners, and commercial vendors. Competence development also comprises on-the-job learning; for example, through job rotation, working on a project, and information gathering from the Internet. Competences are understood to be the outcomes of employees' competence development activities, consisting of content-related clusters of knowledge, skills, and attitudes (Brockmann, Clarke, Méhaut, & Winch, 2008; Winterton, 2009), which are divided into generic and professional competences (Mulder, 2014). Further discussion on the essence of competence development and previous conceptualisations is taken up in Chapter 3.

1.2 Novel theoretical lens for competence development

The distinction between the three aforementioned debates indicates that the prior conceptualisations of adult education, workplace learning, and organisation studies on training provide only a particular point of view and a limited explanation of existing employees' competence development. The requirement of a holistic view is recognised in the literature (Fineman, 2014; Goller & Paloniemi, 2017; Hager, 2011); however, no unified theory could be found that incorporates employees and the learning environment for analytical purposes. Therefore, to combine the perspectives of the employee and the influence of the learning environment, Giddens' (1984) structuration theory is selected as the theoretical lens for this study. Further discussion of Giddens' ideas is undertaken in Chapter 4, but the following paragraphs briefly present the advantages and definitions of the key concepts applied in this thesis.

The first rationale for applying structuration theory (Giddens, 1979; 1984) is that it provides a novel lens to create a holistic understanding of how agency and the learning environment fit together, and also of how together these further explain the mixture of factors enabling or constraining employees to participate in training and on-the-job learning activities. The key concepts of agency, structure, and social systems thus enable the development of a novel analytical framework of employees' competence development. Second, the key concepts of structuration enable further theorisation of the differences between employees through the concept of agency, and also of their perceptions towards the learning environment through the concepts of employee structure and social system. The third reason for applying structuration theory is that its ontology, as well as its related constructions, are applicable to the aims, the research questions (RQs), and the philosophy of pragmatism applied in the present study.

Even though Giddens (1979; 1984) and this thesis employ commonly known notions of agency and structure, the definitions are out of the ordinary, which needs to be clarified briefly here. The concepts of structure and agency have roots in social theory, with a long ontological and epistemological discussion known as the structure–agency debate. The essence of this debate is to what extent an individual lacks power over structural constraints related to, for instance, membership of a social class or being a woman (strong structure) and to what extent he or she has free will (strong agency). The notions of structure and agency are often invoked in socio-political debate and research, which is why the term 'structure' typically refers to the social relations (class and gender) that are understood to constrain people's actions and lives in society (Archer, 1982; Porpora, 1989). Thus, structures are the patterned social arrangements in society that arise from and are determinants of the actions of individuals (Burns & Flam, 1987).

In structuration theory, Giddens (1984) places equal emphasis on both agency and structure, but applies a unique meaning to the term structure (Jones & Karsten, 2008; Whittington, 2010). For Giddens (1984, p.17), structure exists 'as memory traces orienting the conduct of knowledgeable human agent', which are 'continuously re/produced by individuals' actions'. Building on Giddens' ideas, employee structures in

this thesis do not refer to social structures such as gender and class in society. Indeed, employee structures are defined as employees' mental traces comprising their sense of power over available resources, the meaning of work and competence development, as well as internal rules in relation to competence development and work.

Giddens provides another concept, namely social systems, which refer to the arrangements in society, in organisations, and between people, as 'reproduced relations between actors and organised as regular social practices' (1984, p. 25). Building on that idea, social systems in this thesis are defined as the arrangements and relations between people in society and the workplace organised in regular social and organisational practices. Furthermore, a set of social systems is defined as comprising particular individual, organisational, and societal factors present in interactions between people, such as between an employee and a manager. Consequently, the notions of employee structure and socials systems together contain what typically is understood in the social sciences as 'structures'. Accordingly, in analysing these two concepts, this thesis reveals how, for instance, older age and gender in a context of competence development are associated with an employee's frequency of engagement in competence development activities.

In turn, agency is widely understood as an individual's capacity to act independently and make his or her own free choices, despite the structural constraints in his or her environment (Barnes, 2000). The conceptualisation in this thesis takes this common view of agency as a starting point, and applies Giddens' (1984) idea of knowledgeable agency as knowing much about what happens in the learning environment. However, where Giddens' (1984) focus is on the level of consciousness in an individual's agency, this thesis considers agency in relation to an employee's capacity, particularly for agentic actions, and accordingly competence development activities. In this thesis, agency is defined as an employee's capacity for agentic actions and competence development activities constructed through temporality, self-determination, and self-efficacy. Furthermore, agency is mutually dependent on employee structures that comprise their sense of power over available resources, the meaning of work and competence development, as well as internal rules in relation to competence development and work.

The concepts of agency, employee structure, and social systems are used throughout this thesis, and to avoid confusion at any point, a glossary of the key terms is provided in Appendix 8. The following section precisely introduces the research objectives and questions, which set the scope as well as guide the field study and analysis.

1.3 Objectives and research questions

As discussed thus far, the rationale for exploring employees' continuous competence development stems from the everyday observation that existing middle-aged and late-career employees may lack the required skills, particularly in Finnish IT workplaces. To achieve the aim, the first objective of this thesis is to empirically understand the overall picture with respect to the frequencies and means of competence development activities in Finnish workplaces through a quantitative inquiry. Considering the prior concerns over older employees' lower level of participation in training and learning (Felstead, 2011b; Vickerstaff, Phillipson, & Loretto, 2015), it is also necessary to separate middle-aged and late-career employees' responses and search for possible differences between the age cohorts. The initial quantitative analysis of the frequencies and rationale of competence development activities informs the subsequent interviews and integrated analysis, which reveal more in-depth insights into the subject. The limitations of existing literature give rise to the theoretical aims of this thesis: to conceptualise the relationship between the employee—through the concept of agency—and the learning environment—through the concepts of employee structure and social systems.

The second objective of this thesis is to understand the role of employees in their competence development activities. Research has recognised an increase in employees' roles related to their education and training in society (Loretto, Phillipson, & Vickerstaff, 2017) and the workplace (Billett 2011; Eteläpelto, et al., 2013). In recent years, workplace learning scholars have conceptualised employees' agency in multiple ways, exhibiting greater interest in employees' roles in pursuing their competence development as opposed to focusing only on their learning processes (Gruber & Harteis, 2011; Manuti, Pastore, Scardigno, Giancaspro, & Morciano, 2015). However, room exists for further understanding the concept of agency in the context of competence development.

In turn, the third objective of this thesis is to identify the role of the learning environment; that is, the institutional, organisational, and individual factors involved in employees' competence development, particularly in Finnish IT workplaces. Earlier studies provide insights into both the individual and organisational factors related to employees' competence development in different empirical settings, raising such factors as age, gender, occupation, as well as the size of the organisation and training practices (Hurtz & Williams, 2009; Kyndt & Baert, 2013). Literature also points to the importance of economic cycles and societal regimes when investigating education and training in a particular context (Beck, 2014; Felstead, 2018). However, room exists for linking these factors into the whole framework of competence development. Accordingly, the quantitative part of this study reveals which factors middle-aged and late-career employees find relevant and impactful in their situation, whereas the qualitative study delves deeper into how these factors influence the frequency of individuals' competence development activities.

The fourth—and most important—objective is to understand the association between the employee and the learning environment. As further discussed in Chapter 3, earlier conceptualisations of agency in relation to workplace learning indicate that employee agency is associated with the environment in which education, training, and learning occur (Evans, 2007; Hodkinson and Hodkinson, 2004). In addition, the conceptualisations of expansive or restricted learning environments (Fuller and Unwin, 2007) indicate that certain circumstances enable or constrain all employees in their competence development. However, earlier studies do not reveal if the learning environment has different levels of importance for different employees, leaving the question of what the relationship is between employees and the learning environment open. To achieve these objectives, the following four RQs are posed:

RQ1: What kind of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces?

RQ2: How do different institutional (e.g., education opportunities and legislation), organisational (e.g., size and type of work), and individual factors (e.g., age and gender) enable or constrain middle-aged and late-career employees' competence development in Finland?

RQ3: How do IT professionals construct their agency in relation to their competence development in the workplace?

RQ4: What is the relationship between agency and institutional, organisational, and individual factors in employees' participation in competence development?

The rationale for each of the research questions is further elaborated upon in Chapter 3 in conjunction with the concluding summary of the literature review. In addressing these RQs, the differences between employees and their participation in competence development activities in Finnish IT workplaces are explained. The findings produce both empirical and theoretical contributions to existing knowledge, which are briefly discussed in the next section, addressed fully in the analysis in Chapters 6, 7, and 8, and concluded in Chapter 9.

1.4 Contribution to knowledge

This study provides a greater understanding of the contributions of employees' competence development to adult education and workplace learning studies focused on older workers, as well as its contributions to human resource development (HRD) research. As indicated, the need exists to combine prior viewpoints, focusing on either the employee as learner or factors in the learning environment. This thesis provides a holistic viewpoint for understanding the differences in existing employees' participation in competence development activities.

Furthermore, this thesis contributes to theory by providing empirically grounded and theoretically informed conceptualisations of competence development and the social actions prior to such activities. The core argument is that the frequency of competence development activities is an outcome of the pre-existing interaction between the

employee and the learning environment. It is proposed that employees' competence development is contingent upon employees' agency and employee structures as well as their interaction with particular sets of social systems in the workplace.

Moreover, the major theoretical contribution to knowledge is a holistic framework for competence development, which reveals how employees' own role and the learning context are associated, and also what components must be involved in such an analysis. The second key contribution is the categorisation of employees according to their agentic orientation, as proactive, reactive, and restricted in demonstrating their perceptions and actions related to competence development.

Although consideration of the relational bases between individual agency and the learning environment is not entirely new, this thesis exposes a novel construction of the relationships between the employee and factors in the learning environment. To fill the theoretical gap identified in the literature, the developed analytical framework developed draws on Giddens' (1979; 1984) understanding of agency, structure, and social systems. However, while supporting the key ideas of structuration, the thesis further develops the existing conceptualisations as well as the interlinkages between these components. Consequently, this thesis also contributes to the debate on the usefulness of structuration theory in empirical research, particularly in individual-level studies.

The empirical contribution is founded on a mixed-methods study conducted on well-educated middle-aged and late-career employees in Finland, an understudied group of workers. Earlier adult education and training studies have concerned the whole population, and their focus has been on those with a relatively low level of education. By contrast, this thesis analyses how employees with a relatively high level of education face constraints in their competence development in the workplace and, when unsuccessful in taking on these development activities, how their ability to work until official retirement age may be jeopardised. Another empirical contribution lies in the finding that even though the Finnish IT sector generally provides an enabling environment for existing employees' competence development, both (older) age and gender may present barriers to middle-aged and late-career IT professionals.

1.5 Outline of the thesis

This doctoral thesis is compiled in nine chapters, the remainder of which are organised as follows. Chapter 2 discusses the socioeconomic context of education and training and also presents the key indicators of employment and working life in Finland. Moreover, it presents the Finnish features of higher adult education as well as workplace training systems and welfare practices for supporting women and older workers in their career. The chapter ends by explaining why IT is a suitable industry for the investigation of middle-aged and late-career employees' competence development.

Chapter 3 can be understood as a critically oriented literature review, which provides definitions of competence development and its observable components. The discussion then addresses the key individual factors identified as being involved in employees' training and workplace learning, and also the factors associated with the workplace as a learning environment following emerging research on agency related to competence development. The concluding reflections present a summary illustration (Figure 5) of the existing understanding of the components of employees' competence development and unanswered questions therein.

Chapter 4 sets the theoretical foundation for investigating employees' competence development through the lens of structuration (Giddens, 1979, 1984). In the first section, the criteria for the selection of structuration as a suitable theoretical basis is addressed followed by the Giddensian ideas of agency, structure, and social systems. Next, from the numerous critiques on Giddens' work, key debates on structuration in relation to the aims of this thesis are discussed followed by two promising examples as steps towards a holistic framework that applies Giddens. The conceptual framework is presented in Figure 10, summarising key concepts from previous literature.

Chapter 5 addresses the ontological and methodological bases for this doctoral study. It introduces the qualitative focused mixed-methods approach—less applied in research on the subject of workplace learning. It presents the step-by-step procedures involved in the quantitative and qualitative empirical studies, as well as the respondents of the quantitative survey (*N*=1,119) and qualitative interviews (*N*=27). How these data sets

are integrated in one study is also discussed. Lastly, ethical considerations and the quality of the study are elaborated.

Chapters 6, 7, and 8 together discuss the analysis and the findings. Chapter 6 begins with a short presentation of the analytical framework developed in this thesis, and then continues by examining the level and forms of competence development activities employees participate in across Finnish business workplaces. In so doing, it addresses the first RQ: What kind of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces? Chapter 7 explores the individual, organisational, and institutional factors middle-aged and late-career employees recognise to be key enablers and constraints for their competence development. The focus is on the second RQ: How do different institutional, organisational, and individual factors enable or constrain middle-aged and late-career employees' competence development in Finland? Most importantly, the chapter reveals three sets of social systems that eventually influence existing employees' actions related to work and their competence development activities.

Chapter 8 starts by addressing the third RQ: How do IT professionals construct their agency in relation to their competence development in the workplace? The enhanced construction of agency/employee structure is discussed in light of agentic orientations, which demonstrate how employees exercise their agency and accordingly participate in competence development activities. Agentic orientations also expose employees' perceptions toward the learning environment and particularly the social systems there. The discussion throughout this chapter thus answers the fourth RQ: What is the relationship between agency and institutional, organisational, and individual factors in employees' participation in competence development?

Finally, in Chapter 9, the contribution to knowledge of this thesis is addressed from both theoretical and empirical perspectives. The chapter addresses how the developed analytical framework and novel categorisation of agentic orientations elaborate on earlier conceptualisations and enhance the research on existing employees' competence development. The limitations and ideas for future research are addressed, as are the implications for policy and practice. The closing reflections concern my personal journey in undertaking my part-time doctoral studies during 2014–2020.

2. Enablers and constraints for competence development in the Finnish learning society and IT sector

Further higher education, training, and on-the-job learning can be related to wider social trends, such as accelerating technological development and an ageing workforce (Degryse, 2016; de la Maisonneuve et al., 2014). Workforce ageing is challenging the ways in which societies organise lifelong learning and organisations develop their human resources (Kulik, Ryan, Harper, & George, 2014). This chapter examines the subject of employees' competence development in relation to relevant research in the context of Finnish workplaces and in light of continuous competence development. It investigates the features of Finnish adult education and workplace training systems in addition to the associated welfare practices.

The development of technology and the continuation of globalisation have caused major changes in the nature of work, and they have also increased the demand for innovation and technology-related competences for all employees (Susskind & Susskind, 2015; Frey & Osborne, 2017). The need for lifelong learning and continuous professional development has been widely recognised, while the distribution of responsibilities and risks has been suggested for shifting towards less collective obligations; this involves a higher level of individual responsibility in employees' competence development (Renkema, 2006; Rubenson, 2006). In other words, employees need to take responsibility for attaining technical skills and knowledge in their digitalised work life.

Simultaneously, the ageing of the workforce in European countries is regarded as a major issue, increasingly addressed both in national and organisational policies (OECD, 2019). Due to the increased dependency ratio, there currently exists a strong economic and fiscal need to retain workers for longer in the labour market, and public policies have changed to delay retirement to a later age in Finland (Kannisto, 2015; Oksanen, 2014). One of the key drivers for policy makers has arisen from the old-age dependency ratio, defined as the share of the population aged 65 years and over relative to the population aged 15–64 years (Oksanen, 2014). This ratio has risen steadily, from less than 15% in 1970 to 25% in 2010, and is projected to exceed 45% by 2060 in Finland (de la Maisonneuve et al., 2014).

2.1 Higher adult education and workplace training in Finland

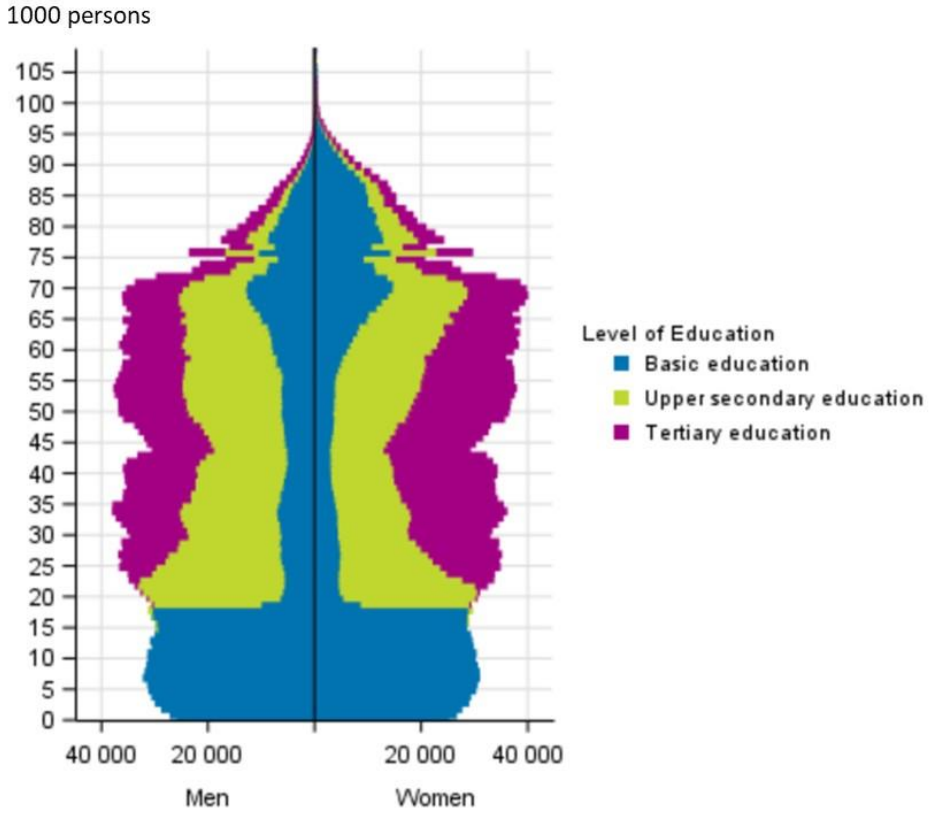
Earlier literature points to the great variability in adult education and training between countries, which is also recognised as being linked to welfare state regimes, characterised by different arrangements between state, market, and family (Esping-Andersen, 1989). The Anglo-Saxon countries follow a liberal welfare state regime, whereas Finland follows the Nordic 'social democratic' regime (Hall & Soskice, 2001). Finland has a labour market structured around a high-skill strategy and a civil society that fosters adult education and workplace learning for both employability and personal development (Rubensen & Kjell, 2009). The country can undoubtedly be regarded as a technologically advanced learning society that recognises the crucial importance of lifelong learning for society, organisations, and all citizens (Saarinen & Ursin, 2012; Silvennoinen & Nori, 2017).

Societal and organisational features for employees' continuous learning in Finland represent an ideal model of lifelong learning in many aspects (Blanden, Buscha, Sturgis, & Urwin, 2010; Tikkanen, Nissinen, Silvennoinen, & Andersson, 2015). Higher education in Finland is practically tuition-free, which is also true for adult students, and the Finnish government takes responsibility for covering the living expenses of full-time students through a combination of student grants and loans (Ministry of Economic Affairs and Employment, 2017). An important part of the education model involves work organisations maintaining employees' competence development at work, which the government in part financially supports. The state also regulates labour market training targeted towards unemployed persons seeking to develop their competences to increase their employability.

The Finnish higher education system is based on a dualistic model, whereby universities engage in both education and research and have the right to award doctoral degrees. Universities of applied sciences (UASs) are multi-field institutions of professional higher education that offer, for example, business and engineering courses. Adults can apply for and participate in open higher education courses provided by universities and UASs in Finland. Adult education in Finland comprises education and training that do not necessarily lead to a degree or certificate awarded by a university, UAS, or institution of

liberal adult education (Finnish National Board of Education, 2015); however, adults can engage in either full- or part-time higher education degree studies.

As a result of successful lifelong learning policies and systems, the baseline for continuous adult learning in Finland is one of the highest levels of educational attainment in the world. In general, 84% of Finnish citizens aged 25–64 years have completed at least upper secondary education compared with the OECD average of 75% (OECD, 2017). Close to 40% of Finnish people hold a tertiary degree, whereas in 2017 the OECD average was 32%. Crucial to this discussion is that middle-aged and older-age cohorts are well-educated, even though younger generations continue to gain even higher levels of education. Nevertheless, as of 2016, 80% of older workers (aged 55–64 years) in Finland had reached at least upper-secondary education (Ministry of Education and Culture, 2015). Moreover, the proportion of higher-educated citizens was the highest among the 40–44 years cohort, of whom 47% had attained a tertiary-level qualification by 2015, as illustrated in Figure 1 (Official Statistics of Finland, 2016).



Source: Official Statistics of Finland, 2017

Figure 1. Finnish population's level of education by age and gender, 2015

Finland is also one of seven OECD countries where higher education attainment rates for women are higher compared with those for men, as illustrated in Figure 1. Of all women in Finland, 35% have a tertiary qualification compared with 29% of men. In the younger age cohort, between 25 and 34 years, figures show that in 2015, of those with higher degrees, 43% were women and 28% were men (OECD, 2017). Thus, Finnish women have higher levels of education than do men, and the favourable development of women appears to continue.

Here, it must be acknowledged that the majority of adult training involves work-related learning activities and occurs at the workplace (Billett, 2004; Mähönen, 2017; Virtanen, Tynjälä, & Collin, 2009). The European Union (EU) average shows that 28% of adults have undergone paid training organised by their employer, whereas in Finland and other Nordic countries the share of work-related, employer-provided training is approximately 40% to 65% (Cedefop, 2015). The linkage between work and workplace learning is reflected in the governance of existing employees' competence development. The Ministry of Economic Affairs and Employment is responsible for supporting employers in their training roles, and regards adult training and learning as important for organisations and society to gain a competitive advantage in the global market (Ministry of Economic Affairs and Employment, 2017).

The high standard of employee training in Finland can be partly explained by legislation that aims to support employees' vocational and professional development for current and future work. National legislation, including the *Employment Contracts Act* (55/2001) and *Act of Employer Training* (2014), imposes training obligations on employers; therefore, organisations need to assess their employees' occupational skills and plan training according to any changes that affect skill requirements. Annual training objectives should be based on this assessment for each personnel group. Employers are expected to implement and monitor training procedures, and organisations with 30 or more employees must provide three days of training per year to strengthen their employees' employability.

Finland provides two crucial societal features for competence development: the first is the financing of the adult education and training system on the employee's behalf, and the second is financial support for employers for training (Rubenson & Desjardins, 2009). In addition to training costs, the government covers 50% of a training day's salary for the employer (the *Act of Employer Training*, 2014). These detailed responsibilities of employers have been defined in a tripartite collaboration between employers, labour unions, and the government in Finland. Furthermore, the government has implemented so-called tripartite income policy agreements and taken them into account in social legislation and adult training (Bergholm, 2012). Many employers organise more training and learning opportunities than are required; therefore, workplace training and learning can be regarded as a type of fringe benefit for the personnel of an organisation in Finland (Silvennoinen & Lindberg, 2015).

Traditionally, the concept of lifelong learning and the regime of a learning society envisage education and training as supporting people in developing their capacities for agentic and autonomous actions (Blanden, et al., 2012; Harteis & Goller, 2014; Renkema, 2006). However, following the human capital approach (Becker, 1964) (described in detail in subsection 3.4.3) and the principles of liberal economic policies, workers are increasingly assumed to carry full personal responsibility for their learning to remain competitive and become employable in the workplace and in the wider labour market (De Vos, 2011; Froehlich, Beausaert, & Segers, 2015; van der Heijden, Boon, van der Klink, & Meijs, 2009).

The education and continuous learning sectors are under increasing pressure to produce a skillful workforce for employers; therefore, they prefer increasing workers' employability in the labour market rather than providing learning for well-being and a meaningful life (Jarvis, 2004; Regmi, 2015). The Finnish National Board of Education, which governs the education system and policies, states the following: 'The main objectives of adult education policy are ensuring the availability and competence of the labour force, providing educational opportunities for the entire adult population and strengthening social cohesion and equity' (Finnish National Board of Education, 2015). Consequently, continuous development should support efforts to extend the working life of an individual, raise the employment rate, and improve productivity, as well as

implement the conditions for lifelong learning and multiculturalism in Finland (Finnish National Board of Education, 2015).

2.2 Economic cycle and employees' competence development

The economic situation in the market has an impact on employment and, consequently, on employees' competence development (Beck, 2013; Felstead, Green, & Jewson, 2012; Felstead, 2018). The economy and labour market in Finland have faced both high and low cycles since the 1990s. During the 2000s, the strong economic upswing and so-called 'Nokia effect' increased labour demand, leading to a rise in the employment rate, particularly among technically competent employees (Schauman, Vanhala, & Virén, 2014). At its peak, Nokia had over 130,000 employees worldwide and indirectly created tens of thousands of jobs in Finland.

After 2008, the global financial crisis caused a long period of downturn worldwide, which was more severe in Finland, lasting longer than it did in other OECD countries (OECD, 2018). Numerous redundancies occurred in Finland between 2008 and 2016 (Central Organisation of Finnish Trade Unions, 2014). The IT industry in particular laid off existing employees, leading to over 90,000 redundancies, mostly in very large companies such as CGI, Tieto, and F-Secure during 2008–2014 (Central Organisation of Finnish Trade Unions, 2014).

These dismissals were possible under the specific Finnish *Act on Co-operation within Undertakings* (334/2007). The purpose of this Act is to promote 'the undertaking's and its personnel's interactive cooperation procedures' and 'to collectively develop operations of an undertaking and the employees' opportunities to exercise influence in the decisions made within the undertaking relating to their work, their working conditions and their position in the undertaking' (*Act on Co-operation,* 334/2007). Moreover, employers are primarily responsible for organising 'reasonable' training in cases of reorganisation; if this is not possible, then downsizing can occur following a detailed employer–employee cooperation procedure (*Act on Co-operation*, 334/2007). An employer who has dismissed an employee on financial or production-related grounds is obliged to offer the employee training to promote subsequent employment. The legislation related to cooperation negotiations is, however, argued to be outdated

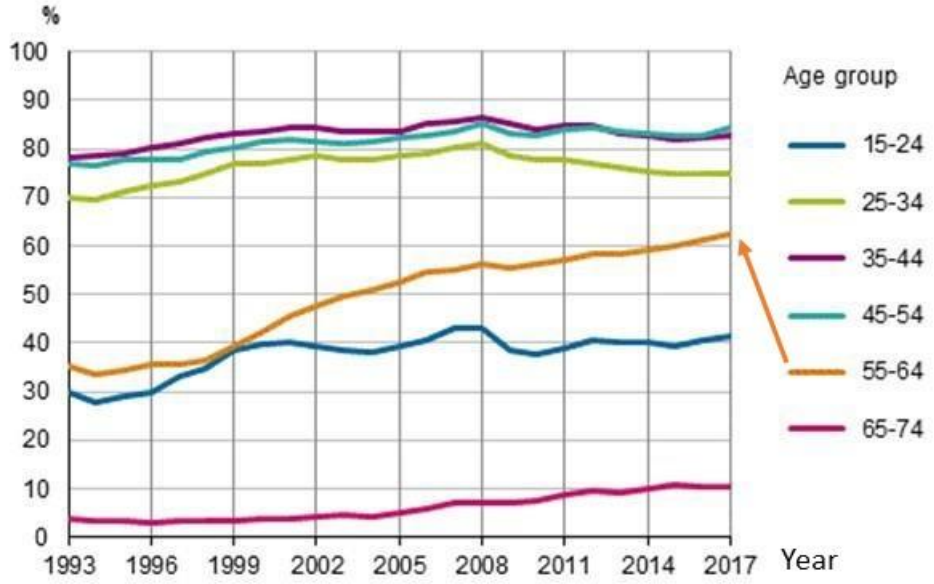
and to have become a ‘dismissal law’ (Eriksson, 2006). According to Eriksson (2006), ‘it is complied with, but the spirit within it has been lost long ago’ (p. 137). In fact, Finnish legislation enables employees to be dismissed more easily than in many other OECD countries (OECD, 2016a).

Due to the 2008–2016 recession, the Finnish government drastically reduced funding for the education sector, negatively influencing, for example, adults’ access to higher education in universities and UASs. Higher education institutions no longer received government financing for short courses, significantly reducing the number of short course enrolments. In addition, long-term funding for universities and UASs was reformed in 2010 (*Universities Act,* 558/2009), which reduced the funding and thus the autonomy of these institutions, reflecting a shift towards a neo-liberal model of education (Kilpi-Jakonen, Sirniö, & Martikainen, 2014).

2.3 Employment of older workers and women in Finland

The employment rate has an impact on opportunities for adult education and workplace training, which is because the adult education framework and systems differ according to people’s employment status (Kilpi-Jakonen et al., 2014). When employed, workers naturally have access to employer training, but further study must be undertaken on a part-time basis in parallel with their work. While unemployed, employees’ access to adult education for a degree or an Open University course is easier and, for such studies, a person can receive subsidies and full-time study leave.

Even though older age cohorts are relatively well-educated in Finland, they have a weaker position in the labour market compared with middle-aged workers. In 2017, the average employment rate for the Finnish population aged between 15 and 64 years (70%) was slightly higher than the OECD area rate of 68% (OECD, 2018). However, compared with other Nordic countries, the employment rate in Finland is lower in general, particularly among older workers aged 55 to 64 years (Schauman et al.,2014). Figure 2 shows that the employment rate for those aged 55–64 years is remarkably lower than that within other working-aged cohorts between 25 and 64 years.



Source: Official Statistics of Finland; Labour force survey, 2018a

Figure 2. Employment rates by age group during 1993–2017 in Finland

Over the last two decades, as can be observed in Figure 2, the employment rate of those aged 55–64 years has increased, but a sharp drop in employability still occurs from age 55 onwards in the Finnish labour market. A partial explanation may be that those labelled as 'inactive' in these statistics. Among older age groups, the proportion of the inactive group naturally increases as a result of people being retired or ill, whereas the proportion of unemployed plays a greater role for younger generations (Official Statistics of Finland, 2015). However, reports indicate that age discrimination occurs in Finnish labour markets; once a worker aged over 55 years loses a job, the chances of him or her being employed again are lower compared with workers in other age groups (Ilmakunnas & Ilmakunnas, 2014; Larja et al., 2012).

Finland's population is ageing more rapidly than the average rate in OECD countries. The issue of an ageing workforce will continue in the future because of increased life expectancy and decreasing fertility rates (de la Maisonneuve et al., 2014). The proportion of those aged over 65 years in the Finnish population was 20% in 2015, and this is projected to increase to more than 25% by 2030 (Official Statistics of Finland, 2017). Work-related policies have mainly focused on reforms to the pension system in 2014 and 2017, aiming to encourage older workers to work longer than they did previously (Kannisto, 2015). In addition, the country has a long tradition of supporting

older workers' employability throughout their career stages through health programmes (Ilmarinen, 2001, 2009). Clearly, less attention has been paid to older workers' weaker positions in the labour market and the special issues concerning competence development during late career phases.

Furthermore, a high degree of gender equality is recognised to be a major characteristic of the 'Nordic work life model', even though substantial gender-related issues can be recognised, such as the gender pay gap and lower levels of managerial positions in workplaces for women (OECD, 2018; Teigen & Skjeie, 2017). Finland has a strong emphasis on the 'breadwinner' or the 'dual-earning' model, where typically both spouses undertake full-time paid work, even among the more highly educated population (Ferragina, 2019). Consequently, men (70.7%) and women (68.5%) work almost the same amount, with more women typically working full-time compared with the average in OECD countries (OECD, 2018). Socialising responsibility for and financing of day care for children, as well as home-based and institutionalised care for the frail and elderly, facilitate this high level of permanent employment for women in Finland. However, these systems have also set barriers for women's careers, which is discussed in the next section together with other characteristics of welfare systems in Finland.

2.4 Welfare systems to support older employees and women at work

Studies have revealed that a lack of critical competences may jeopardise individuals' employability and well-being. This is particularly true for those aged over 55 years, who typically have lower levels of employability and experience more difficulties in finding a new job if they become unemployed (Schauman et al., 2014; Wanberg, Kanfer, Hamann, & Zhang, 2016). It is also widely recognised that older women in particular are in weaker positions than men in terms of pay, pensions, and career development within the European labour markets (Loretto & Vickerstaff, 2011; OECD, 2018). Finland has the lowest ratio of female-to-male managers of all the Nordic countries (OECD, 2015)—a factor that is incompatible with a country that claims to support gender equality at work. In addition, work-related research has identified both vertical and horizontal segregation between men and women. In vertical segregation, men tend to hold positions that are highly competitive, well-paid, and involve a degree of authority over

others, including management positions (Huber & Huemer, 2015; Ilmakunnas & Ilmakunnas, 2014). In horizontal segregation, women tend to be concentrated in the social and services sectors, with men dominating technical occupations and study areas (Vuorinen-Lampila, 2016).

These welfare state regimes, in addition to work-related rules, form institutional frameworks that apply to employees who are working and developing their competences (Boeren & Holford, 2016; Virolainen & Stenström, 2014). Multiple national social benefit and job security systems are related to employees' competence development, particularly for older employees and working women. In this respect, Finland represents a 'coordinated market economy', similar to the other Nordic countries as well as Germany, the Netherlands, Belgium, Austria, and Japan (Hall & Soskice, 2001). By contrast, Hall and Soskice (2001) classify the USA, the UK, Australia, Canada, New Zealand, and Ireland as liberal market economies leaving France, Italy, Spain, Portugal, Greece, and Turkey in more ambiguous positions.

Multiple social policies, which oblige employers to treat their employees fairly, affect the extent to which older employees and women continue working and developing their competences. Under the *Non-Discrimination Act* (1325/2014), employers are prohibited from discriminating on the grounds of age, ethnic or national origin, nationality, language, religion, belief, opinion, family ties, trade union activity, political activity, health, disability, sexual orientation, or other personal characteristics. Both direct and indirect discrimination as well as harassment, denial of reasonable accommodation, and instructions or orders to discriminate are also prohibited.

Finland's equal treatment of women and men at work is laid down in the *Act on Equality between Women and Men* (609/1986). Specific rules on, for example, the announcement of vacant positions, selection of employees, and treatment of employees during their employment, aim to ensure that selection and treatment are not based on gender. The *Employment Contracts Act* (55/2001) requires fair treatment to be observed in employers' granting of benefits and when obligations are imposed on employees, and this legislation applies to recruitment, employment, and termination of employment (Ministry of Economic Affairs and Employment, 2016).

Older workers' intentions to continue working and consequently develop their competences are related to retirement systems (McNair, 2006; Tuomi, Huuhtanen, Nykyri, & Ilmarinen, 2001). Nordic pension schemes have, in the past, offered opportunities for early retirement as opposed to working and developing competences. The idea was that part-time work and pensions for older workers created more opportunities for the younger generations to gain employment during the 1990s recession (de la Maisonneuve et al., 2014). The baby boomer generation welcomed these opportunities and early transition from work to retirement became a common experience for said generation in Finland (Järvensivu, Nikkanen, & Syrjä, 2014).

However, the negative effects of an ageing population have become more apparent to the Finnish government since 2000, particularly due to the government's increasing and wide-ranging public responsibility for financing—not only pensions but also professional care for frail and elderly citizens (Riihelä, Vaittinen, & Vanne, 2014). Consequently, European nations (including Finland) have reformed their pension systems to encourage older workers to continue working (Mahon & Millar, 2014). In 2017, earnings-related pensions were reformed to change the general retirement age from 63 to 65 years by 2027, after which retirement is determined according to life expectancy (de la Maisonneuve et al., 2014; Kannisto, 2015). These exogenous changes in pension rights may influence late-career employees' full participation in workforce-development activities (Kannisto, 2015; Oksanen, 2014).

For women in particular, existing family policies establish the framework for their opportunities to work and, consequently, to participate in training and on-the-job learning. Common features of all the Nordic welfare states are advanced universal childcare facilities and long-term care for the elderly, both of which are heavily publicly subsidised. Finland has relatively generous parental leave schemes, which aim to support families in caring for small babies, and a government-subsidised child daycare network that enables both parents to work. Family leave is based on the *Employment Contracts Act* (55/2001) and new *Parental Leave Act* (11/2019), which mandate maternity leave of 105 workdays, paternity leave of 54 workdays, and full- or part-time parental leave of 158 workdays that spouses can share. In addition, childcare leave is granted for the full-time care of a child aged under three years.

During parental leave, employees are allowed to participate in employer training, but rarely do so, and therefore their professional competences may decline (Salmi & Lammi-Taskula, 2007). After parental leave, employees should be able to return to work in similar roles, but that is not always the case (Holth, Bergman, & MacKenzie, 2017; Seierstad & Kirton, 2015). Family-related employment interruptions, including family leave, create higher costs for employers, which can in particular decrease young women's opportunities to obtain jobs. While these schemes support women with childcare responsibilities, they may also adversely affect women's position in the labour market, because the majority of those taking care of children aged under three years have typically been women (Salmi & Lammi-Taskula, 2007; Ferragina, 2019).

2.5 The information technology industry as an extreme case

Information technology provides an interesting environment for an investigation into existing employees' competence development. Because of rapid technological change and the global nature of the IT business, employees working in IT require higher education and the constant development of their professional competences (Tarafdar et al., 2015). In turn, the demand for the most up-to-date technical skills and the supply of highly educated engineers and business professionals from Finnish higher education systems create a situation where employers can easily find new recruits. IT is also an industry dominated by young male employees. In such a labour market situation, women and those of older age face challenges in maintaining their competences to the levels required.

The starting point for existing employees' competence development in the Finnish IT sector is favourable: employees are well-educated with a total of 60% holding tertiary degrees, of whom 30% hold master's and 30% hold bachelor's degrees (Federation of Finnish Information Technology, 2014). Such high levels of education have been a strength of the IT industry as well as Finnish society overall. Attaining higher education is also a benefit for employees because it typically ensures a better position and relatively high salary level in the labour market compared with those with a lower education (de Grip & Smits, 2012; Urwin, 2006). In addition, employees with an education in business administration (master- and bachelor-level) and master-level

qualifications in engineering have a relatively high employment rate and experience only short periods of unemployment. Despite the large-scale dismissals discussed earlier in this chapter, the number of employees in the IT industry in Finland also increased between 2007 and 2017, as Figure 3 illustrates.

Source: Official Statistics of Finland, 2018b

Figure 3. Employed persons in the IT sector by sex (2007–2017) in Finland

In addition, Figure 3 highlights the predominantly male character of the IT industry in Finland; over the last decade, the proportion of men employed in IT has even increased. In 2007, 33% of employees in the IT sector were women, whereas 10 years later only 28% were women and the proportion of men reached 72%. This is partly because of the decline in the proportion of women graduates in information communication technology (ICT), which was remarkably low in 2014 at only 15% (Vuorinen-Lampila, 2016). A small but visible feature in Finnish IT services shows a rise of the gaming industry driven by a few star performers, such as Rovio with its Angry Birds game and Supercell with Clash of Clans (Luoma, 2015). Even though the significance of the gaming scene is minor in terms of numbers, the IT sector's image of producing noteworthy young talent remains attractive to male students interested in employment in the field. The problem of the low percentage of women studying technology in Finland is leading to vertical segregation between men and women at work. Men form a majority in the fields of engineering and natural sciences, whereas women tend to choose education and the social sciences

(Vuorinen-Lampila, 2016). The Finnish government and the IT industry have recognised the issue, but the trend has not yet changed.

Focusing on employees working in IT is of specific value to Finnish working life research. IT is an industry of strategic importance in Finland because IT/ITC workplaces employ between 48,000 (Technology Industries of Finland, 2015) and over 100,000 workers (Official Statistics of Finland, 2018b) depending on the source. In general, the Finnish IT sector has become polarised and global, and by 2014 a small number of the largest IT companies in Finland dominated the market, producing 66% of the industry's total revenue and employing nearly 60% of employees (Federation of Finnish Information Technology, 2015). Although global IT giants such as Accenture, Fujitsu, IBM, and CGI have gained a market share in selected business fields, Finnish IT companies have been able to remain market leaders at the lower levels of aggregation or at subindustry levels (Lilius, 2012). The number of medium-sized firms is low, yet they have a role to play in local markets. Furthermore, there were 5,400 software product and IT services firms in Finland in 2014, of which 93% were very small, revealing revenue of less than 100,000 euros in that year (Federation of Finnish Information Technology, 2015).

Due to global competition and the diminishing development of Nokia mobile phones in Finland, the IT sector faced a more severe downturn than did other countries from 2008 onwards. In response, IT companies developed their business models to be more service-based, applied new technologies, and reduced costs by outsourcing IT jobs from Finland to offshore countries, such as India and China, and to nearshore areas, such as Estonia and Latvia (Lilius, 2012; Virtaluoto, Sannino, & Engeström, 2016). Consequently, some technical skills were no longer required in Finland (e.g., old technology, support work, C++, and Nokia Symbian), whereas the demand for other skills related to the latest technologies (e.g., big data, analytics, cloud services, and Java) grew rapidly (Finnish Information Processing Association, 2015). In recent years, IT companies have recognised the particular need for skills and competences related to solutions design, systems integration, robotics, 5G, the Internet of Things (IoT), and artificial intelligence (AI; Finnish Information Processing Association, 2015).

2.6 Conclusions

In conclusion, Finnish society and working life comprise a unique set of education and welfare systems that form attractive education, training, and on-the-job learning environments for existing IT employees. Employees can take study leave and receive financial support while obtaining a degree, and large employers generally provide three training days annually for their employees. Antidiscrimination legislation and systems for parental leave are aimed at supporting women and older workers at work. For employers, training costs are partially covered by government, and there are thousands of new, highly educated graduates entering the external labour market each year. In this respect, Finland provides two crucial institutional features for competence development: financing of the adult education and training system on the employee's behalf and financial support for employers for training. Finnish workplace systems nevertheless include contradictory practices, which can become barriers for those seeking competence development in their career. The Finnish welfare regime is highly complex and, from the viewpoint of continuous competence development, the country's societal rules and organisational practices are contradictory.

Firstly, the same IT companies that conduct the largest redundancy programmes among existing employees can also recruit new workers from the external labour market. Employers are able to simultaneously lay off and recruit employees due to the complex set of legislation. In addition, the Finnish vocational and higher education systems still produce thousands of young graduates in the fields of engineering and IT (Federation of Finnish Information Technology, 2014). Consequently, Finnish IT employers are easily able to recruit new employees rather than focus on the competence development of their existing ones.

Secondly, late-career IT professionals are available for work rather than early retirement due to the heavy economic incentives to remain at work as well as the prolonged official retirement age. Despite multiple legislative acts in place to prevent discriminatory action, the level of employability declines after people reach the age of 55 years in Finland. These numbers indicate, together with previous studies, that discrimination exists against workers of an older age in the Finnish labour market (Larja et al., 2012); however, it is unclear what the implications are for existing employees'

competence development. Less attention has been paid to older workers' weaker position in the labour market, and there appears to be no policy discussion regarding the special issues concerning competence development during the late-career stage in Finland.

Thirdly, despite the provision of parental leave and childcare systems, women still may face challenges in combining work, home, and social life. Socialising the responsibility for and financing of daycare for children has facilitated the permanent employment of women in Finland, but this has also set barriers to women's employability and career progression. In addition, job segregation exists between women and men, which may influence women's access and career, for instance, in the IT sector.

Overall, the Finnish IT sector context provides a particularly interesting learning environment in which to explore existing employees' competence development. The IT industry requires the constant development of professional competences due to rapid technological change and the global nature of the IT business, which enables organisations to recruit employees with relevant competences beyond country borders. Finnish education and social systems with employer-organised training provide a solid basis for continuous learning at work. However, despite the supportive legislation in place, older employees and women face challenges. For this thesis, the following interesting yet open questions are raised: How are Finnish educational and social systems as well as work organisations involved in existing employees' competence development? Furthermore, how can employees utilise these systems in their competence development?

3. Approaches to employees' competence development

The societal features pertaining to employees' competence development in Finland have been covered in the previous chapter, and attention turns here to what is known in the literature about the individual and organisational factors involved in workers' competence development. The first section defines competence development and explores why older workers might have a lower level of participation in training than younger employees might. The chapter continues by discussing the key individual factors identified in the literature as being associated with employees' training and workplace learning. Then, the focus shifts to the workplace as an environment for learning, with enabling and constraining aspects considered. In the next section, emerging research on agency in workplace learning approaches is addressed as a theme of special interest for this study. Lastly, elements of earlier research are summarised in the concluding section, where individual, organisational, and institutional factors related to competence development are drawn together figuratively.

3.1 Definition of competence development

Given that this chapter focuses upon and critiques literature related to the employee and learning environment, it is important to clarify the notions used in various disciplines and this thesis. Due to competing disciplinary, ideological, and organisational perspectives, scholars employ different terminology to describe education, training, and learning in the workplace. Macro-level studies refer to skill development (de la Maisonneuve et al., 2014; OECD, 2016b) and workforce development (Vickerstaff et al., 2015), whereas management and organisational scholars address HRD and human capital approaches (López-Cabrales, Real, & Valle, 2011; Truxillo, Cadiz, & Rineer, 2017). Scholars widely use the term 'workplace learning', which has multiple definitions. It has been associated with informal learning processes (Tynjälä, 2008), although workplace learning is increasingly understood to encompass a variety of formal and informal elements covering formal teaching and assessment as well as informal learning as a part of everyday work (Billett, 2004; Ellström, 2011; Eraut, 2004).

To overcome any confusion caused by the use of different definitions for the concept of workplace learning and to position this thesis at the intersection of organisation and workplace learning research, the umbrella term 'competence development' is applied (Svensson, Randle, & Bennich, 2009). Similar to the holistic approach to workplace learning described above, competence development here refers to the activities through which employees learn at work, including both formal education and training, as well as various activities associated with informal learning. The focus in this thesis is on competence development activities and competences rather than employees' cognitive or participative learning processes, as is typically the case in studies on workplace learning (e.g. Billett, 2011b, Ellström, 2011; Engeström, 2011).

Therefore, competence development here includes 'formal on-the-job learning' activities, such as mentoring, career counselling, and job rotation, which aim to increase competence levels but in ways other than those employed in training programmes. In addition, competence development comprises 'informal on-the-job learning' activities designed primarily to execute tasks but which also increase employees' competences through activities ancillary to the specific job; for example, working on a project and information gathering, as Figure 4 illustrates.

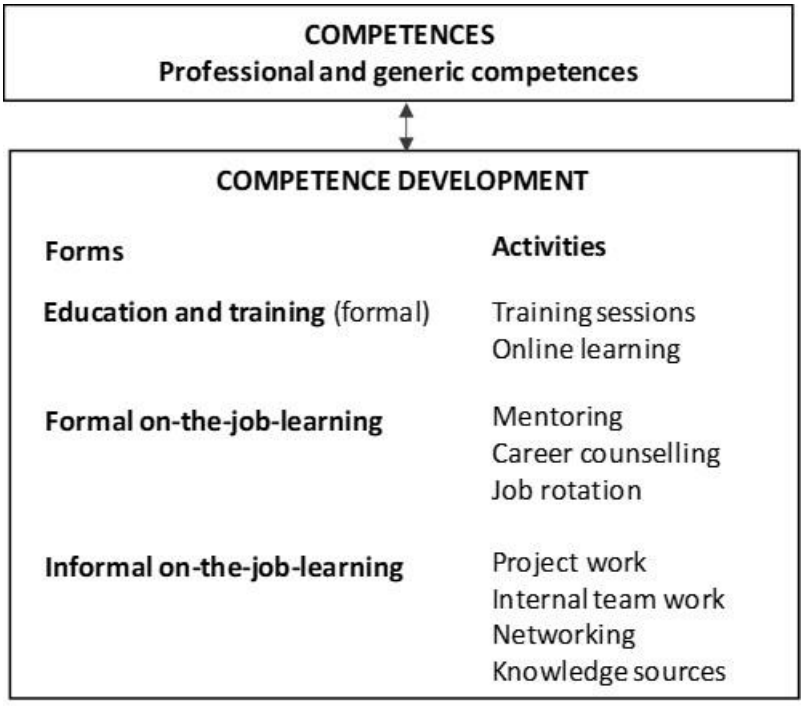


Figure 4. Definitions of the notions of competence development

In this conceptualisation, the activities of competence development also mirror HRD staff and management actions concerning employees' competence development (Kock & Ellström, 2011), which some scholars refer to as 'competence management' (Mulder, 2011; Pinnington, 2011). For instance, from the employees' perspective, mentoring is a competence development activity they can participate in, whereas from HRD staff's viewpoint, it is actions they can plan, coordinate, and assess.

Competence development has a specific focus on the outcomes of the abovementioned activities, namely competences, which is a term being constantly debated by education researchers. However, the widely agreed-upon understanding of competences is that they are a set of integrated capabilities consisting of content-related clusters of knowledge, skills, and attitudes (Brockmann et al., 2008; Mulder, 2014; Winterton, 2009). For employees, some competences comprise skills and knowledge for performance in a certain context, profession, job, role, or situation, such as a specific technology (Eraut, 2001). Other competences are more transferable, consisting of more generic skills and knowledge, which can be applied in different work and other life contexts, such as communication (Fenwick & Edwards, 2016; Mulder, 2014; UK Specifications, 2014). Accordingly, professional competences are understood in this thesis as skills, knowledge, and attitudes related to a particular work domain, whereas generic competences include the social, career, and personal competences required across different jobs and industries.

Scholars agree that education and training are planned and systematic activities designed to promote the acquisition of competences (Illeris, 2011; Sterns & Doverspike, 1989; Unwin, 2017). Education is traditionally understood to involve the transfer of knowledge and skills from teachers to students in a learning-focused environment, to enable students to apply newly acquired knowledge and skills independently (Jarvis, 1995; Poell, 2014; Svensson et al., 2009). Recently, activities in education have also enlarged to cover other types of activities associated with online learning, collaborative learning, and learning in project work as forms of education (Huang, 2002; Jarvis, 2004). Employee training is designed to increase knowledge and skills as well as efficiency and value creation to execute one's job, and is often executed through planned and measured training programmes.

In turn, the categorisations of formal and informal learning have provoked intense debate, including over the broad array of meanings for these terms. Marsick and Watkins (2001) offer a loose definition of informal learning as learning that occurs wherever people have the need, motivation, and opportunity to learn. Consequently, informal learning can be regarded as experience-based, non-routine, and often tacit because it occurs spontaneously, unconsciously, unintentionally, and incidentally (Ellström, 2011; Eraut, 2004; Marsick & Watkins, 2001). Furthermore, informal learning materialises when employees make observations, pose questions, solve problems, and receive feedback from their manager and others (Lohman, 2009; Schulz & Roßnagel, 2010; Van der Klink, Van der Heijden, Boon, & Williams van Rooij, 2014).

Notably, Marsick and Watkins (2001) state that informal learning can also be intentional but not highly structured, including, for example, self-directed learning, networking, coaching, mentoring, and performance planning. Intentional informal learning is thus suggested to embrace formal learning episodes; for instance, participation in a language course, which combines both formal and informal learning activities in the workplace (Fontana, Milligan, Littlejohn, & Margaryan, 2015). Although it is recognised that informal learning is difficult to identify and measure (Tynjälä, 2008), it is claimed to be the most frequently used form of learning in the workplace (Billett & Van Woerkom, 2006). The rapidly changing skill demands and rising mandatory retirement ages make informal learning more important for workers' employability throughout their working life (de Grip & Smits, 2012; Fenwick, 2012; Malcolm, Hodkinson, & Colley, 2003).

However, the view of informal and formal learning as binary has been questioned. Some argue that the distinction is based on an outdated dichotomy and claim that all learning situations contain a degree of formality or informality, which interrelates in different ways in different environments (Kyndt, Vermeire, & Cabus, 2016). Other studies, however, show that the distinction between purposeful learning—associated with formal training—and implicit learning—associated with workplace experiences, is crucial (Felstead & Unwin, 2017; Warhurst & Black, 2015). The definitions in this thesis support that a division between formal and informal on-the-job learning is required to analytically explore employees' participation in different observable types of competence development activities.

3.2 Concern of older workers' lower participation in education and training

As indicated in the introductory chapter, previous studies have raised concerns about education and training among older members of the workforce and a vital debate is taken among researchers. Today, workplaces are becoming increasingly age diverse and the likelihood that an older employee will report to a younger manager is increasing (Cogin, 2012). The issues concerning older employees' competence development is of growing interest. Empirical evidence is presented in various pieces of research that 'older workers' have lower training participation rates than 'younger workers' (OECD, 2013; 2016b). When older employees are provided training, it tends to be of shorter duration (Felstead, 2011b; Maurer, 2001; Urwin, 2006).

Prior studies suggest that employers offer fewer training opportunities for older workers than their younger counterparts, and that older workers are sometimes denied access to training (Billett, Dymock, Johnson, & Martin, 2011a; Riach, 2015). In addition, older workers have less access to developmental job experiences such as challenging work assignments (Maurer, 2007). It is also suggested that employees may be more likely to be selected for redundancy on the grounds of being too old, and because they are regarded to be inflexible to learn new skills and keep pace with the demands of the work organisation (Carmichael, Hulme, Porcellato, Ingham, & Prashar, 2011).

Moreover, research reveals that employers have mixed views on older workers' competences. Employers may undervalue older workers' skills and experience and regard their knowledge as outdated (Hennekam, 2016; Lundberg, & Marshallsay, 2007). On the other hand, older employees may be told they are overqualified for lower positions and underqualified for higher positions in the company (Billett et al., 2011a). While employers offer fewer learning opportunities for older workers, they also expect this group of workers to take on additional roles to provide younger colleagues with opportunities to learn and gain experience (Beck, 2014).

Questions related to older workers' competence development are often connected to individual factors such as age and motivation. Furthermore, a long list of factors has been identified to be involved in the process of employers offering training for their employees and employees accepting and participating in such opportunities (Kyndt &

Bauert, 2013; Dochy, Smet, Govaerts, & Kyndt, 2018). Whether the explanation for employees' lower or higher participation frequency in competence development activities is based on their motivation, other individual factors, or employers' training and on-the-job learning offerings, remains an open question in the literature. In the following two sections, the individual and organisational factors relevant to this thesis are discussed, respectively.

3.3 Individual factors connected to competence development

Based on the most common individual factors, many country-level reports claim that older age is an obstacle to citizens wishing to participate in lifelong learning activities (Eurostat, 2016; Jarvis, 2004; Rubens & Kjell, 2009). In addition to age, researchers have investigated the association between gender and participation in education and training (Aaltio, Salminen, & Koponen, 2014; Harteis, Billett, Goller, Rausch, & Seifriedd, 2015; Huber & Huemer, 2015). By contrast, less attention has been paid to the intersection of age and gender in terms of workforce development and training. An established line of studies has, however, investigated the association between motivation, work, and work-related training (e.g. Kanfer & Ackerman, 2004; Kooij, 2010; Maurer 2003).

3.3.1 Age and gender in employees' competence development

Analyses of differential participation in adult learning have suggested that age and ageing are the strongest determining personal characteristics, and that older age is an obstacle in adult training (Bown-Wilson, 2011; Boeren & Holford, 2016; Eurostat, 2016; Fineman, 2014). In such studies, chronological age dominates investigations into the link between age and training. Following positivistic philosophy, age is regarded as an objective variable, which is convenient because data can easily be gathered from official or organisational statistics (Froehlich et al., 2015; Pitt-Catsouphes, Matz-Costa, & Brown, 2011). However, other perspectives concern the attribution of age.

One widely used concept is functional age, which is related to physical, biological, and mental processes. In Finland, the definition of an older or 'ageing' workers is typically based on functional age and the respective conceptualisation of 'workability' (Ilmarinen, 2009). Being an older worker is treated as a medical construct, which is

based on the physical and mental changes that may affect one's physical and cognitive abilities to perform tasks (Sterns & Doverspike, 1989). Accordingly, Ilmarinen (2009) defines an 'older worker' as aged 45 years and older. It is argued that physical and cognitive changes occur from age 40 years; therefore, this 'early' definition of older employees provides enhanced possibilities for preventing early retirement (Tuomi et al., 2001). Focusing on workability measures can, however, be connected to ageing-related perceptions of physical age and physical appearance (Jyrkinen & McKie, 2012), which can enforce negative stereotypes associated with older workers.

Employees regarded as 'older' are often associated with their organisational age. They are those nearing the end of their careers, and thus are not perceived to be active in their careers (Furunes et al., 2015). In addition, others in the workplace might expect 'older workers' to plan for their retirement since they have reached the peak of their career (McCarthy, Heraty, Cross, & Cleveland, 2014). Therefore, they may not be offered training and opportunities to learn in new jobs or projects.

Similar to the mainstream approach, the present study begins from the viewpoint that age has a direct association with existing employees' competence development activities. However, after analysing the field study and further theorising the topic, it becomes evident that the conceptualisation based on only chronological age and workability offers only a narrow view of the existing workforce—one that is insufficient when addressing the competence development of employees. Therefore, as discussed later in this thesis, age is understood as a social organising principle that defines, unites, and divides individual employees in different ways (Ainsworth, 2002). Age is primarily a psychosocial attribute with two components: subjective self-perception, denoting how old an individual feels, and the social perception of age, defining how others think and feel about the person's age (Sterns and Doverspike, 1989).

Age also includes a life course approach, which, according to traditional life stage research, takes into account individual changes in behaviour at different stages across the life cycle, such as childhood (0–22 years), early adulthood (17–45 years), middle adulthood (40–65 years), and late adulthood (over 60 years) (Levinson, Darrow, Klein, Levinson, & McKee, 1978). The life course perspective further suggests that as people

pass through their adulthood, they face new challenges and adopt different social roles in their private and work lives (Kanfer & Ackerman, 2004). Accordingly, this thesis focuses on Finnish employees aged 40–65 years, which covers employees in their mid- and late-career phases. This is further discussed in relation to the study participants in Chapter 5.

Gender is typically used as an individual characteristic and variable in studies on education and training. Following this approach, Finland is one of seven OECD countries where higher education attainment rates for women are higher than those for men, as indicated in Chapter 2. However, many quantitative studies find no gender differences in training or knowledge sharing in the workplace (Inanc, Zhou, Gallie, Felstead, & Green, 2015; Felstead, 2011) or in the support given to employees in workplace training (Harteis et al., 2015). These differences between genders reflect a viewpoint of 'gender in organisation' (Calás, Smircich, & Holvino, 2014). This describes the frequency of participation in education and training between women and men rather than exploring what possible differences are revealed in the organisation or society.

Furthermore, gender-sensitive scholars show that gender is a culturally and socially constructed attribute tied up with social inequality in the context of work (Loretto & Vickerstaff, 2011; Longarela, 2017). Gendered social systems have several implications for women in the workplace and in other areas of life, where gender is associated with roles that are considered appropriate (Calás, Smircich, & Holvino, 2014). Gender norms in the workplace are connected to a gendered life cycle and the responsibility to provide care to small children and elderly relatives, as is often the case for women (Riach, Rumens, & Tyler, 2014). Because women carry the majority of care duties, this means they also carry them into their late work life as the average lifespan is increasing (Atkinson, Ford, Harding, & Jones, 2015).

One explanation of gender differences at work is status characteristics (Ridgeway, 1991), whereby gender is associated with desirable characteristics and attributed differently by virtue of sex category membership. For example, goal orientation and strength in decision making are typically related to men, whereas nurturing and relationship orientation are often ascribed to women (Aaltio et al., 2014; Zanoni,

2011). Following gender role socialisation theory (Corcoran & Courant, 1985), men and women are described as learning and growing in cultural and social environments where they must adjust to normative expectations and stereotypical gender roles.

A smaller number of articles are concerned with the interaction of age and gender in relation to work life. The approach of intersectionality seeks to understand the multiple and simultaneous oppressions that older and younger women, as well as older and younger men, experience during their life course. Following this avenue, women and men are reported to experience ageism in different ways and to different degrees. It is suggested that gender and age both appear to be especially disadvantageous to women in the older age groups of a population (Ainsworth & Hardy, 2008; Marshall, Lengyel, & Menec, 2014). Drawing upon work histories, Moore (2009) argues that discrimination on the grounds of age is bound up not only with gender but also class. For instance, Rippon and colleagues (2015) report that during 2010–2011, employees' perceived age discrimination was consistently higher in England and the United States among those of lower socioeconomic status. Similarly, in an Australian nationwide study, McGann et al. (2016) suggest that the nature of ageism experienced by older women is qualitatively different from that experienced by men, and that the perceptions should be investigated, including occupational and class differences.

The intersection of age and gender seems to be interlinked with the line of business and occupation at work. Duncan and Loretto's (2004) study of the financial sector in the UK discovers that women experience more age discrimination than do men. Loretto et al. (2007) further show that workers' employment reflects established occupational segregation in the intersection of age and gender. Thus, older women's employment not only diverges from that of older men but also from that of younger women workers, with the latter being more likely to work in personal services, sales, and customer service occupations, and older women are more concentrated in administrative and secretarial jobs. Furthermore, in one study, employers depict the ideal worker as being approximately 25 years old within the female-dominated occupations of clerical, secretarial, and receptionist work (Handy & Davy, 2007). In turn, older men, at least in some occupations, are able to take advantage of their greying hair, reading glasses, and lined faces to portray wisdom and experience (Loretto & Vickerstaff, 2011).

These studies provide a promising avenue for investigating the intersectionality of age and gender in relation to competence development activities and the factors involved. Relevant literature provides little evidence of how the intersection of age and gender influences employees' competence development (Aaltio et al., 2014; Riach, Loretto, & Krekula, 2015). As the earlier discussion in this chapter revealed, both age and gender are culturally and socially constructed attributes; therefore, the individual factors of gender and age are used in this study to identify the differences between groups of women and men, and also those between middle-aged and older workers.

3.3.2 Motivation and other individual factors

In addition to (older) age and gender, employees' motivation is raised as a key factor influencing the frequency of competence development activities. As quantitative studies report, a relationship exists between the motivation to learn, initiation to participate, and actual participation in training (Bertolino, Truxillo, & Fraccaroli, 2011; Froehlich, Beausaert, & Segers, 2016; Maurer et al., 2003). However, in contrast to studies describing older workers as having less motivation for training, a smaller number find that the motivation to engage in competence development can increase with age (Pitt-Catsouphes et al., 2011). For older workers who engage in more extensive training, their existing knowledge increases and there is a broader utilisation of existing competences (Felstead, Gallie, Green, & Zhou, 2010; Fenwick, 2012). Older professionals can also be strategic when engaging in or rejecting training and learning opportunities offered in the workplace (Riach, 2007).

In their widely cited work, Kanfer and Ackerman (2004) suggest that there is neither theoretical justification nor empirical evidence to support an inevitable decline in work motivation with age. Indeed, age-related changes may enhance, decrease, or have little effect on work motivation, depending on the work circumstances. They apply socioemotional selectivity theory and lifespan psychology, as other authors have (Baltes, 1997; Carstensen, Isaacowitz, & Charles, 1999; Heckhausen & Schulz, 1995), to understand older employees' motivation for work. Furthermore, recent studies show that employees' goals and strategies for participating in the workforce and accomplishing work goals change in association with age-related losses, gains, and shifts in motive priorities (Kanfer & Ackerman, 2004; Ackerman & Kanfer, 2020). Specifically,

these developmental approaches to work motivation posit that age-related changes in cognitive and physical abilities, knowledge, and skills as well as changing strength of motives jointly influence the strategies that employees use to select and accomplish goals at work. Accordingly, it is suggested that older workers may focus more on social relationships at work and change their activities from personal achievements to support for others (Kanfer & Ackerman, 2004; Kooij, De Lange, Jansen, Kanfer & Dikkers, 2011). A significant positive relationship exists between age and intrinsic work-related motives, whereas a significant negative relationship exists between age and extrinsic motives (Kooij et al., 2011).

These views resemble self-determination theory (Ryan & Deci, 2000a; 2000b; Deci & Ryan, 2011), which extends the types of motivation that distinguish employees' intrinsic and extrinsic motivation. Indeed, employees with intrinsic motivation are 'autonomously motivated' and engage in training and learning because they willingly choose to do so and gain spontaneous satisfaction from the activity itself (Ryan & Deci, 2000b). Intrinsic benefits can arise from a personal choice or because the individual fully endorses an external request or rationale (Van Vianen et al., 2011; Vanthournout et al., 2014). Extrinsically motivated employees in turn have 'controlled motivation', and they engage in training because they feel pressured to do so, which stems from the desire to receive rewards, avoid punishment, or fulfil the expectations of others. In turn, a-motivation is the state of lacking the intention to act. When amotivated, people either do not act at all or act without intent (Ryan & Deci, 2000b). In addition, Ryan and Deci (2000a) recognise that a learning context can be supportive or constraining for employees' autonomy, competence, and relatedness, indicating that there is a relationship between motivation and the learning environment. This approach to employees' motivation for competence development provides a strong basis for understanding individual cognitive processes related to initiation and participation in training and learning within the framework of this thesis.

In addition, some studies suggest that older age and motivation to learn are not only connected but also mediated by future time perspectives at work before retirement (Froehlich et al., 2015; Kochoian, Raemdonck, Frenay, & Zacher, 2017). The future time perspective pertains to individual differences in the general capacity to anticipate, shed

light on, and structure one's future (Kooij, Bal, & Kanfer, 2014); for instance in terms of remaining time at work before retirement (Zacher, 2013). This promising avenue implies that those workers who perceive their time at work to be more limited are less oriented towards learning, and thus develop a negative attitude towards learning and development (Maurer et al., 2003). Consequently, these workers, irrespective of their chronological age, are less likely to invest resources in future-oriented goals such as knowledge acquisition (Froehlich, et al., 2015). However, it is also suggested that middle-aged employees may perceive their remaining time at work to be lengthy, similar to young adults; therefore, they may consider the future to include not only opportunities but also restrictions (Cate & John, 2007). These results indicate that time is a multi-sided attribute in employees' competence development.

Some motivation, career, and employability literature views employees as quite simplistic *homini economici*, who are motivated by self-interest and economic calculations in their competence development (Maurer, 2001; Migliore, 2015). These scholars follow the human capital approach (Becker, 1964) and argue that employees develop themselves because they want (only) to maintain their current job or move forward in their career, and, in so doing, generally strengthen their employability and career capital (Baruch, Szűcs, & Gunz, 2015; De Vos, 2011; Froehlich et al., 2015). Furthermore, older employees are supposed to gain higher returns from informal and directly relevant training, as well as from training content that can be tackled mainly by crystallised abilities (Zwick, 2015). The abovementioned viewpoints, however, fail to encompass the critical idea of competence development as a means to develop employees' well-being and joy in life.

Among individual factors, it is suggested that prior participation in education and training is a strong predictor of later participation in formal learning at work (Maurer et al., 2003), and that positive reactions to learning experiences are related to greater future participation in training activities (Bertolino et al.,2011; Hurtz & Williams, 2009). Higher levels of education are associated with jobs that have a rich reservoir of various on-the-job learning possibilities (Meyers et al., 2010), and employees who have demanding jobs, regardless of age or gender, receive more support for workplace learning (Harteis et al., 2015).

As a result, participation in formal training seems to be part of a vicious (i.e., the employee has not participated and will not participate) or virtuous (i.e., the employee has participated and will participate again) circle (Kyndt & Baert, 2013). Some scholars suggest that the wider prevailing systems and social structures within the organisation may have more influence on employees' career development than do individual factors, such as an individual's level of confidence or motivation (O'Neil, Hopkins, & Sullivan, 2011). Moreover, the workplace and work itself have strong links to training and on-the-job learning, as discussed in the next section.

3.4 Workplace as an environment for competence development

Recent research suggests that all types of work involve knowledge and skills being shared with others; therefore, all workplaces are potential learning environments (Unwin, 2017). However, organisations are also suggested to differ in their support and provision of opportunities for employees' competence development, opening up rich potential for some but limited potential for others (Billett, 2004; Fuller, Unwin, Felstead, Jewson, & Kakavelakis, 2007). In some studies, an organisation's size is suggested to have an influence. As the number of employees increases, an organisation is more likely to implement formalised learning practices (Kyndt & Baert, 2013; Poell, 2014). Although small businesses face severe resource constraints for training, they can provide opportunities for informal learning (Susomrith & Coetzer, 2015). The findings from a Finnish study, however, indicate that the number of formal competence development activities in large workplaces has remained at the same level over the last decade, whereas training in small and medium-sized organisations has increased (Mähönen, 2017). Thus, the influence of organisational size is not as straightforward as previous studies might indicate. Indeed, there are other organisational factors of interest to the present study, conceptualised in terms of expansive–restrictive workplaces.

In addition, the line of business is suggested to have an association with (older) workers' opportunities for competence development. Classical sectors, such as manufacturing, production, and services, are suggested to be more favourable towards older workers' training because they regard older workers to have more experience and

place higher value on them as a result (Posthuma & Campion, 2009). In turn, the finance and IT sectors may prioritise younger employees' training as part of the industrial and organisational culture (Jovic & McMullin, 2016; Riach, 2009). As discussed in Chapter 2, the IT sector predominantly employs younger men.

Since this thesis focuses on activities related to competence development in IT work, it is concerned with the types of workplaces and jobs that provide opportunities and constraints for employees regarding their training and on-the-job learning activities. Following this approach, the following discussion begins by focusing on the differences between expansive and restrictive workplaces.

3.4.1 Expansive and restrictive workplaces

An important line of study for this thesis is to investigate the types of organisation that might enable or set constraints on (older) employees' workplace learning. The conceptualisation of an expansive–restrictive workplace provides a framework for the incidence and quality of workplace learning, as well as for how the organisational context can facilitate on-the-job learning, particularly 'learning as participation' (Fuller & Unwin, 2005; 2011). The expansive end of the continuum promotes the optimal conditions to facilitate workplace learning, whereas the restrictive elements involve a lack of opportunity for off-the-job learning (Paavola & Hakkarainen, 2005). Consequently, the expansive learning environment provides opportunities for discretion, exposure to a range of work processes, and a management style that encourages the creation and distribution of knowledge (Fuller & Unwin, 2005).

Similarly, Kock and Ellström (2011) define an 'enabling learning environment' as being characterised by work tasks with a high degree of learning potential; opportunities for feedback, evaluation, and reflection; available learning resources; and the manager's recognition of learning. A restrictive or constraining learning environment offers less stimulating work tasks, has barriers to learning new work tasks, and lacks organisational support (Kock & Ellström, 2011). Furthermore, the concept of a positive learning culture is aligned with that of an enabling learning environment (Hodkinson, Biesta, & James, 2008). The learning culture emphasises the values and ideals as well as normative expectations about learning, teaching, and leadership from inside and outside any

particular setting (Hodkinson et al., 2008). Thus, it facilitates a particular way of understanding a learning location as a practice constituted by the actions, dispositions, and interpretations of the participants (Hodkinson & Hodkinson, 2004).

Since the abovementioned conceptualisations have attempted to define enabling or constraining organisational factors, a range of literature provides lists of the separate features of training and learning. Challenging work tasks and job variety are suggested to be key enhancers for on-the-job learning along with managers who are committed to and support learning at work (Kyndt, Govaerts, Smet, & Dochy, 2018). The nature of the work and particularly the degree of challenge and growth, as well as the level of autonomy the job provides, are suggested to affect the extent to which the employee's job position competences can be expanded (Billett, 2004; Kooij, Tims, & Kanfer, 2015; Malcolm, Hodkinson, & Colley, 2003). Professional jobs, such as IT design, include highly demanding work activities, high levels of job control, and strong social supports, which afford numerous on-the-job learning opportunities for employees (Hofstetter & Cohen, 2014; Kanfer & Ackerman, 2004).

By contrast, high workloads and associated time constraints are recognised to be the most significant barriers to participation in competence development (Savinainen, 2004; Van der Heijden, van der Klink, & Meijs, 2009). The lack of time not only constrains employees' education and training but also inhibits collaborative reflection and the conversion of tacit experience into explicit knowledge. Consequently, it limits the potential for project-based learning in practice (Susomrith & Coetzer, 2015). Overall, the expansive workplace as a learning environment is presented as an ideal learning culture for all employees, with managerial support and processes that facilitate competence development.

3.4.2 Organisational practices and discrimination

According to the perspectives of human resource management (HRM) and the organisation, employees' competence development is influenced by organisational structure, strategies, practices, and resources (Beck, 2014; Billett, Dymock, Johnson, & Martin, 2011b; Loretto & White, 2006). A staffing strategy that focuses on recruiting employees from within rather than outside the organisation, and that focuses on the

internal development of expertise, will positively predict participation in work-related learning (Dobrev, 2012; Ilmakunnas & Ilmakunnas, 2014). It is suggested that an effective workplace training system can assess and plan training, involve managers, train facilitators, and make use of distance learning techniques (Svensson et al., 2009). Training resources, such as learning materials, time, and budget, as well as the availability of learning opportunities, are strong positive predictors of actual participation in training and on-the-job learning (Hurtz & Williams, 2009; Schulz et al., 2010).

Traditional managerial support for employees' learning relates to the provision of access to and guidance towards training opportunities, the utilisation of learning outcomes, and the transfer of knowledge obtained in training to the work environment (Harteis et al., 2015; Kyndt & Baert, 2013; Peeters, van Emmerik, Armstrong- Stassen, & Schlosser, 2008). Supportive managers discuss training and its outcomes with employees, provide encouragement, and coach workers on the use of new knowledge and skills while on the job (Ellström & Ellström, 2014). Active managers create informal learning opportunities, encourage risk-taking, and serve as role models for learning (Engeström, 2011). Some refer to similar elements as part of informal learning and emphasise that managers should offer feedback and work alongside others to facilitate activities that are the most conducive to learning, which concerns managers as partners in employees' learning (Eraut, 2004).

The manager's role is of specific importance because managers generally have power over access to learning and support for employees. More broadly, opportunities and access to support and guidance are distributed in ways that reflect workplace political and power relationships (Billett et al., 2011a; Fuller & Unwin, 2005). This occurs particularly in a highly centralised training process, which is likely to constrain employee behaviour towards formal training (Susomrith & Coetzer, 2015). Thus, such studies indicate that managers' actions and attitudes influence the learning attitudes of older employees. Consequently, cultural beliefs and attitudes are suggested to cause inequitable distributions of workplace learning and work opportunities to older workers (Meyers, Billett & Kelly, 2010). Even when organisational practices and legislation

promote equality, organisational contexts reportedly include ageist or age-blind practices (Aaltio et al., 2014; Viitasalo, 2014).

In the IT context, it is suggested that there may be a higher risk of age discrimination towards ageing employees because their experience and competences may be considered outdated and undervalued (Jovic & McMullin, 2016; Marzec, Scholarios, Jedrzejowicz, & Bozionelos, 2009). Indeed, an IT firm's self-interest is suggested to rest on preserving a team of cheaper, younger employees, and older employees' experience and competences may be considered outdated (Crawford et al., 2011). Relevant literature finds that while white collar workers enjoy rich support for work-related learning processes during their entire career, they may also face stereotypes against older employees regarding the lack of capabilities or opportunities to actualise their capabilities in contemporary work environments (Ng & Feldmann, 2008). In turn, some quantitative research does not find indications of any considerable age discrimination regarding workplace learning support (Dymock, Billett, Klieve, Johnson, & Martin, 2012; Harteis et al., 2015)

The reason for older workers' lower level of training compared with that of younger workers has been explained as negative bias and age stereotyping regarding older age in organisations and society (Parry & Tyson, 2011; Posthuma & Campion, 2009). Age stereotyping draws a picture of older workers as being less motivated, generally less willing to participate in training and career development, more resistant to change, and more vulnerable to work–family imbalances (Finkelstein et al.,2015; Jacquelyn, 2013; Ng & Feldman, 2012). Younger managers in particular may reflect more negative stereotypes, rather than neutral or positive ones, towards older employees compared with managers who are the same age as their team (Armstrong-Stassen & Seung, 2009; Finkelstein et al., 2015). Additionally, an employee's self-categorisation as an older worker is suggested to be related to a stronger desire to retire early, a stronger inclination towards intergenerational competition, and decreased satisfaction and empowerment at work (Desmette & Gaillard, 2008; Kulik, Perere, & Cregac, 2016). In turn, if employees of all ages perceive they are being discriminated against due to their age, then this is related to lower levels of employee engagement (Boehm, Kunze, Bruch, 2014).

Despite the image of Finland as offering equal opportunities for all and having strict legislation regarding discrimination, ageism is still reported to be a challenge, as discussed in Chapter 2. Finnish employees who are older than 55 years are reported to have faced age discrimination in the workplace more often than those in other Nordic countries have, particularly in recruitment situations (Ilmakunnas & Ilmakunnas, 2014; Larja et al., 2012). Employers in countries with low unemployment rates (around 4–5%) are more likely to recruit and retain older employees compared with employers in countries with high unemployment rates, such as France, Sweden, and Finland, which have unemployment rates of approximately 8% (Conen et al., 2012). Although organisations may maintain a relatively positive view of older employees in general, their recruitment practices often differ from their stated values (Billett, Dymock, Johnson, & Martin, 2011b).

Two complementary theoretical approaches to age discrimination exist: self-categorisation theory (Tajfel & Turner, 1986; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and the similarity-attraction paradigm (Byrne, 1997). According to self-categorisation theory, employees define themselves based on certain characteristics, such as age and gender, and categorise themselves accordingly, such as an older worker or a younger woman. Consequently, younger employees view themselves as members of the younger employee 'in-group' and may regard older workers as members of the 'out-group'. This self-categorisation occurs even when managers and employees do not engage in direct interactions (Tsui, Egan, & O'Reilly, 1992). Following the similarity-attraction paradigm (Byrne, 1997), employees who view one another as similar, for example, younger employees, are more attracted to each other. As a result, those who are different, such as older employees, are considered less favourable and associated with negative perceptions.

Scholars suggest that 'age management' or 'diversity management' are ways to prevent stereotypes and discrimination having an effect in the workplace (Parry & Tyson, 2011; Schröder, Muller-Camen, & Flynn, 2014). Age management is a formal change initiative in which managers and employees are challenged to change their attitudes and behaviour from negative and discriminative ones that are age-neutral (Grima, 2011; Naegele & Walker, 2006; Parry & Tyson, 2011). Additionally, age-awareness training is

suggested to be a key intervention for driving attitudinal changes and adjustments among managers to facilitate longer careers among older workers (Heilmann, 2017; Pärnänen, 2012; Schröder et al., 2014). An age management approach still leaves little scope for the influence of wider sociocultural factors in the organisation, and particularly ageism in the wider societal context. In addition, age management deals with organisational practices for influencing attitudes, but it is unsuccessful in affecting people's meanings and sense of power over the resources available for competence development.

Despite the positive intentions of the age management approach, some studies can be criticised for reinforcing age-related stereotypes rather than reducing ageist attitudes. For instance, older workers are regarded as a group of people who need a specific training pedagogy due to their different learning styles or needs (Hennekam, 2015; Zwick, 2015). Furthermore, age management often refers to the declining health and workability of all older employees (Ilmarinen, 2001, 2009) and emphasises the need for alternative workloads and working times, job sharing, and part-time scheduling to retain older employees (Costa & Sartori, 2007; Peeters et al., 2008), thereby creating higher levels of organisation and scheduling.

3.4.3 Human capital approach

A common explanation for why older workers receive less training compared with their younger counterparts lies in the employer's economic and cost-benefit approach, which follows human capital theory (Becker, 1964). The fundamental principle is that employees build an accumulated skill base as an organisational resource and an element of core competences (Ployhart & Moliterno, 2011; Prahalad & Hamel, 1990). Accordingly, competences are considered critical assets for organisations, especially in the IT field, because employees' skills and knowledge are sources of top performance and innovation that a company's products and services build upon (Crawford, Lori, & Jones, 2011).

Consequently, participation in training and development, the provision of formal training programmes, and the association between selection practices and learning are primarily presented as questions of investment and resources (Kock & Ellström, 2011;

Lazazzara et al., 2013; Van Vianen, Dalhoeven, & De Pater, 2011). Employers invest in employees by providing training and other career development activities (Lopez-Cabrales, Valle, & Herrero, 2006; Wright, Coff, & Moliterno, 2014). Although the costs of participating are equally high for older and younger employees, employers consider the return on their investment to be lower for older employees because they have higher wages and fewer long-term prospects compared with younger workers (Boeren & Holford, 2016; Stevens, 2010). Consequently, employers offer fewer training opportunities for older workers than they do for younger employees.

In addition, literature shows how this cost-driven approach is sensitive to economic cycles (Beck, 2013; Felstead, 2018). During a recession, older workers can be the first target of redundancy measures (Beck, 2013; Felstead, Green, & Jewson, 2012), while in times of workforce shortages, employers are more positive about retaining and recruiting older workers (Conen, Henkens, & Schippers, 2012; Taylor, McLoughlin, Brooke, Di Biase, & Steinberg, 2013). Similarly, employers in countries with low unemployment rates are more likely to recruit and retain older employees and apply measures that reflect the importance of extending careers compared with employers in countries with high unemployment rates (OECD, 2016b).

However, the human capital approach in HRD studies can be criticised as providing a limited viewpoint because it does not reveal the complexity and context of ageing employees' situations in the workplace and in their lives. It does not consider older employees' roles in empowerment, autonomy, and learning (Fenwick, 2012; Tikkanen, 2011), and thus does not recognise their agency in competence development. The human capital view also overlooks informal learning, which enables workers to achieve competences beyond employers' offerings and the requirements of their work roles. In this respect, informal learning includes a broad set of activities, which may include personal transformation, collective empowerment, and other phenomena beyond the workplace (Fenwick, 2010; Flynn, Upchurch, Muller-Camen, & Schroder, 2013). Thus, informal learning can enable employees to control their own learning efforts in the workplace more and to become less dependent on their employers' resources (Ropes, 2013).

On the one hand, motivation-related studies indicate that organisational factors have an association with individual characteristics, such as demographic variables and employees' motivation (Maurer et al., 2003; Kooij et al., 2015). On the other hand, scholars focusing on the workplace as a learning environment have also begun to recognise the role of an employee in the learning-at-work process (Ellström & Ellström, 2014; Harteis et al., 2015). In addition, significant implications stem from the responsibility for an employee's learning in work organisations shifting from HRM to the employee, who must manage his or her own learning within the constraints afforded by the work role and organisational context (Fenwick, 2012; Fuller & Unwin, 2005). Employees are being asked to assume a growing role in their competence development, which can be conceptualised through their agency.

3.5 Employees' emerging agency in competence development

In recent years, workplace learning scholars have conceptualised employees' agency in multiple ways, showing an increased interest in employees' roles in pursuing their competence development. As indicated in Chapter 1, agency in the social sciences is understood to be individuals' capacity to act independently and make their own free choices despite the structural constraints based on class or gender in their environment (Barnes, 2000). The concept of agency is also applied in adult education and workplace learning research, although a definition of the notion itself may be entirely lacking (Damman & Henkens, 2017; Weiss & Perry, 2020).

Nevertheless, workplace learning scholars provide some conceptualisations of agency in relation to how individuals learn at work and how in doing so they change their work practices. Biesta et al. (2015) apply agency to a teaching context, suggesting that agency is a quality of the engagement of actors with temporal–relational contexts-for-action, rather than a quality of the actors themselves. Some psychologically oriented scholars, by contrast, have examined agency in connection with personal characteristics and personality (Goller & Paloniemi, 2017), regarding these as crucial components of an individual that contribute to his or her agency (Setti, Dordoni, Piccoli, Bellotto, & Argentero, 2015). Indeed, Billet (2006, 2008) more specifically defines agency as relating to how employees construe, construct, and engage with the training and

learning opportunities offered to them in the workplace. Billet (2008) also recognises that personal agency, subjectivity, and intentionality shape individuals' cognitive experiences of learning. He suggests that employees differ in the ways they construe, interpret, and construct the on-the-job learning offered to them in workplace settings.

An example of a confusing conceptualisation is found in a long list of characteristics of professional agency related to workplace learning by Eteläpelto and her colleagues (2013). The authors' understanding of professional agency is intertwined with employees' work-related identities and the practicing of their profession, as well as with the learning and renegotiation of work-related identities in changing work practices. They regard professional agency as bounded because it is exercised under certain sociocultural and material circumstances (Eteläpelto et al., 2013). They also refer to individual factors where employees' unique experiences, knowledge, and competences function as individual developmental affordances and individual resources.

Many workplace learning scholars regard agency to result in only positive outcomes for employees and their environment, such as the development of competences and work practices (Vähäsantanen, Hökkä, Paloniemi, Herranen, & Eteläpelto, 2017) as well as new and creative work methods or procedures (Messmann & Mulder, 2017). Others suggest that employees' agency can overcome both inactivity in the workplace and the dehumanising aspects of 'poor work' (Gruber & Harteis, 2011; Manuti et al., 2015). Rather than being solely a subject of learning and change, employees are actively engaged in remaking cultural learning practices and changing work procedures in the workplace (Goller & Billett, 2014; Eteläpelto et al., 2013). Some scholars consider the demands on individuals' learning capacity and agency for crafting one's career to be undeniably high and ask for employers to play a larger role (Fenwick, 2012; Mallon & Walton, 2005).

In addition to imprecise definitions of agency, more robust conceptualisations exist. In their seminal work, Emirbayer and Mische (1998) propose that three temporal elements are critical when examining the interaction of agency and structure. Firstly, they suggest that the past, repetition, and order are stabilised in employees' agency to sustain interactions, identities, and institutions. Secondly, agency is future-focused, associated with goal orientation and the capacity for actors to imagine alternative

possibilities. Thirdly, current and practical elements involve agents in contextualising 'past habits and future projects within the contingencies of the moment' (Emirbayer & Mische, 1998, p. 962). They also propose that social actors are always living simultaneously in the past, future, and present and adjusting the various temporalities of their empirical existence.

However, Emirbayer and Mishce (1998) suggest that there are times when actors are more oriented toward the past, more directive toward the future, or more evaluative of the present. Following the temporal approach, Hitlin and Elder (2007) present a typology of agency and define 'life-course agency' as including performing actions that have long-term implications and an individual's reflective belief in his or her capacity to achieve life course goals (Hitlin & Elder, 2007; Hitlin & Kirkpatrick Johnson, 2015).

The concept of self-efficacy (Bandura, 1986, 1997) in turn provides a promising notion, which is used to explain individuals' readiness to learn. Applied to learning contexts, self-efficacy is the belief that individuals have their own capacity to learn. Accordingly, Kyndt and Baert (2013) describe a line of studies that relate self-efficacy to learning. Self-efficacy is involved in individuals' perceptions of their learning competence, which in turn is involved in successful informal learning (Schulz & Roßnagel, 2010). Furthermore, if employees perceive themselves as possessing the qualities required for learning in terms of general skills and abilities, they will report higher learning intention and self-belief (Maurer, 2001). The aforementioned viewpoints are included in the discussion on the framework of this thesis.

Notably, agency is connected to 'agentic actions' in some workplace learning articles. Agentic actions illustrate how individuals construct their goals and consequently act in their learning for and through work (Somerville & Bernoth, 2001). Billet and Pavlova (2005) understand that individuals' agentic actions concern learning in relation to bodily and mental actions in the workplace. Even though they consider that employees can exercise agentic actions to enact human agency and make informed decisions that reside within that agency, they fail to explain what those actions are.

Both the notions of structure and agency are relevant in the context of later working lives and competence development. Even though explicit reference to the agency–

structure debate is relatively uncommon in adult education, HRM, and workplace studies, many studies do implicitly incorporate the idea in their theoretical reasoning or empirical modelling. For instance, there are indications of how agency is associated with the environment in workplace learning and life course studies. Hitlin and Long (2009) identify a dimension of 'structural agency', which indicates the locations and resources available to individuals that constrain or enable the exertion of control over one's life.

Critical to this thesis is Evans' concept of bounded agency, because it denotes the ways in which contextual factors—especially institutional frameworks of vocational education—shape people's subjectivities and how they may support or hinder their agency (Evans, 2002; 2007). In studying young people's lives, Evans (2002) believes that personal agency is necessary for decision-making processes related to future careers and lifestyle choices, observing that agency is visible in characteristics such as self-confidence, self-trust, and feelings of capability. Furthermore, Evans (2007) identifies that young people may exhibit 'proactive strategies' or 'reactive transition behaviour', which can be understood as the seeds of the categories of proactive and reactive agency posited in this thesis, respectively. Evans, among multiple scholars (Biesta et al., 2007; Hodkinson & Hodkinson, 2004; Eteläpelto et al., 2013), builds on the work of Emirbayer and Mische (1998) in their conceptualisation of agency. For Evans (2007, p. 88), bounded agency includes a process of social engagement, which 'builds on the past, imagines the future and contextualises the present'.

Evans (2002, 2007) positions the concept of bounded agency in terms of internal processes and external structures and identities. Bounded agency is influenced, but not determined, by the environment, emphasising internalised frames and actions (Evans, 2002). Taking the middle ground approach between the influences of social structures, such as gender and ethnicity on the one hand and personal agency on the other, Evans states that 'bounded agency understands individuals as actors, without losing the perspective of structuration' (2007, p. 83). Evans thus explicitly places her conceptualisation close to Giddens' idea of agency (1984), which is discussed in the next chapter.

Similarly, the conceptualisation proposed by Hodkinson and Hodkinson (2004) can be claimed to resemble Giddens' (1984) structuration in their discussion on learning agency and the reproduction of learning culture. They propose that positive learning cultures are ideal types of learning environments comprising distinct systems of meanings, which are simultaneously structuring and being structured by the dispositions, beliefs, and values of social actors within them (Hodkinson & Hodkinson, 2004). It is also suggested that learning cultures are (re)produced by individuals just as much as individuals are (re)produced by cultures, although employees are differently positioned in the organisation with regards to the shaping and changing of a culture (Hodkinson et al., 2008).

3.6 Concluding reflections on prior literature

In conclusion, the discussion in this chapter shows that in today's changing working life, the need exists for further conceptualisations of employees' competence development. Earlier studies provide insights into both individual and organisational factors related to employees' competence development discussed in this chapter. Figure 5 refers to the wider context and, more precisely, to the institutional factors involved in an employee's competence development, which were discussed in Chapter 2. The key emerging concepts in the literature relevant to this thesis are 'Agency' in a workplace learning context and 'Expansive-restricted learning environments'.

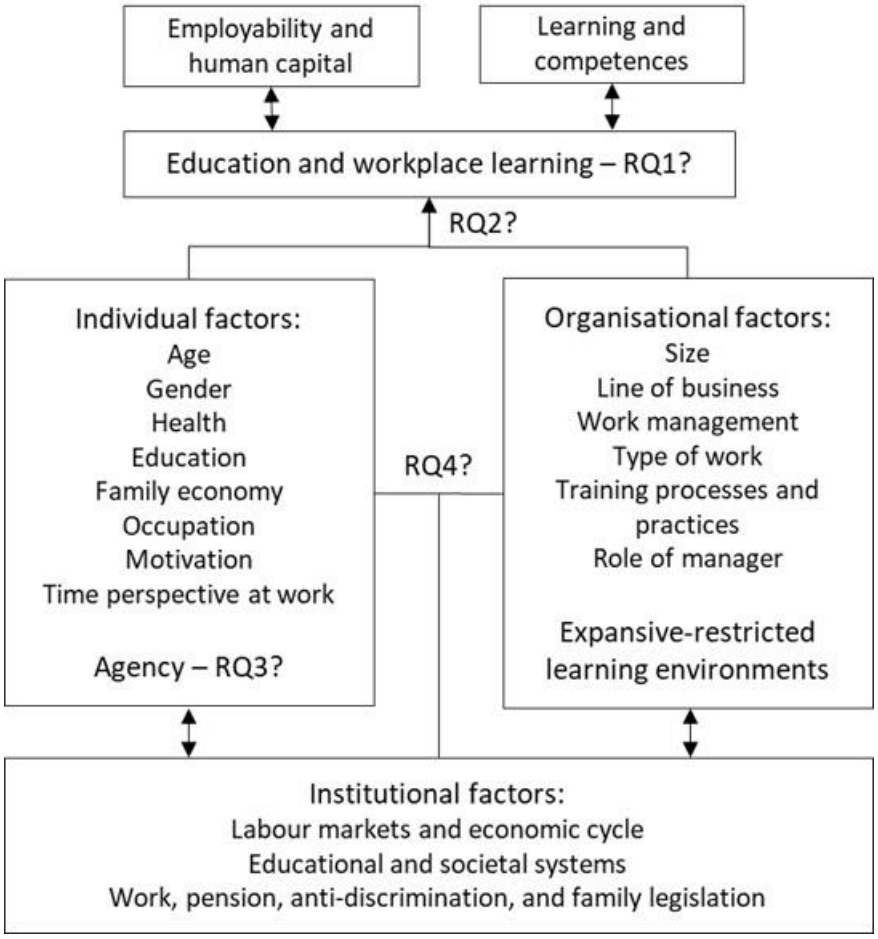


Figure 5. Summary of the literature and the context for the research

The key approaches for explaining older workers' participation in training and adult education are drawn from workplace learning literature, as well as from HRD studies. A key argument related to older workers is that they have lower training participation rates, which are caused by multiple factors associated with their age and motivation (Bown-Wilson, 2011; Felstead, 2011b; Maurer, 2001; Urwin, 2006). Another research avenue has focused on organisational factors for identifying the enabling or constraining learning environment. This research has often relied on psychosocial and learning-oriented theories, emphasising learning processes and the development of individual competences, as shown in the summary in Figure 5. The key argument is that expansive workplaces provide good training opportunities and on-the-job learning activities for all employees (Fuller & Unwin, 2005; Kock and Ellström, 2011). Research from an economic perspective, relying on a human capital approach, has been predominant in HRD studies, with a focus on the outcomes of individuals' employability and the core competences of organisations. These studies suggest that

employers invest in employees' training based on their consideration of returns on their investment, and therefore offer fewer training opportunities to older employees than they do to younger ones.

Each of the approaches in the literature provides a partial understanding of the complex nature of (older) employees' competence development. However, they also have the following limitations. First, specific issues arise in relation to older workers' training and education. Traditionally, previous literature explains differences in competence development activities through employees' motivation to learn or the availability of organisational training practices (Maurer et al., 2003; Truxillo, Cadiz, & Rineer, 2017). An investigation of the association between a few individual or organisational factors as dependent variables, and the frequency of training activities, is not without problems. These studies dilute the attributes of age and gender to a one-dimensional variable, leaving little scope for recognising the subtle means of discrimination and normative expectations and biases attached to age and gender. They also miss the linkage between employees' actions and the context in which they occur. Thus, it is necessary to start this investigation with RQ1: What types of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces?

Secondly, although earlier studies recognise multiple facilities within organisations and society that affect employees in their competence development (Fuller & Unwin, 2011; Kock& Ellström, 2011), they present workplaces as learning arenas in a polarised manner. Encouraging organisations to provide an expansive learning environment and a positive learning culture is posited to enable all employees to participate in training and workplace learning. Nevertheless, there are organisations that serve as constraining forums with neither opportunities nor support for training and learning. In turn, HRD studies provide insights into the organisational processes involved in employees' training and on-the-job learning by focusing on formal procedures of training (Crouse, Doyle, & Young, 2011; Lazazzara et al., 2013; Truxillo et al., 2017). However, it remains unclear which factors have an influence in a specific context; therefore, RQ2 is posed as follows: How do different institutional (e.g., education opportunities and work legislation), organisational (e.g., size and type of work), and individual factors (e.g., age

and gender) enable or constrain middle-aged and late-career employees' competence development in Finland?

Thirdly, the importance of the employee's role is recognised in workplace learning literature, but the conceptualisations of employee agency omit aspects of depth and versatility in real-life situations. Multiple conceptualisations picture agency as a driving force for change (Messmann & Mulder, 2017; Vähäsantanen, et al., 2017), whereas others present it as a feature of personality or a community (Goller & Harteis, 2017), and in so doing blur its essence. However, the literature provides promising insights into the construction of agency as including temporal aspects and motivational elements, thereby conceiving employee agency in terms of competence development as well the relationship with the learning environment, such as bounded agency (Evans, 2007; 2011). To understand the components of agency in this context, RQ3 is posed as follows: How do IT professionals construct their agency in relation to their competence development in the workplace?

The major flaw in the literature is that even though both employee and context are identified as important influences on competence development actions, such studies tend to underestimate the relationship between the two, and thus fail to explain how the relationships between different factures are constructed (see Figure 5), the relationships with question marks). More precisely, the literature fails to integrate these concepts into a clear theoretical framework, and also offers little explanation for how they are associated with existing employees' competence development. Consequently, RQ4 of this thesis is posed as follows: What is the relationship between employees' agency and institutional, organisational, and individual factors in employees' competence development?

In conclusion, the theorisation of individuals' competence development in the workplace environment as presented in this literature review is based to a great extent on economic, motivational, and learning theories, each of which give rise to challenges when seeking further understanding of employees' continuous competence development. Generally, these theories lack a wide understanding of the social systems and relationships involved in employees' competence development, particularly how they affect individual employees. The following open question thus remains: Why do

some employees continuously develop their competences while others do not? Therefore, this thesis focuses on the individual level and develops a novel theoretical framework for exploring the relationship between an individual's agency and his or her learning environment and wider societal context. As already mentioned, to achieve this goal, structuration theory (Giddens, 1984) is applied to explore a more sophisticated but clear framework and operationalise it in an empirical enquiry, as discussed in the next chapter.

Related to the methodology, previous economic and motivational research has mostly applied a quantitative, positivistic approach, whereas education and workplace learning scholars also rely on constructivism as well as qualitative methods. In addition, current attempts to build the connection between individual, economic, and organisational factors rely on quantitative strategies (Froehlich et al., 2015; Maurer et al., 2003). Some of these models, however, lead to a limited view because of a small number or misplaced variables, such as older age. Other models lead to complex modelling, and thus miss the power of clear theorising and practical empirical use. In addition, these models cannot capture the depth of individual experiences involved in the competence development context. To tackle these challenges and answer the RQs, a pragmatic philosophy and a mixed-methods research strategy are applied, which are further addressed in Chapter 5.

4. Theoretical framework for competence development

A sound analytical framework is vital for any research to ensure a rigid research design and connect the research findings with current knowledge. As discussed in the previous chapters, an appropriate framework for this thesis must combine employees' experiences of their competence development and the specific learning context. The current theory and research on employees' competence development contributes to a partial understanding of how employees engage with workplace learning activities, and also, how the workplace as an environment for learning nurtures or constrains these actions. However, no unified theory is found that incorporates these perspectives, which are recognised as important for understanding employees' competence development as a whole.

Consequently, the key concepts of structuration (Giddens, 1979, 1984) are selected as a theoretical foundation, supporting both the field study and theorising the explanations. The framework provides a platform on which to base the analysis of empirical data and conceptualisation of the findings, thereby making them relevant to existing knowledge and contributing to it. The detailed steps involved in the analysis and the development of the framework are discussed in the next chapter, while the present chapter discusses the ideas of Giddens and briefly presents the key concepts of the analytical framework proposed for this thesis.

Initially, this chapter discusses why the research is grounded in Giddens' structuration theory, which is followed by a discussion of the key concepts in the way Giddens (1978; 1984) presents them. Then, critiques of Giddens together with earlier adaptations of structuration are addressed to understand the aspects that must be considered when applying the key concepts of structuration as a leading framework. At the end of the chapter, a short overall discussion is presented of the framework proposed for investigating employees' competence development.

4.1 Selecting Giddens' concepts as a theoretical foundation

In essence, structuration theory explains how people's acts affect the continuity or transformation of social structures and organisations over time (Giddens, 1979, 1984). However, rather than investigating the production or reproduction of social structures, this research applies the key concepts from that theory—agency, structures, and social systems—to understand the differences between employees in terms of their competence development activities. Structuration theory was selected as a key theoretical lens for several reasons: first, it pays equal attention to both structures and agency (Jones & Karsten, 2008; Whittington, 2010), and therefore supports the analysis and theorising of employees' competence development actions within the present situation. Consequently, the key concepts of structuration provide novel lenses through which to gain a holistic understanding of how agency and learning environments fit together. Calls for such a holistic framework have been issued by organisational and workplace learning scholars (Fineman, 2014; Goller & Paloniemi, 2017; Hager, 2011) in accordance with the need for politicians and practitioners to recognise the importance of continuous competence development in prolonging careers in countries with ageing populations (McNair, 2011; Vickerstaff et al., 2015).

Secondly, the key concepts of structuration enable further theorisation of employees' agency and perceptions of their learning environments through the concepts of structure and social systems. Even though the conceptualisations of agency in relation to workplace learning were discussed in Chapter 3, room exists for further conceptualisations regarding the interaction between employee and the learning environment. Giddens' (1984) idea of knowledgeable agency, involving practical consciousness, certainly resonates with IT professionals, who have relatively high levels of education and work in knowledge-intensive environments. Most crucially, the concepts of agency, structures, and social systems help to reveal the interactions between employees and the environmental factors that affect their lives and work.

Thirdly, the chosen framework of structuration aligns with the pragmatic ontology and mixed-methods methodology applied in this study. Structuration theory concerns the analysis of both structures and agency without prioritising either (Bryant & Jary, 2011; Pozzebon, 2004; Whittington, 2010); therefore, it provides a more appropriate

philosophical basis for this study compared with approaching the subject only from interpretive or structuralist perspectives. Structuralist theories recognise that social and organisational structures and practices constrain people's behaviour. By contrast, interpretive theorists have argued that individual human agency and actions create societies and organisations. While structuralism has dismissed the concept of agency and its consequent relationship with human freedom and choices, interpretative approaches have neglected the influences of social and organisational practices and norms. The pragmatist philosophy and mixed-methods methodology capture both viewpoints by investigating the enabling and constraining factors, as well as employees' experiences and sense-making, to analyse how employees participate in competence development activities.

Other theorists have attempted to balance the roles of agency and structures when explaining social actions. Bhaskar's (1989) account of positivism and post-modernism seeks to understand the interplay between agency and structures—an approach that Archer (1998) continues in her work. Bhaskar (1989) and Archer (1998), however, use a critical realist ontology to produce a categorical distinction between human actions and social structures, seeing them as fundamentally different (King, 1999). Such an interpretation departs from Giddens' (1979; 1984) conceptualisation, which sees structures and agency not as categorically distinct, but rather as instantiations of each other. In addition, Giddens postulates structure as enduring generative components that pre-exist the social activities through which they are reproduced and transformed, whereas Bhaskar and Archer ascribe primacy to structures, once again departing from Giddens (King, 1999). These points prevent the application of Archer's conceptualisations to the present research.

In addition, Bourdieu's (1977) work attempts to reconcile structures and agency and the interaction between them in societies. According to his thinking, social actors internalise external structures into 'habitus', while interactions between actors in social relationships are externalised as 'fields'. In sociology, habitus comprises socially ingrained habits, skills, and dispositions; in so doing, individuals perceive the social world around them and react to it. For Bourdieu (1977), the habitus consists of individuals' tendency to hold and use their body in a certain way, such as posture and

accent, and more abstract mental habits, schemes of perception, classification, appreciation, feeling, as well as action. Bourdieu (1977) suggests that attitudes, mannerisms, tastes, moral intuitions, and habits influence individuals' life chances; thus, the habitus is not only structured by an individual's objective past position in the social structure but it also structures the individual's future life path. Jones and Karsten (2008) emphasise that Bourdieu views agency as significantly shaped by structural forces and claim that for Bourdieu, the focus is on organisational and institutional factors rather than agency. His work emphasises how social classes, especially the ruling and intellectual classes, preserve their social privileges across generations; however, these ideas are not readily applicable to the learning society in Finland, and therefore they are not considered appropriate for this research.

Most importantly, according to Pozzebon (2004), the choice between theoretical alternatives is primarily a matter of ontological affinity, meaning that a given theoretical lens should best serve the particular research of a given researcher. When choosing an applicable theory, the ontological approach, theory, and thinking of the researcher must be aligned. Accordingly, researchers espousing critical realistic thinking will likely favour Bhaskar and Archer, whereas those adopting a nominalist or constructivist ontology will probably find structuration more appealing (Pozzebon, 2004). As later elaborated in this thesis, the researcher relied on pragmatism and a qualitative mixed-methods design aligned with structuration theory for the present study.

Lastly, references in previous workplace learning studies indicate that Giddens' ideas would be applicable for this exploration. Taking a middle ground standpoint between the influences of social structures and agency, Evans (2007, p. 83) states that 'bounded agency understands individuals as actors, without losing the perspective of structuration'. In turn, Billet (2008) refers to Giddens' work, which opposes polarisation between agency and structures, and adopts a balanced focus on agency and structures that would be valuable for this inquiry. The work of Hodkinson and Hodkinson (2004) resembles Giddens' (1984) structuration theory in its discussion of learning agency and the reproduction of learning cultures. They suggest that learning cultures are produced and reproduced by individuals just as much as individuals are produced and reproduced by cultures (Hodkinson et al., 2008).

Drawing on Giddens' core concepts and the interaction between agency and structures, this research provides a critique of the conceptualisations of these categories. The inadequate conceptualisation of agency and the confusing description of the components of structures require further complementary theorising and clarification, as discussed later in this chapter. In addition, the notions of employee structure and social systems are taken from Giddens, but to be more specific were clarified according to an empirical data analysis. Consequently, the researcher drafted a holistic, integrative analytical framework in 2017 and constantly refined it during the data analysis phase in 2018.

4.2 Giddens' ideas of agency, structure, and social systems

4.2.1 Knowledgeable agency

In social sciences, agency is widely understood as the capacity of individuals to act independently and to make their own free choices (Barnes, 2000). Giddens' (1984, pp. 9–10) agency can be characterised by a strong sense of knowledgeable human agents who have practical consciousness to communicate the motives of their competence development, particularly the capacity to choose otherwise, to follow one system of practices and refuse another (Whittington, 2010). Giddens' (1984) basic idea of agency is that all human actors know a great deal about the workings of society and multiple social systems, such as economic, work, and domestic, by virtue of being participants in these contexts.

Giddens (1984) emphasises that agency is not only in people's intentions towards doing things but also in their capability to do things in the first place, which implies power: 'Agency concerns events of which an individual is the perpetrator, in the sense that the individual could, at any phase in a given sequence of conduct, have acted differently' (Giddens 1984, p. 9). Employees thus constantly monitor and adjust their actions to achieve their purposes and make choices (Whittington, 2010). 'Human agents,' Giddens argues, 'always know what they are doing on the level of discursive consciousness under some description' (Giddens, 1984, p. 26). Giddens details his conceptualisation of agency in structuration theory according to different forms of consciousness (Figure 6).

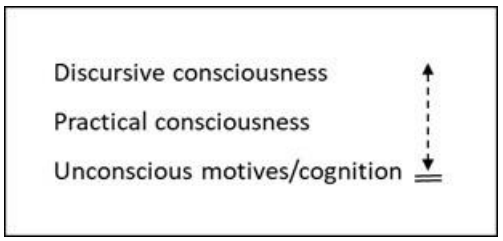


Figure 6. Levels of consciousness in agency (according to Giddens 1984, p. 7)

Applying the abovementioned ideas in the context of employees' competence development, at the discursive consciousness level, employees have a clear understanding of how and why they develop their competences. At the unconscious level, employees' cognition comprises their learning and deeper unrecognised motives for their actions. Most crucially for this thesis, Giddens (1984) suggests that people typically have high levels of practical consciousness that exceed discursive consciousness, including the ability to articulate the unconscious motives of their competence development. In other words, the idea of practical consciousness leads to the capacity of employees to think about their situation and change it (Jones & Karsten, 2008; Ortlieb, 2014). Giddens (1984) also refers to the individual's capability to learn. Practical consciousness also consists of shared understandings between individuals, which are essential in teamwork projects and participative learning among team members.

Knowledgeable agency with the capacity to take free actions might seems to suggest that employees can always control their activities, but agency always needs to be judged in relation to structure. For Giddens (1984), the knowledgeability of human agents is always bounded on the one hand by the unconscious, and on the other by the unacknowledged conditions and unintended consequences of their actions; these are essential for the prosecution of social life, but they are not explicitly understood (King, 2000). Consequently, employees do not only have opportunities but also meet barriers to their competence development.

For Giddens (1984) social structures include those rules and resources in society and organisations that limit employees' actions, even though employees can simultaneously move freely within those boundaries that represent agency. As Whittington (2010)

suggests, Giddensian agency is enhanced by control over resources and is exercised through following or rejecting rules in society and organisations. Following Giddens' ideas, agency as capacity for action is always associated with employee structures and social systems that are always both enabling and constraining. However, as can be observed in Figure 6, these ideas are not visible in his illustration; therefore, the conceptualisation of agency in this thesis is further developed to more adequately cover these features.

4.2.2 Structure, social systems, the duality of structure, and structuration

When investigating existing employees' agency for their competence development, it is necessary to understand what Giddens explains about the interaction between agency and structure. Giddens (1979; 1984) provides rather unusual conceptualisations of the idea of 'structure', referring to the individual level, whereas he uses the concept of 'social systems' to refer to the societal and organisational levels. In relation to the interaction between agency, structure, and social systems, it is also necessary to discuss two more notions: the duality of structure and structuration.

In social theories, *structure* typically refers to the sets of social (class) relations or stable institutional frames and artefacts that are typically regarded as constraining social actions. In turn, employees' actions and thoughts are part of agency. Giddens (1984, p.17) provides the rather uncommon conceptualisation that structure is not 'external' to individuals, but 'exists, as memory traces orienting the conduct of knowledgeable human agent', which are 'continuously re/produced by individuals' actions'. On the one hand, Giddens understands structure to have a 'virtual existence', which is 'temporally present only in their instantiation, in the constituting moments of social systems' (Giddens, 1979, pp. 63–64). In this way, structure is an idea or schema lodged in human brains (Sewell, 1989), where employees' competence development decisions are shaped.

On the other hand, Giddens (1984, p. 25) defines '*structure(s*) as rules and resources, or sets of transformation relations, organised as properties of social systems', which occur 'in a material time-space presence' (Giddens, 1984, p. 17). Thus, in addition to virtual *structure* as employees' memory traces, *structures* are also rules and resources

embedded in social systems that give form and shape to social life and employees' decisions and actions. For Giddens, social systems are arrangements in society, in organisations, and between people, as 'reproduced relations between actors and organised as regular social practices' (1984, p. 25). Consequently, the notions of structure and socials systems together contain what is typically understood as structures in social sciences (1984, p. 7).

The conceptualisations discussed thus far are already rich with notions, but Giddens continues by introducing a controversial notion of the duality of structure. In so doing, he aims to emphasise the recursive nature of structure; specifically, 'structural properties of a system are both the medium and the outcome of the practices they recursively organise' (Giddens 1984, p. 25). In other words, employee structures and social systems shape people's actions, such as participation in training. However, people's decisions and actions also constitute and reproduce societal and organisational rules and power over resources embedded in social systems. Giddens proposes three dimensions of structures and presents them in the form of dualities (see Figure 7).

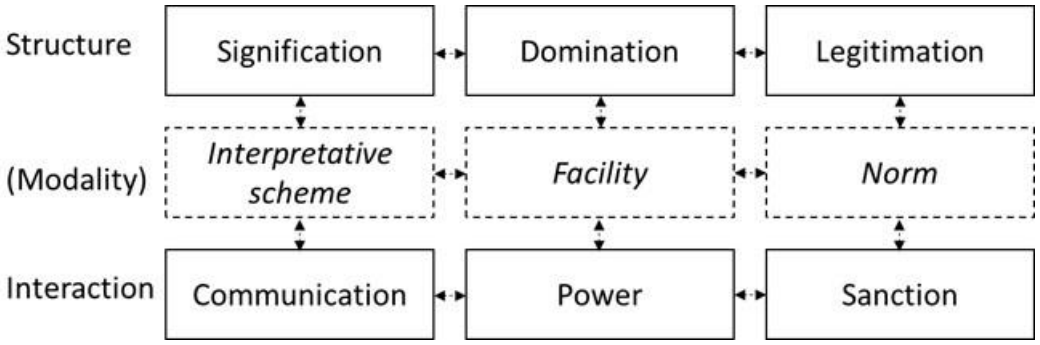


Figure 7. Duality of structure (according to Giddens, 1984, p. 29)

As Figure 7 illustrates, the structural dimension of *signification* refers to the interpretative schemes, which an employee states in their communication of meaning with other people. These schemes imply rules of an organisation's discursive and symbolic order expressed by myths, symbols, and biases related to, for instance, older age (Whittington, 2010; Neu Morén, 2013). The dimension of *domination* concerns the perception of training and learning related to power over people and resources at the

workplace. Giddens' term 'facility' consists of relations of dominance, which demonstrate the power relationships that exist between; for instance, managers and employees as well as younger and older employees in workplaces and labour markets (Bryant & Jary, 1991; Zanoni & Janssens, 2007). Lastly, the dimension of *legitimation* concerns the regime of normative organisations that defines the evaluation and judgement of competence development activities. Legitimation thus illustrates the construction of norms and rules that guide interactions as well as the establishment of rights, obligations, and sanctions related to, for instance, obligatory training at the workplace.

Giddens (1984) refers to the notion of the 'duality of structure' when addressing structuration between social systems and social actors, as discussed above. Consequently, human agents draw upon rules and resources when perceiving the enablers and constraints in their social environment. Rules refer to signification and legitimation, whereas resources refer to domination and power over resources of two kinds: authoritative resources, which allow social actors to control the activity of other actors, and allocative resources, which allow agents to control material objects (Mutch, 2014; Whittington, 2010).

Giddens also refers to 'duality' when pointing to the interaction between agency and structure, stating the following: 'The constitution of agents and structures are not two independently given sets of phenomena, a dualism, but represent a duality' (1984, p. 25). According to Giddens (1979), structures do not exist independently of agents, but their use in interaction is seen as 'literally inhabiting people' (p. 64). This linkage, however, cannot be directly recognised in Figure 7, and as such, scholars have generated multiple interpretations of how agency and structure are connected.

Scholars have understood that the duality of structure aims to diminish the opposition between structure and agency and transform it into an assertion of the mutual dependence of agency and structure (Jones & Karsten, 2008; King, 1999; Whittington, 2010) or even a conflation of both concepts (Archer, 1982). However, a proponent of structuration sees that 'in this view of things, human agency and structure, far from being opposed, in fact presuppose each other' (Sewell, 1989, p. 88). Furthermore, Orlikowsky (1989) understands agency to be involved through Giddens' modalities of

interpretative schemes, facilities, and norms, whereas Stones (2005), in his 'strong structuration' approach, comprehends agency to include internal structures and active agency. These prior conceptualisations are further discussed at the end of this chapter.

Finally, Giddens defines structuration as the 'conditions governing the continuity or transmutation of structures; and therefore, the reproduction of social systems' (Giddens, 1984, p. 25). As Giddens deals mostly at the level of societies (Haslett, 2013; King, 1999; Mutch, 2014), social systems in structuration typically reflect the 'institutional realm'. Aligned with this thesis, Whittington (2010, p. 149) asserts that the structuration process also occurs at the organisational level when social agents draw on the various rules and resources of their domestic and organisational systems. As they do so, they either reproduce or amend the norms, practices, and power relations that initially organised their activities within their workplace. Although structuration has been highly influential in the social and applied sciences, Giddens' position has also been criticised, as will be discussed next.

4.3 Critiques on structuration theory

As part of a decades-long structure–agency debate, Giddens in his structuration theory aims to reject traditional dualistic views that view social phenomena as determined either by objective social structures or by autonomous human agents (Bryant & Jary, 2911; Jones & Karsten, 2008). Giddens' propositions in turn have been criticised from various perspectives, often illustrating the ontological position of the author. Of this debate, the most relevant areas of criticism for this thesis are as follows: first, the ontological position of agency–structure; second, the analytical use of the duality of structure; and third, the position of material structures in structuration.

First, Giddens' proposition that structure and agency are a mutually constitutive duality has raised an ontological debate from opposite viewpoints. Callinicos (1985, p. 162) rejects structuration on the grounds that Giddens putatively reduces the objective existence of structure to individual agency. He insists on greater primacy being afforded to human agents over structure and the agent ultimately being able to exercise free will. Consequently, Giddens' position is too deterministic for Callinicos.

For many, Giddens' view is strongly voluntarist. Jones and Karsten (1989, p. 258) argue that if human agents always 'have the possibility of doing otherwise' (Giddens, 1984, p. 23) and if structure is always enabling as well as constraining, then agency is not constrained by structures. They also see voluntarism as embedded in Giddens' proposition that 'the seed of change is there in every act which contributes towards the reproduction of any ordered form of social life' (Giddens 1993, p. 108). Porpora (1989) sees that the difficulty lies in the Giddensian structure referring to the virtual rules in society that social actors recursively draw on in their knowledgeable activity (1989, p. 202). This is a problem, particularly for structuralists, because in the Marxist framework structure refers to sets of social (class) relations that are causally efficacious in enabling, constraining, and motivating human behaviour (O'Boyle, 2013, p. 1021).

The strength of structuration, however, is that it can be considered a mid-range theory, which attempts to reconcile both agency and structure without falling into either objectivism or subjectivism (Jones & Karsten, 2008; King, 1999; Whittington, 2010). In this manner, and against many of his critics, Giddens is 'explicitly committed to ontological dualism' (King, 2004, p. 8). Structuration not only demonstrates both the agency that individuals exercise but also how structure with its rules and resources has a role in directing the social systems embedded in organisations and society. For this thesis, Giddens' (1979; 1984) lens demonstrates how employees' own perceptions and actions as well as the learning environment are involved in their competence development activities. It also demonstrates how employees as agents are affected by employees' structure, and by how they draw on the meaning of training and social systems, as well as by biases towards older age, which can both eventually enable and constrain employees' competence development activities.

Second, the generality of Giddens' definitions has been criticised, with calls for the provision of greater detail about the concept of the duality of structure, particularly for analytical use. Archer (1996), as a critical realist, agrees with the fundamental ontology of Giddens, who is also regarded as a realist, but she 'rejects Giddens' mediation of structure and agency' (King 2010, p. 255). Archer understands that the duality of structure means that structure is inseparable from agency; therefore, she sees that the individual properties of structure and agency are merged (Archer, 1995, pp. 93–134).

Consequently, Archer argues that Giddens' conceptualisation of duality leads to a 'central conflation' of both agency and structure, which 'deprives both elements of their relative autonomy, not through reducing one to the other, but by compacting the two together inseparably' (1996, p. 688). For Archer, the duality of structure provides no indication of how one might analyse the relationship between agency and structure over time. She insists that in many instances, structure has an independence that historically predates the present time, and argues that both agency and structure have relative autonomy where structure presupposes agency.

The methodological implications of duality may seem dauntingly holistic, implying equal attention to both structure and agency. However, both King (2000; 2010) and Stones (2005) argue that Archer's criticisms are partly misplaced. King (2010) reminds us that Giddens does not ignore the institutional realities of the social system or deny the existence of social conditions that transcend the individual. 'On the contrary, with the concept of the social system, these realities are always present in his theory' (King, 2010, p. 255). In addition, King (2010) suggests that Giddens and Archer hold the view that individual actions can reproduce or change social structures. Therefore, the investigation of 'structures' must involve both Giddensian structure and social systems.

Stones (2005) argues that for Giddens, structure and action are not contemplated in the abstract but observed in concrete situations, through the why, where, and what of everyday occurrence, and also through understanding the dispositions and practices of agents. He sees that a study applying structuration can involve hermeneutics as well as structural analysis, and preserves the central tenet of the duality of structure (Stones, 2005, pp. 81–82). While Giddens focuses predominantly on the instantiation of structure in what people actually do, he also recognises that their actions take place within a context that 'places limits upon the range of options open to them' and that these may have an objective existence (Giddens 1984, p. 177). In addition, a structuration perspective is inherently dynamic and grounded in ongoing human action (Orlikowski, 2000, p. 405), which conceptualises structure as an interactive process with the production and reproduction of structure through employees' activities (Poole & DeSanctis, 2004).

The third set of criticisms concerns Giddens' ambiguous definitions of the nature of structure in relation to material artefacts, also understood as 'structure' in social sciences. As indicated earlier, Giddens on the one hand proposes that structure is 'a virtual order of transformative relations…that exists, as time-space presence only in its instantiations in [reproduced social] practices and as memory traces orienting the conditions of knowledgeable human agents' (Giddens, 1984, p. 17). On the other hand, Giddens proposes that structures are also 'rules and resources, organised as properties of social systems that exist only as structural properties' (Giddens, 1984, p. 25). Both definitions seem to give structure an immaterial character, and consequently many understand that Giddens' idea of material artefacts, such as training budgets or technology, cannot be understood as structures (King, 1999; Mutch, 2014).

It is fair to say that structuration does not deal explicitly with material artefacts; however, it has been interpreted in research in different ways. Stones (2001, 2005) suggests that for Giddens, structuration involves both internal and external structures, but social action is always mediated through the former. For example, online learning technologies may have an influence on training, but the effect depends on how employees engage with it (Halperin, 2017). As Ortlieb (2014, p. 238) states, structuration theory highlights the recursive interplay of the organisation's social structure with the reflexive, knowledgeable agent. Material artefacts are included in structuration but through modalities of domination—employees' access to resources in society and organisations as well as their sense of power over them. For Giddens, in contrast to structuralism, structure does not only carry a sense of constraint due to unequal distribution of resources but it is also enabling as it furnishes both the resources that make action possible and the rules that guide it (Whittington, 2010).

These arguments together with earlier adaptations of structuration show that the interaction between agency and structure can be analysed in a single study. In addition, through 'methodological bracketing', Giddens (1984, pp. 281–354) suggests that a researcher can either concentrate his or her attention on how actors draw on their structural rules and resources in their social activities or undertake an institutional analysis for the understanding of institutional context (Lee, Collier, Cullen, Jack, &

Kholeif, 2007; Whittington, 2010). For this thesis, the former approach to research is adopted.

4.4 Earlier adaptations of structuration

Despite criticism, different parts of structuration theory are widely applied in the fields of strategic management (Pozzebon, 2004; Whittington, 2010), accounting (Englund, Gerdin, & Burns, 2011), and IT (DeSanctis & Poole, 1994; Jones & Karsten, 2008), as well as in studies in organisations (Neu Morén, 2013; Ortlieb, 2014) and on teaching (Biesta & Tedder, 2007; Burridge, Carpenter, Cherednichenko, & Kruger, 2010). Surprisingly few researchers apply multiple key elements of structuration, namely agency, structure, and the duality of structure, into their work. Exceptions are Orlikowski (2000) and Stones (2005), who provide valuable viewpoints and comparisons that have facilitated the application of Giddens' concepts in this thesis. Orlikowski (1992, 2000) successfully conceptualises the duality of social structure, showing that structuration offers a balanced conceptual mediator between subjective and objective conceptions of organisations. She presents agency, structure, and the usage of technology in one figure when investigating technology and its use at work (1992, p. 403).

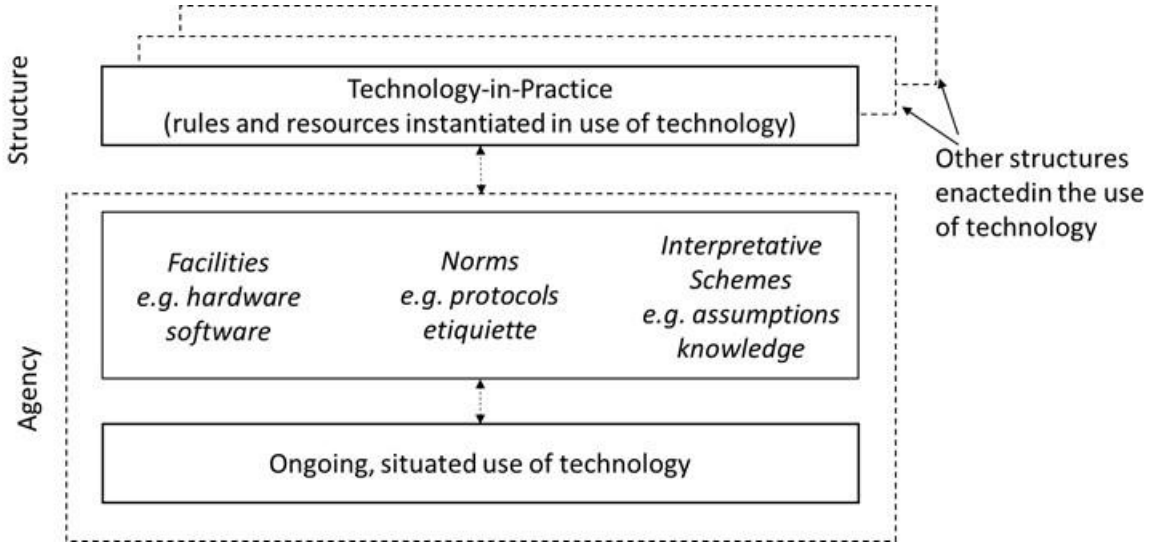


Figure 8. Enactment of technology-in-practice (according to Orlikowski, 2000, p. 410)

Remarkably for this thesis, Orlikowski's landmark study (1992) describes the duality of structure, including agency, effectively demonstrating how consultants' use of tools is

influenced by the organisational context. However, Orlikowski's model has a limited view of the ways in which the tools mediate consultants' perceptions through interpretive schemes, norms, and resources. She also neglects to demonstrate how agents' stance towards social–technical interaction may be (strongly) conditioned by their feelings about themselves and the circumstances in which they see themselves. Seeing technology (software and hardware) as facilities (see Figure 8), Orlikowski ascribes a material existence to structures, which Giddens explicitly denies (1989, p. 256).

In turn, Stones (2005) argues for the development of a 'stronger' conception of structures than Giddens allows, but retains Giddens' idea of the knowledgeable agent. This leads to Stones' quadripartite conceptualisation of structuration: external structures, internal structures, active agency, and outcomes of action, as presented in Figure 9.

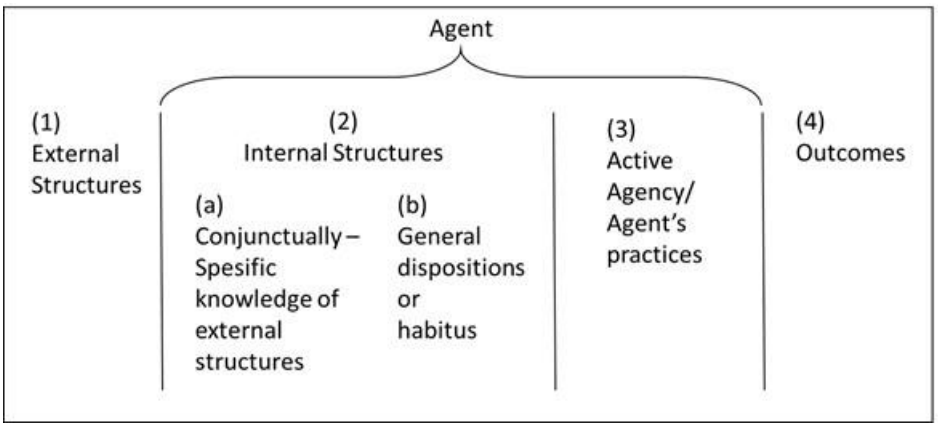


Figure 9. Strong structuration (according to Stones, 2005, p. 85)

The value of Stones' model for this thesis is twofold. First, it presents structure and agency as an entity (Figure 9, refer to Agent), which includes both knowledge of the structural context and the active agentic practices as analytical components. Second, Stones introduces components of outcomes that are the result of active agency: structures may be changed or preserved, consequences may be intended or unintended, and the agent may be facilitated or frustrated (Stones, 2001, 2005). Following this avenue, competence development can be understood as an outcome of employees' actions reflecting the relationships between agency and structure.

However, Stones (2001, 2005) claims that structuration theory draws a distinction between internal and external structures. Aligned with Orlikowski (1992), Stones rejects the virtual nature of structure existing as actors' mental traces and applies Giddens' concept of structure in a way that Giddens directly denies. Stones (2005, p. 58) also follows the critical realists' idea of causality between structure and action: 'It is still clear that, for an agent to be able to draw on the social structures of domination, legitimation and signification, these structures must pre-exist the moment in which the agent draws upon them'. This is not what Giddens has in mind: 'structures refer to structural property, providing the binding of time and space in social systems' (1979, p. 64). Temporality and spatiality are indeed key to Giddens' (1979) distinction between social systems and employee structures; however, agency and structure still exist in the present.

4.5 Conceptual framework for competence development

The construction of a sound framework entails choosing a combination of the concepts that allow the data to be viewed in the most interesting, insightful, illuminating, and meaningful ways. The selection of structuration as the theoretical foundation was made after a pilot study, but the ideas and themes stemming from the data guided the development of the concepts and the relationships between them. The conceptual framework presented in Figure 10, in conjunction with the findings of this thesis, then informed the development of the analytical framework (Figure 12).

The conceptual framework includes four key elements that have already been presented in Figure 7 (Giddens, 1984), Figure 8 (Orlikowski, 2000), and Figure 9 (Stones, 2001). From the top of the diagram (Figure 10), the components of the conceptual framework are as follows: (1) Professional and generic competences; (2) competence development activities; (3) agency; (4) employee structure; and (5) social systems embedded in the learning environment, with individual, organisational, and institutional factors.

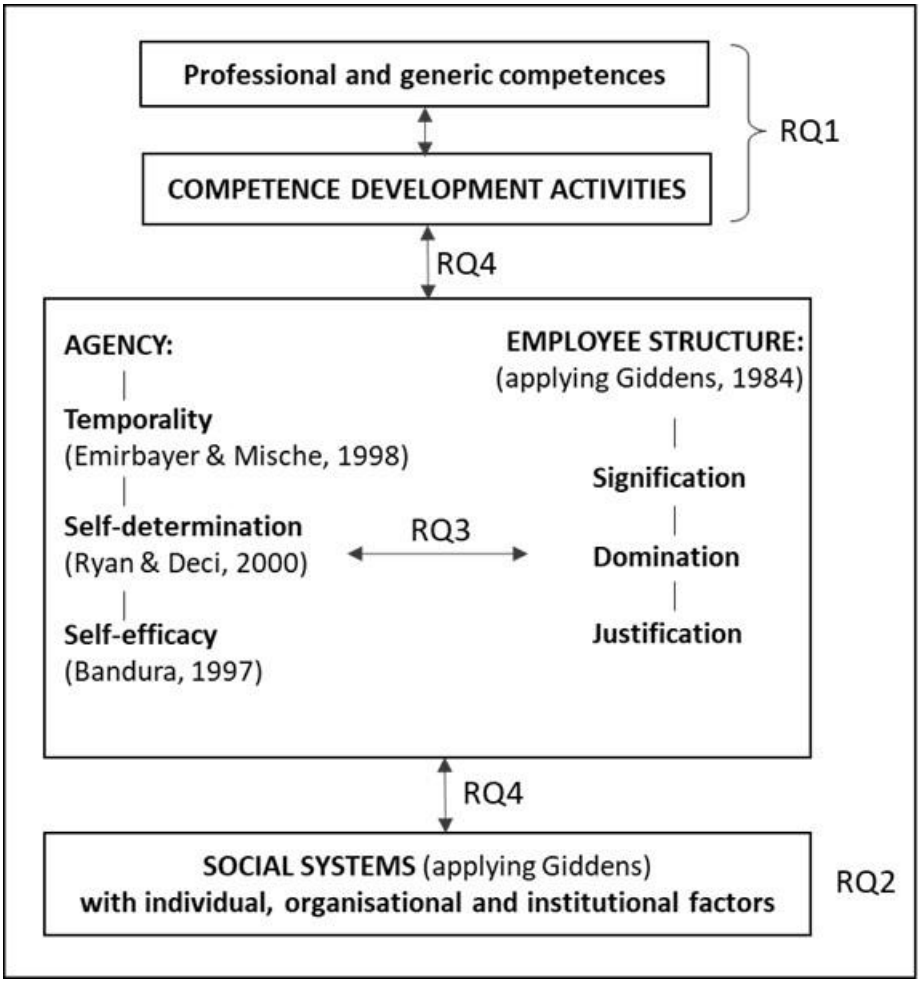


Figure 10. Conceptual framework for competence development

Professional competences are skills, knowledge, and attitudes related to a particular work domain, whereas generic competences include social, career, and personal competences across different jobs and industries. Competence development activities are adult education, training, and on-the-job learning activities as outcomes of the pre-existing interaction between agency and employee structure as well as social systems. Competence development activities include both formal education and training organised by universities, adult education institutions employers, partners and commercial vendors, as well as different activities associated with informal learning. According to the proposed framework, competence development is an outcome of the pre-existing interaction between employees' agency/structure and social systems. The first research question investigates what kind of activities middle-aged and late-career

employees engage in to develop their competences in Finnish workplaces. The respective discussion of findings is taken upon in Chapter 6.

Social systems illustrated in the bottom of the diagram are defined in this thesis as the arrangements and relationships between people in societies and workplaces that are organised into regular social and organisational practices. These social systems could reveal how different institutional (e.g., education opportunities and work legislation), organisational (e.g., size and type of work), and individual (e.g., age and gender) factors enable or constrain middle-aged and late-career employees' competence development in Finland (RQ2), as will be further discussed in Chapter 7.

The box in the middle of the framework illustrates how IT professionals construct their agency in relation to their competence development in the workplace (RQ3). The definition of agency in this thesis is an employee's capacity for agentic actions and competence development activities constructed through temporality (Emirbayer and Mische, 1998), self-determination (Deci and Ryan, 2000), and self-efficacy (Bandura, 1997). A further conceptualisation of agency that emerges as prominent in the empirical study is discussed in more detail in Chapter 8. Furthermore, the construction of agency includes employee structures, which are mental traces comprising signification, domination, and justification applying Giddens (1984), as will be further conceptualised in Chapter 8. Even though agency and employee structure can be separately defined, they are mutually connected, revealing one of the relationships between agency, structure, and socials systems.

Most importantly, the conceptual framework indicates the relationships between agency, employee structures, and socials systems in employee's competence development (RQ4). The duality of agency–employee structure interacts with the social systems in which employees work and learn. When employees make sense of their competence development in a given situation, their decisions and actions are partially mediated through their own employee structures, and partially through social systems embedding norms and attitudes, influencing organisational practices and relationships.

4.6. Concluding reflections

In conclusion, Giddens' (1979, 1984) key concepts of structuration provide an appropriate starting point for analysing and theorising employees' competence development. Structuration provides new approaches that are insightful and valid for the analysis of employees' competence development. Most importantly, structuration theory pays equal attention to both structures and agency, and therefore is appropriate for supporting the analysis and theorising employees' competence development actions within the present situation. The key concepts of agency, employee structure, and social systems together enable the development of a holistic understanding of how employees and learning environments fit together.

The key concepts of structuration enable further theorisation of employees' agency and their perceptions of learning environments through the concepts of structures and social systems. Giddens' knowledgeable agency concerns the motives and activities linked to enabling and constraining structures, which provide a strong foundation for this research. However, Giddens' (1979) conceptualisation of agency, associated with levels of consciousness (Figure 6), is insufficient for explaining how employees' agency— including agentic actions—is constructed and how it is connected to employee structures at the individual level; therefore, it is inadequate for empirical use. In addition, even though earlier literature provides promising insights into the construction of agency, including the temporal aspects and motivational elements discussed in Chapter 3 (Biesta & Tedder, 2006; Evans, 2007, 2011), these remain underdeveloped in terms of their relationships with learning environments. Consequently, this research further develops the concept of agency in terms of employees' participation in competence development.

In addition, Giddens' concepts of structure and social systems are central to the conceptual framework, which together could reveal the relationship between employees and learning environments. These conceptualisations, and the interaction between agency and structure, are promising approaches for understanding the differences between employees in quite similar circumstances. However, Giddens' rather ambiguous definition of structure(s) has caused misunderstandings and differing views regarding how to apply it to empirical analyses. Following Orlikowski (1998) and

Stones (2005), Giddens' concept of structure could be adapted but would need to include more concrete operational terms and definitions to be effective and clear for theorising; therefore, this research clearly defines and conceptualises the concepts of employee structure and social systems for analytical purposes. The conceptual framework presented in Figure 10 captures the relationships between agency, employee structure, and learning environments, which have not been explored theoretically in previous research, but which are pertinent to the current study (see the items marked with questions marks in Figure 5).

The final rationale for applying structuration is that the ontology of structuration theory, as well as the related constructions, are appropriate for the aims of this research, its RQs, and the underpinning ontology (Bryman, 2003, 2015; Creswell, 2014). Structuration provides a suitable dialectical ontology (King, 1999, 2010), whereby agency and structures are seen as equally important. Despite the critiques discussed earlier in this chapter, structuration's position as a mid-range theory is widely recognised and has been successfully applied in earlier studies.

While earlier studies used structuration as a meta-theory (Lee et al., 2007), in this thesis the key concepts of Giddens are used as analytical tools to accomplish a deeper understanding of the interaction between agency and organisations. Instead of applying these concepts selectively and peripherally, the utilisation of structuration theory is the lead methodology for framing the study, analysing the data, and interpreting the results (see Methodology and Appendix 7), thereby increasing the knowledge of the empirical value of structuration theory (Heracleous, 2013). In doing so, this thesis also contributes to the debate on the usefulness of structuration theory in empirical research (Jones & Karsten, 2008; Sewell, 1992; Whittington, 2010), just as it does to the ontological debate on the structure–agency dilemma (Archer, 2010; King, 2000; Mutch, 2014). The following chapter touches upon the philosophical underpinnings and the methodology chosen, providing a firm justification for the qualitative mixed-methods approach adopted in the present study.

5. Methodology

This chapter addresses philosophical assumptions or beliefs, which consist of a stance on the nature of reality (ontology), beliefs about the nature of knowledge (epistemology), and the methods used in the process (methodology). As shown in the previous chapters, prior studies in the fields of education and workplace learning have either focused on the quantitative strategies and causalities between variables and training/learning or on qualitative approaches with an explorative focus relying on employees' interpretations.

The epistemological and methodological considerations and choices put forward in this chapter address the multiple perspectives of middle-aged and older employees in their partially similar and partially different competence development environments in Finnish workplaces. The pragmatist philosophy and mixed-methods methodology of this research capture the measurable factors relating to employees and learning environments, as well as to employees' experiences and sense-making. This chapter begins by discussing ontological, epistemological, and methodological considerations, and then introduces the pilot study as the basis for the study design. It proceeds to present the procedures and sample for the quantitative online survey (*N*=1,119) and the qualitative face-to-face interviews (*N*=27), explaining how they were integrated. Finally, ethical considerations and the evaluation criteria of the research are discussed.

5.1 Ontological, epistemological, and methodological considerations

The empirical aim of this research is to understand why some employees continuously develop their competences within Finnish workplaces while others lose the skillsets required in their workplaces. This practical issue, and the diversity of the RQs, establish the philosophical foundations for the research. Consequently, the research is built on pragmatism, which addresses the world as partially real and partially constructed simultaneously (Biesta, 2010). Dewey's view of knowledge as experiences, acts, consequences, and warranted beliefs is in line with the aims of this research (Martela, 2015). Employees' actions are understood to depend on worldviews that are both individually unique at the most detailed level, such as an employee's life stage, but simultaneously socially shared at broader levels, such as in the learning society in

Finland. Following Martela's (2015) suggestion, pragmatism fits very well with a mixed-methods study design and is suitable for conducting organisational research from employees' perspectives. It also advocates for practical and outcome-oriented data gathering and the methods employed in this thesis as part of a larger research programme (Johnson, Buehring, Cassell, & Symon, 2006).

Pragmatism as a philosophical foundation enables both individual and contextual explanations of competence development to be captured, which differs from more interpretive epistemologies and hermeneutic models that focus only on individual capacities (Martela, 2015; Morgan, 2014). Since employees' competence development activities cannot be separated from the situations and contexts in which they occur, objective truth or subjective experience alone cannot provide an explanation for employees' participation in competence development. In the context of this thesis, an entirely positivist approach is not appropriate because it would not sufficiently address the complex nature of the association between employees' agency and structures. In addition, positivism is primarily associated with variable measurement, the testing of theories, and the investigation of cause and effect (Bryman & Bell, 2015), which are not the purposes of this research.

The methodology for this thesis has evolved from the initial idea of a qualitative case study approach in 2014 to a mixed-methods study, including both quantitative and qualitative data collection and analysis. The use of a qualitative approach was initially planned to explore employees' competence development, but the pilot study revealed that a mixed-methods approach is more appropriate for the purpose of the study. Based on previous studies discussed in Chapter 3 concerning older employees' training (Beck, 2014; Billett et al., 2011a; Felstead, 2011), a pilot study was aimed at further understanding the relationship between competence development and employees' age. Pilot interviews were conducted in the spring of 2016 among 12 IT professionals aged 39–56 years who were working in a small IT consultancy company, which is an extreme case of an expansive learning environment (Fuller & Unwin, 2005).

The initial findings of the pilot interviews indicated, first, that the relationship between age and competence development is not straightforward. Participants did not recognise their calendar age as having a significant influence on competence development for

themselves or others at work. Second, even though all employees were highly active in their competence development, their strategies for learning differed, and the overall role of the employer was quite limited. Indeed, factors such as work history, nature of the work, and previous training experience were mentioned as reasons why some IT consultants had focused more on formal training and others on on-the-job learning by performing more demanding tasks or self-learning, such as writing a blog or speaking at seminars. The pilot also indicated that the size of the current employer's company might not be a significant factor in employees' competence development, but the impact could not be analysed because all interviewees were from the same company.

When summarising the pilot findings, it became necessary to include more individual and environmental factors, and not only qualitative but also quantitative data and analysis, to respond to the aims of the thesis. Consequently, a qualitative-driven, mixed-methods approach was deployed in this study, as this was appropriate for exploring answers to the RQs (Creswell & Plano Clark, 2011). The aim was to create a holistic understanding of employees' competence development in a changing work environment, such that both explorative and descriptive approaches were required (Teddlie & Tashakkori, 2011).

Thus, the mixed-methods approach has a theoretical purpose because it enables understanding the relationship between structure and agency, addressing multiple layers of the social context, including institutional, organisational, and individual factors. These contextual layers and the experiences of the past are discussed as they require the integration of different types of data during the analysis phase (Nielsen & Brannen, 2010). However, it must be noted that mixed methods differ from the 'mixed model' in quantitative research, where fixed and random models or analysis are mixed as opposed to quantitative and qualitative data. Mixed methods must also be differentiated from 'multiple methods research', which typically refers to the use of more than one method of data collection, such as interviews and observations, in a qualitative study (Creswell, 2014).

The selection of structuration as the theoretical lens for this study also supports pragmatism as a philosophical viewpoint and a mixed-methods study design. Giddens (1979; 1984) relies on the detailed study and interpretation of specific social settings

and presumes, for instance, that ethnography is an example of a suitable epistemological approach when using structuration (Jones and Karsten, 2008). Furthermore, Giddens argues that quantitative methods do have a role in social research: 'There is [nothing] in the logic or the substance of structuration theory, which would somehow prohibit the use of some specific research technique, such as survey methods, questionnaires or whatever' (Giddens, 1984, p. xxx). Consequently, structuration as a theoretical lens and pragmatism as a philosophical foundation fit very well.

Despite the rapid growth in the use and recognition of mixed-methods research over the past 10 years in education, organisation, and management research, its usage has also been questioned. Denzin and Lincoln (2011) argue that qualitative and quantitative paradigms cannot be mixed due to the differences in their grounding philosophical knowledge assumptions. They claim that mixed-methods designs can be seen as the direct offspring of experimentalism, and that mixed-methods embed a presumed methodological hierarchy with quantitative methods at the top (Denzin & Lincoln, 2011).

To overcome such disparity, particular attention was paid to ensure this study was methodologically well-designed and followed a systematic conceptualisation of a mixed-methods design (Gorard & Symonds, 2010; Kelle, 2015; Teddlie & Tashakkori, 2011). Moreover, specific reasons exist for a detailed presentation of a mixed-methods study. First, even though the use of mixed methods is not in itself novel, the qualitative-driven mixed-methods approach adopted is new in this research area. As shown in earlier chapters, previous workplace learning and ageing employee studies have focused either on quantitative strategies and causal relations between different variables or on qualitative approaches with a more explorative intent. Few studies in adult education and workplace learning have combined both the strength of quantitative investigation and the depth of qualitative methods. Even when this is done (e.g., Evans, 2002), studies may not refer to a mixed-methods methodology, and thus the methodological contribution to research is weak. Through applying the qualitative-driven, mixed-methods design, this thesis thus contributes methodologically, particularly to research close to the subject of this thesis.

5.2 Mixed-methods design focusing on mid- and late-career employees

This study's qualitative-driven, mixed-methods design is based on literature review and several iterations in the development of research questions as Figure 11 illustrates. The pilot study resulted in the selection a qualitative-driven mixed-methods research design, which involved two sequential data collection phases: a quantitative structured online survey and semi structured face-to-face interviews. The key idea is that a quantitative approach provides an overview of the activities, rationale, and enablers/constraints affecting employees' competence development across businesses in Finland. It also supports the subsequent qualitative study in identifying interview participants working in the IT sector (Johnson & Onwuegbuzie, 2004).

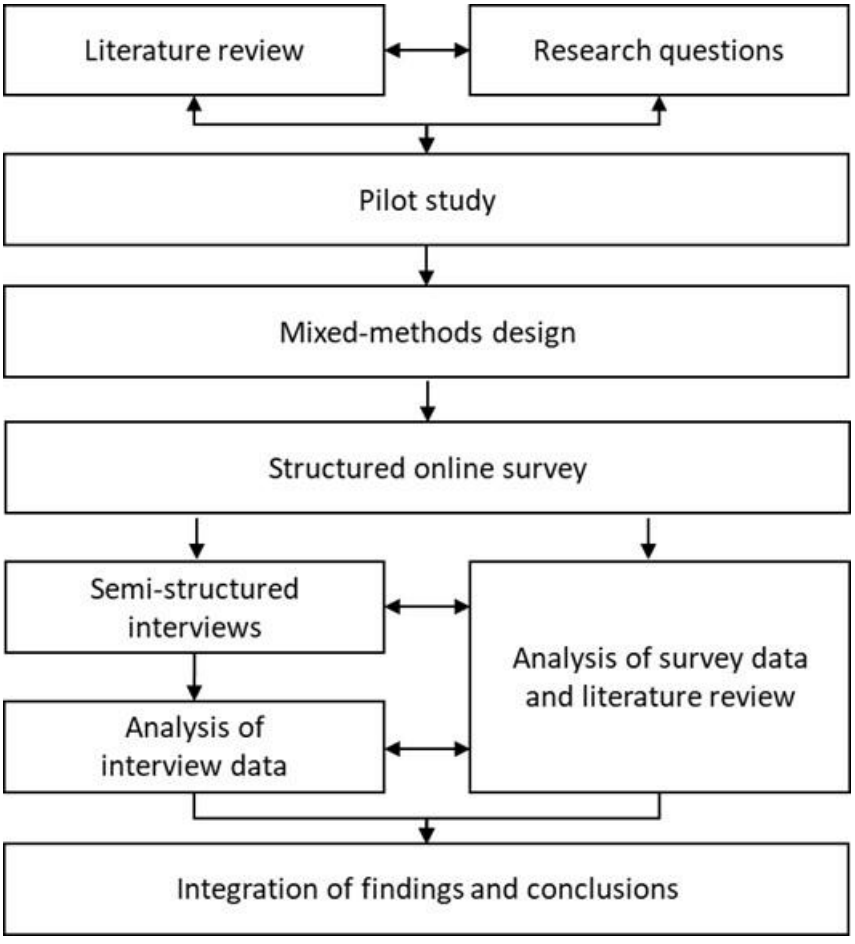


Figure 11. Mixed-methods design of this study

The qualitative data and analysis are essential for gaining an in-depth understanding of IT employees' experiences of their competence development over their previous career and currently (Buchanan & Bryman, 2009); this increases the depth of knowledge required to capture the complex interaction between structure and agency (Greene, Caracelli, & Graham, 1989). The quantitative and qualitative data are linked in the analysis phases and integrated as one conclusion.

The quantitative survey is focused primarily on RQ1, which concerns the kinds of activities middle-aged and late-career employees engage in to develop their competences in Finnish workplaces. It also responds to RQ2, with considerations regarding the different institutional and organisational factors involved in employees' competence development in Finland. The qualitative focus is on RQ3, which is related to how IT professionals construct their agency and structures in relation to their competence development in the IT workplace. It also addresses RQ4, which concerns the relationship between agency, employee structures, and social systems in employees' competence development. However, the process of the mixed-methods study is illustrated in this chapter as closely as possible. Figure 11 aims to illustrate that the interpretation and data analysis were partly separated but highly interlinked activities, even though this involved stepping back from the data, making sense of what was going on, and extrapolating from the previous HRM and workplace learning literature, as is evident from the years of publication listed in the bibliography (Bryman, 2003; Silverman, 2013).

Related to the focus of this study, the discussions in Chapters 2 and 3 show that a need exists to understand existing employees' competence development activities, particularly among those in their mid- and late-career phases. Existing employees are expected to work longer than before, but issues such as age discrimination with respect to access to training may jeopardise these employees from developing their competences. Earlier adult education and training studies have been concerned with those with a relatively low level of education among older age groups.

However, this thesis analyses how employees with a relatively high level of education face constraints in their competence development in the workplace, because when they are unsuccessful in taking on these development activities, their ability to work until

official retirement age may be jeopardised. In addition, little discussion occurs in Finland on the relationship between the currently middle-aged workforce, competence development, and career extension for Finnish employees (Heilmann, 2017; Kokko & Feldt, 2018). Given these challenges, this research focuses on Finnish employees, aged 40–65 years, in their mid- and late-career phases. There is a general tendency in the literature to use very broad age cohorts, most often aged 50 plus (e.g., Atkinson & Sandiford, 2016; Loretto and White, 2006), but as discussed in the literature review, this can be misleading.

Instead of understanding a wide age cohort as one homogenous group, employees in this study are divided into two groups: 'middle-aged' employees, who are aged between 40 and 54 years, and 'late-career' workers, who are aged between 55 and 64 years. The terms 'middle- aged' and 'late-career' employees are chosen because they do not carry the negative connotations of the 'older worker' present in the literature in terms of stereotypes and age diversity (Finkelstein et al., 2015; Parry & Tyson, 2011). Both terms are assimilated to life and career stages rather than chronological age (see Fenwick, 2012). Employees from age 40 years are considered middle-aged because, based on career and life stage approaches, 40 years can be regarded as the beginning of mature adulthood, even in contemporary life courses (Lewis & Ryan, 2014). The 55-years threshold between middle-aged and late-career employees is based on the suggestion that an age delimiter must be established according to consistently sharp declines in labour force participation rates (Taylor, 2006), which in Finland occurs at 55 years, as discussed in Chapter 2. The upper threshold in this study is based on the normative Finnish retirement age of approximately 64 years for those currently in their 60s, even though it is expected to reach 65–68 years for those currently in their 40s and 50s (Kannisto, 2015).

5.3 Online survey and quantitative analysis

The aim of the quantitative data collection and analysis in the present study is primarily to obtain an understanding of who active middle-aged and late-career employees are, and what types of competence development activities they exercise. Traditionally, quantitative studies test a hypothesis, but that approach is not applicable in this study,

neither ontologically nor theoretically. As discussed in Chapter 3, several factors are involved in employees' competence development, but they do not have a clear basis for hypothesis building in this context. Indeed, this quantitative part of the study primarily describes competence development activities, employees' rationale for developing competences, and the possible constraints associated with this. The aim of the quantitative element is to search for possible differences between groups, such as men and women, as well as between middle-aged and late-career employees. Similarly, the differences between the type of business and its size are investigated when applicable. More importantly, the initial quantitative analysis informs the interviews and the integrated final analysis of combined data sets.

The quantitative data collection involved in this thesis represents a subset of the questionnaire used in the research programme entitled 'Skills, Education and the Future of Work in Finland' throughout 2016–2019. The aim of the research programme was to investigate the one-year follow-up effects of career coaching interventions for middle-aged and late-career employees in their employment, job applications, and subsequent tertiary education. In turn, the purpose of the quantitative part of this thesis is to investigate existing employees' competence development; therefore, the questions formulated and analysed here are a subset of the programme questionnaire. The researcher separately set, planned, and analysed specific questions related to this thesis, which were posed in the programme individually and independently of the rest of the programme inquiry.

The programme enabled access to the registers of BBA graduates and engineers within the Labour Union of Engineers. These two populations were chosen in the programme because they are among the largest occupational groups in Finland, represent the same educational level, and are occupations experiencing rapid changes due to technological development. Consequently, the quantitative study was set up with employees aged from 40 to 65 years with a BBA or a Bachelor of Engineering degree, who were employed in different industries in various-sized public and private organisations in Finland. The survey was conducted in two phases during January and August 2017, and the data sets were integrated on September 2017. Table 1 summarises respondents' characteristics.

Table 1. Survey respondents by background characteristics

Variable	Female %, (n)	Male %, (n)	Total %, (n)
AGE GROUP			
40–54 years	83.5 (570)	74.0 (311)	79.9 (881)
55–64 years	16.5 (113)	26.0 (109)	20.1 (222)
Total	100.0 (683)	100.0 (420)	100.0 (1,103)
MARITAL STATUS			
Single	19.9 (135)	13.9 (58)	17.6 (193)
Married	68.4 (465)	78.1 (325)	72.1 (790)
Divorced or widowed	11.7 (80)	8.0 (33)	10.0 (113)
Total	100.0 (680)	100.0 (416)	100.0 (1,096)
LIVING			
Living with someone	80.3 (549)	84.0 (353)	81.7 (902)
Living alone	19.7 (135)	16.0 (67)	18.3 (202)
Total	100.0 (648)	100.0 (420)	100.0 (1,104)
CHILDREN			
Children aged 0–6 years	10.8 (74)	13.6 (57)	11.9 (131)
Children aged 7–18 years	42.4 (290)	40.2 (169)	41.6 (459)
Older children	11.4 (78)	12.1 (51)	11.7 (129)
No children	46.3 (317)	45.2 (190)	46.2 (517)
Total	100.0	100.0	100.0
CARE DUTIES			
Yes	13.5 (91)	12.0 (49)	12.9 (140)
No	86.5 (583)	88.0 (361)	87.1 (944)
Total	100.0 (674)	100.0 (410)	100.0 (1,084)
FAMILY ECONOMY			
Good or very good	73.6 (501)	62.8 (263)	69.5 (764)
Satisfied	21.7 (148)	30.8 (129)	25.2 (59)
Bad or very bad	4.7 (32)	6.4 (27)	5.4 (59)
Total	100.0 (681)	100.0 (419)	100.0 (1,100)
WORKABILITY			
Very good (9–10)	41.1 (278)	44.4 (183)	42.4 (461)
Good (7–8)	49.0 (331)	46.8 (193)	48.2 (524)
Very poor or poor (1–6)	9.9 (67)	8.7 (36)	9.5 (103)
Total	100.0 (676)	100.0 (412)	100.0 (1,088)

Source: Own survey data, 2017; *N*=1,119

A population of 5,673 individuals aged 40–64 years, living in Finland, speaking the Finnish language, and holding a BBA degree in business or IT, were retrieved from the register of Haaga-Helia University of Applied Sciences. They received a mailed letter inviting them to participate in a non-compulsory and anonymous online questionnaire. In turn, a sample of engineers (*N*=4,802) aged 40–64 years, living in Southern Finland,

speaking the Finnish language, and holding an engineering degree, received an e-mail invitation to participate in the online survey. A total of 1,139 individuals filled in and returned the questionnaire, of whom 1,119 were eligible .In Table 1 below, survey respondents are presented according to their background characteristics.

Table 1 shows that more middle-aged employees participated (79.9%) in the survey than did older employees (20.1%) and there were more women (62.0%) than men (38.0%). In addition, among the men, many late-career employees responded (26.0%) to the survey, whereas among the women the proportion was smaller (16.5%), as illustrated in Table 1. Most of the respondents were either married (71.3%) or living with other people (81.7%). Over 10% had small children (aged 0–6 years) and 12.9% of the respondents had additional care duties, such as taking care of their parents. Family economic status was often rated as 'good or very good' (69.5%) and only 9.5% regarded it as 'poor or very poor'. Many rated their workability as 'very good' (42.4%) and 'good' (48.2%).

In turn, in Table 2 next page, respondents are listed according to their education and work characteristics. More respondents held a BBA (66.6%) compared with those who held engineering degrees (22.6%). A particle reason for the higher response rate among BBAs (13.0%) compared with engineers (5.0%) is that BBAs were alumni of Haaga-Helia University of Applied Sciences, one of the organisations conducting this survey.

Most respondents (79.3%) had a permanent job, whereas 9.9% were unemployed. The respondents worked in a range of business categories, such as IT (23.6%), Industry or Construction (23.7%), and Public Sector (20.9%). The Other Line of Business category (7.4%) consisted of private health care companies and associations as well as management and human resource (HR) consultancy companies. Approximately half of the respondents were employed in very large companies with 500 or more employees, and the other half were employed in small and medium-sized enterprises (SMEs).

Table 2. Survey respondents by characteristics in education and work

Variable	40–54 years % (n)	55–64 years % (n)	Total % (n)
EDUCATION			
Bachelor of Business Administration	71.6 (639)	46.5 (105)	66.5 (744)
Bachelor of Engineering	20.2 (180)	33.2 (75)	22.8 (255)
Master in UAE	14.5 (129)	8.0 (18)	13.1 (147)
Master in University	8.4 (75)	4.0% (9)	7.5 (84)
PhD. or M.Phil.	0.3 (3)	0.0 (0)	0.3 (3)
EMPLOYER'S LINE OF BUSINESS			
Information technology	23.7 (197)	23.2 (48)	23.6 (245)
Industry or construction	22.1 (184)	30.0 (62)	23.7 (246)
Public sector	20.5 (170)	22.7 (47)	20.9 (217)
Trade or logistics	14.3 (119)	13.0 (27)	14.1 (146)
Finance	10.8 (90)	8.2 (17)	10.3 (107)
Other line of business	8.5 (71)	2.9 (6)	7.4 (77)
Total	100.0 (831)	100.0 (207)	100.0
EMPLOYMENT STATUS			
Permanent work	81.5 (726)	70.5 (158)	79.3 (884)
Fixed-term work or notice period	3.8 (34)	3.1 (7)	3.7 (41)
Unemployed	7.6 (68)	18.8 (42)	9.9 (110)
Student, family leave or other	7.1 (63)	7.6 (17)	7.2 (80)
Total	100.0 (891)	100.0 (224)	100.0
ORGANISATIONAL AGE			
1–5 years	40.2 (357)	29.3 (66)	38.0 (423)
6–14 years	22.0 (195)	13.3 (33)	20.2 (423)
15 and over	37.8 (336)	57.3 (129)	41.8 (465)
Total	100.0 (888)	100.0 (225)	100.0
OCCUPATIONAL AGE			
1–14 years	6.0 (53)	0.9 (2)	5.0 (55)
15–29 years	79.8 (705)	14.3 (32)	66.6 (55)
30 years and over	14.3 (126)	84.8 (189)	28.5 (315)
Total	100.0 (884)	100.0 (223)	100.0
NUMBER OF OCCUPATIONS			
Same occupation during career	37.8 (333)	41.3 (93)	38.5 (426)
At least two different occupations	62.2 (549)	58.7 (132)	61.5 (681)
Total	100.0 (882)	100.0 (225)	100.0

Source: Own survey data, 2017; *N*=1,119

The overall response rate was 10.7%, and the response rate was higher among BBAs (13.0%) than it was among engineers (5.0%). Comparing the gender and age distributions between respondents and database information, two biases can be observed from Table 3 below. First, the proportion of female respondents was higher in the survey than in the databases of BBAs and engineers. Second, a higher number of

late-career BBAs responded to the survey compared with their proportionate presence in the BBA database.

Table 3. Comparison between survey respondents and populations

Variable	Engineers in this survey %, (n)	DB of engineers* %, (n)	BBAs in this survey %, (n)	DB of BBAs** %, (n)
GENDER				
Female	23.6 (59)	16.2	80.4 (599)	72.6
Male	74.9 (191)	83.8	18.3 (136)	27.4
Total	100.0 (250)	100.0	100.0 (735)	100.0
AGE GROUP				
Middle-aged	70.6 (180)	71.4	85.9 (639)	90.2
Late-career	29.4 (75)	28.6	14.1 (105)	9.8
Total	100.00 (255)	100.0	100.0 (744)	100.0

Source: Own survey data, 2017; *N*=1,119
**Database of the Labour Union of Engineers*
***Database of Students in Haaga-Helia University of Applied Sciences*

These figures place a limitation on generalising the percentages to the respective population. However, as this thesis reveals, gender and age are social attributes where women and late-career employees face more constraints at work related to their competence development; therefore, a greater number of women and late-career respondents are helpful for the data analysis. In addition, the aim of this quantitative study is not to generalise but rather to provide an overall picture for further examination, and in this manner, the data provide a strong basis for further in-depth analysis.

5.3.1 Conducting the structured survey

The questions related to competence development activities and their rationale, as well as enablers and barriers, were designed to apply directly to this thesis study. However, background information such as the characteristics of respondents and their employers correlated with the programme survey, and were designed together with the author and the programme's research team. The subset of questions dedicated for the present study initially concerned formal training activities, with the following question: 'How much have you developed your competences over the past year (12 months) in the following ways?', with a list of training options provided based on previous literature

(e.g., Felstead, 2011a, 2011b; Kilpi-Jakonen et al., 2014). Then, formal on-the-job learning was determined by the following question: 'Which methods have you used to develop your competences at work during the past year (12 months), covering, for instance, job rotation and mentoring?' Informal on-the-job learning was investigated by asking respondents to choose from a list of activities; for example, how they learn by working on a project or reading social media.

The rationale for competence development was determined by the following question: 'To what extent have the following factors made you develop your competences during the past year (12 months)?' A 5-point Likert scale was offered, ranging from 1 = not at all or very little to 5 = very much. The constraints of competence development were investigated using the following question: 'To what extent have the following factors hindered your competence development over the past year (12 months)?' Again, respondents answered on a 5-point Likert scale ranging from 1 = not at all or very little to 5 = very much. Answering all the questions in the survey was optional. There was also an open space for any additional comments at the end of the questionnaire. The respondents' characteristics and the survey questions are presented in Appendix 3.

5.3.2 Quantitative analysis methods

The questionnaire was conducted via the Internet using Webropol software (Webropol Oy, Helsinki, Finland) and responses were sent to the Finnish Institute of Occupational Health. The author received the cleaned data set from a researcher in the wider programme in Excel, including all responses to the questionnaire, but she only analysed the subset of questions planned for this thesis. In addition, the author adjusted the data in four cases: 'Engineer' was mentioned but not ticked in the respective box in the questionnaire, and three training occasions were transferred from employer training to other training because of the information provided in the open fields. Content analysis was applied using advanced Excel options to categorise free text, for instance, in the cases of 'occupation' and 'other informal learning' (Bryman, 2003).

For statistical analysis, data were transferred from Excel to IBM SPSS Statistics version 24 (IBM, Armonk, NY, USA), which was used to run the necessary statistics. The descriptive analysis of frequencies and cross-tables of respondents' characteristics and

their employers, as well as the competence development questions, were analysed, including mean and standard deviation, when applicable. A standard deviation is used as a measure of variation in a set of values when comparing means of responses between groups. A low standard deviation indicates that the values tend to be close to the mean, while a high standard deviation designates that the values are spread out over a wider range in a Likert scale between 1 and 5 (Bryman, 2013).

The Mann–Whitney *U* test was applied to determine if statistically significant differences existed between women and men as well as between age cohorts. This test is nonparametric and appropriate for comparing the mean calculation between two groups. The purpose is to determine whether the means are equal or not in cases where normal distributed data are not upheld (Burns & Burns, 2008; Tolmie, Muijs, & McAteer, 2011). The Kruskal–Wallis *H* test was applied when there were more than two groups to compare between employees' occupational age (three categories) and line of business (six categories). However, said test is an omnibus test; it reveals only that at least two groups are different, but it does not determine which of these groups differs from the other. The application of SPSS 24 includes pairwise comparisons, and therefore, this was used to recognise these differences (Harteis et al., 2015). The analyses were in some cases exported back to Excel to utilise its advanced chart options. These figures were helpful when exploring the essential findings from the high volume of data.

The criteria for judging the significance of differences were 0.050* and 0.010**, which are generally used in empirical research (Tolmie et al., 2011). Statistical significance is the likelihood that a difference between two or more groups or variables is caused by something else than a chance. Thus, the Mann–Whitney *U* and Kruskal–Wallis *H* tests were applied to determine if the difference between, for instance, males and females was statistically significant. The tests provided a p-value, which is presented in each of the tables, representing the probability that random chance cannot explain the result (Bryman & Bell, 2015).

5.4 Face-to-face interviews and qualitative analysis

The aim of the interviews was to reveal how respondents construct their agency; how they cope with institutional, organisational, and individual constraints; and most importantly what the relationships are between agency and other factors. The first version of the interview questions was tested in March 2016 in a pilot study, which indicated that more information was needed. The final interview guide was designed after the initial survey analysis in spring 2017, and it is presented in Appendix 6.

As discussed earlier, the IT industry was selected as an extreme learning environment for continuous competence development at work (Creswell, 2014; Eisenhardt, 1989), and thus it is appropriate for identifying factors in society and organisations. Interviewees were recruited among survey respondents to cover both engineers and BBA-educated men and women working in IT organisations of various sizes or IT work. In practice, at the end of the survey, all respondents in the second wave were asked if the researcher could contact them for an interview, and 121 people gave their contact information. From these, 31 people were identified as candidates because they were working in IT, living a maximum distance of 200 km from Helsinki, and had not yet retired. When contacting these candidates, three did not reply to several e-mails and one had retired, and thus, these candidates were no longer considered eligible to participate.

As can be seen in Table 4, a total of 27 employees participated in the interviews. Most interviewees (18) were men but there were also nine women, which is a greater proportion than that in the IT industry on average, as discussed in Chapter 2. Most of the interview participants were middle-aged (20), as shown in Table 4 above the line, and seven were late-career employees aged between 56 and 61 years.

Table 4. Basic information of the interview participants

Age	Gender	Status of employment	Education	Professional role	Size of employer
40	Male	Permanent	Engineer	Technical	1–49
41	Male	Permanent	BBA	General	500 +
42	Female	Family leave	Engineer	General	50–499
42	Male	Permanent	Engineer	Technical	1–49
42	Female	Permanent	BBA	General	50–499
42	Male	Permanent	BBA	Technical	500 +
43	Female	Permanent	BBA	General	500 +
44	Female	Permanent	BBA IT	General	500 +
44	Male	Permanent	Engineer	Technical	50–499
44	Female	Permanent	BBA	Technical	500 +
45	Male	Permanent	Master of Engineering	General	500 +
46	Male	Permanent	Engineer	Technical	500 +
46	Male	Permanent	Engineer	Technical	1–49
47	Female	Permanent	MBA	General	50–499
47	Male	Entrepreneur	BBA	General	1–49
48	Male	Permanent	Master of Engineering	Technical	50–499
49	Male	Permanent	Engineer	Technical	1–49
49	Male	Permanent	Engineer	Technical	500+
53	Male	Permanent	BBA	General	500+
54	Male	Permanent	Engineer	General	500+
56	Female	Fixed	Master BA	General	50–499
56	Male	Permanent	BBA	General	500+
56	Female	Permanent	Master BA	General	500+
58	Male	Permanent	Engineer	Technical	500+
59	Male	Permanent	Engineer	General	500+
59	Female	Unemployed	BBA IT	Technical	500+
61	Male	Fixed	Engineer	Technical	500+

Source: Own survey data, 2017; *N*=27*;*
MBA = Master of Business Administration

The interviews consisted of eight themes: (1) past experiences of education, (2) career path, (3) competences required at work, (4) current competence development activities, (5) employer support, (6) experiences of age and gender during work career in IT, (7) current life stage, and (8) future plans for work and life. These topics originated from the literature previously discussed in Chapter 4 and from the aim to examine the interplay between employees' agency and structure, as well as the structuration of social systems (Giddens, 1984).

Each theme began with an open-ended question, such as 'Could you please tell me about your education history after elementary school to the current time?' Thus, the

interviewer picked up on issues and events raised in the previous answer. However, the interviews could be regarded as semi-structured because the interviewer probed and followed up with structured questions if these were not answered earlier by participants. The use of a topic guide as a checklist ensured a degree of standardisation and robust data collection (Bryman & Bell, 2015; Johnson et al., 2006). It should be noted that all interviews were conducted in Finnish; therefore, the interview guide in English (Appendix 6) reflects areas covered but not the exact phrasing used in the interviews.

The interviews also comprised in-depth questions, a vital technique for collecting data about employees' experiences and their underlying rationales, beliefs, and values, and are of great importance when analysing social systems (Alvesson & Sandberg, 2011; Silverman, 2013) and partially unconscious thoughts (Giddens, 1984). In a sense, the interviews followed a sociobiographical approach as the different themes followed an employee's work and life history (Chamberlayne, Bornat, & Wengraf, 2000). The biographical approach is suitable for the study of employees' structure and agency as it seeks to reconstruct how employees' lived experiences of events over time have shaped their anticipation of the present and the future (Emirbayer & Mische, 1998).

The interviews were conducted in October and November 2017, most of which were either at the respondent's workplace or the facilities of Haaga-Helia University of Applied Sciences in Helsinki, based on the respondent's choice. One interview was held in Tampere, one in Lohja, and another in Turku. The duration of interviews varied from 41 to 93 minutes, and typically lasted approximately 60 minutes. All interviews were recorded and transcribed into the Finnish language. MAXQDA software (VERBI GmbH, Berlin, Germany) was used for qualitative analysis in this phase to organise, analyse, and visualise the interview data. The software was also used when reading and referring to the literature in parallel with the analysis. A separate log of all interviews in Excel supported the management of the interview schedule during the research process, and a field notes file in Word was created to capture the impressions immediately after the interviews. Field notes not only helped to determine how to overcome the overlap and replication of information but also initiated thinking concerning the analysis and theory of agency and structure (Eisenhardt, 1989). In the qualitative analysis, saturation of the

activities and experience of competence development was achieved with a sample of 27. These participants described similar experiences and thoughts, and the results began to form patterns of competence development and typographies of agentic orientations (Bryman & Bell, 2015; Saunders & Townsend, 2016). After an initial analysis of the interviews, it was decided that further interviews would not provide additional information for the study (Baker, Edwards, & Doidge, 2012).

The following paragraphs, together with Appendix 7, provide more information on how two steps of qualitative analysis were managed before the quantitative and qualitative analyses were integrated. The interview narratives were coded and analysed in several iterations in 2018. The unit of analysis in the interviews was a sentence or paragraph that included data describing an entity. All sentences were coded, many for multiple categories of codes, as presented in Appendix 7. The qualitative data were also revisited several times in 2019 during the analysis and writing-up phases to make further sense of them. In the process of coding, the researcher searched for common themes, meanings, beliefs, and values, and purposely coded for such items. This method of thematic analysis emphasises the content of a text, namely 'what' is said and 'told' and the specific language used, providing a direct and unambiguous route to the 'meaning' of employees' thoughts and expressions (Nowell, Norris, White, & Moules, 2017).

5.4.1 First step of the interview analysis

The first step of qualitative analysis and respective coding followed the earlier knowledge of workplace learning and agency, reflecting a deductive approach (e.g. Kyndt and Baert, 2013; Emirbayer and Mische, 1998). The coding of agency in the interview narratives included two dimensions of agency, namely temporal (past, current, and future, taken from Emirbayer & Mische, 1998) and level of activity (active versus passive, taken from Giddens, 1984; Evans, 2002; Hitlin & Long, 2009). Accordingly, active/passive agency and factors as enablers/constraints were used in the coding (see Appendix 7). Giddens' (1984) concept of agency features an idea about motivation but it was insufficient for this study, and therefore not included in the first round of analysis.

This first step of analysis related to agency exposed different viewpoints based not only on temporality (Emirbayer and Mishe, 1998) but also on other components such as self-belief and agentic actions. Therefore, the interviews were then analysed against self-determination, taken from Ryan and Deci (2000), and self-efficacy, taken from Bandura (1979). This analysis led to the initial conceptualisation of agentic orientations, labelled at this point as 'proactive', 'reactive', and 'inactive' (later restricted), as presented in more detail in Appendix 7.

In the first step, the contextual factors related to competence development were coded as enablers and constraints. They were also divided into the following category groups: individual, organisational, and institutional. The analysis of codes related to institutional, organisational, and individual factors revealed that specific reflections and perceptions existed. There were also some inspiring occasions as well as perceptions, which could simply be labelled as positive or negative (see Appendix 7). This analysis of institutional factors (such as access to further higher education), organisational factors (such as training opportunities), and individual factors (such as age, gender, and having small children) showed that the same factor could be perceived as an enabler, supporter, or constraint for an individual. Therefore, it was no longer useful to continue coding the factors from the viewpoint of enabling/constraining, but to rather move to apply the concepts of (employee) structure and social systems from Giddens' (1984) structuration theory.

5.4.2 Second step of applying Giddens in the qualitative analysis

The initial conceptualisation of agency, as the first step of the analysis, partially revealed the differences in employees' agency in terms of time, self-efficiency, and self-determination. It also indicated that employees could be categorised into three groups, which not only reflected their competence development activities but also their perceptions of the learning environment. Consequently, the interviews revealed that an employee's agentic orientation is connected with his or her perceptions of the learning environment.

To further understand the differences in how employees construct their agency as well as perceive the factors and relationships between the two, the second level of analysis

revolved between the concepts of structure and social systems (Giddens, 1984). By applying the concept of employee structure, the differences between interviewees could be analysed in terms of the meaning they attached to their work and competence development. They also had different perceptions of norms and rules related to competence development in the workplace, as well as different senses of the power over the resources related to competence development. These components facilitated the analysis of the relationships between agency and employees' perceptions as well as those between agency and the factors affecting different agentic orientations (discussed in Chapter 8). In addition, applying Giddens' concept of social systems facilitated further analysis of the arrangements and relationships between employees and managers in the workplace that are organised into regular social and organisational practices. These analyses resulted in an understanding of social systems, including individual, organisational, and social factors, as well as how they are embedded in the relationships between managers and employees, as discussed in Chapter 7.

In essence, the data analysis in the first step was deductively shaped by insightful ideas captured from the earlier literature discussed in Chapter 3. In the second step, these findings were explored through the lens of structuration and derived through multiple readings, comparisons, and the integration of empirical data. The integration of quantitative and qualitative findings can be regarded as the third step of the analysis, which is discussed next.

5.5 Integrating the quantitative and qualitative analysis

The separate quantitative and qualitative analyses provided initial findings related to the research objectives and RQs, although the results were still scattered and in some instances appeared contradictory. An important third step in this mixed-methods study was to combine the statistical information extracted from questionnaire responses (*N*=1,119) and the contextually specific qualitative analysis drawn from interviews (*N*=27). The integration began with the identification of common themes, particularly those relevant to the context of competence development in Finnish IT workplaces.

The thematic analysis was performed in cycles, as is typical (Boyatzis, 1998; Nowell et al., 2017), and consequently the initial codes evolved towards the development of the analytical framework and agentic categorisations discussed in the chapters concerning the findings. Thus, the thematic approach supported the combination of quantitative and qualitative data into one integrated analysis and the reporting of these findings (Creswell, 2014). The thematic approach was useful for integrating qualitative and quantitative findings, theorising the relationship between agency, and learning environment factors across a number of experiences, as well as finding common thematic elements across research participants and the experiences they reported (Riessman, 2005). This turned out to be very helpful for the process of recognising similarities and differences in employees' agentic constructions and the relationships between agency, employee structures, and social systems.

One example of the separate quantitative analysis focused first on RQ1, which concerns what kinds of activities middle-aged and late-career employees engage in to develop their competences in Finnish workplaces across businesses. However, interview narratives under the codes of 'Education', 'Training', 'Learning in depth', and 'Free time and hobbies' raised two particular themes from the interviewees: the first was active competence development by different types of respondents (the initial construction of agentic orientation), and the second was on-the-job learning, which was especially significant. Moreover, the quantitative survey responded partially to RQ2 by revealing the different institutional, organisational, and individual factors involved in employees' competence development in Finland. The interviewees also revealed that the following themes were particularly relevant in this context: Finland as a learning society, the impact of a downturn in the Finnish economy, and the impact of HRM and work and team management practices.

The results from the parallel analysis of the aggregated qualitative and quantitative data were subsequently compared for a holistic synthesis, which is presented in Table 5. Upon further analysis, these themes, qualitative codes, and quantitative survey data were organised as far as possible according to the RQs.

Table 5. Quantitative and qualitative data with common themes

Themes that emerged in qualitative data	**Qualitative codes**	**Quantitative survey data**
RQ1: What types of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces?		
Active competence development On-the-job learning significance Tensions in technical and generic roles	Education training Learning in depth Free time and hobbies Professional competences Technical competences	Participation by training type and duration (T6) Participation in training and further education by age cohort (T7) Participation in training by gender (T8) Participation in on-the-job learning by age cohort (T9)
RQ2: How do different institutional, organisational, and individual factors enable or constrain middle-aged and late-career employees' competence development in Finland?		
Finland as a learning society Downturn influences HRD processes Work and team management practices Gendered IT work	Institutional enablers Institutional constraints Organisational enablers Organisational constraints Individual enablers Individual constraints	Employment rates by age group (F2) Employed persons in the IT sector by gender in Finland (F3) Perceived constraints by gender (T15) Manager position, demanding projects, and mentoring by gender (T13)
RQ3: How do IT professionals construct their agency in relation to their competence development in the workplace?		
Motivational differences Imperative for individual effort and initiatives Agency, not only positive but also reluctant	Future agency/Current agency/Past agency Positive feelings/Negative feelings Self-awareness	Rationale for competence development by age cohort (T11)
RQ4: What is the relationship between employees' agency and institutional, organisational, and individual factors in employees' competence development?		
Age discrimination in recruiting Gendered life course Managerial support Priority of client work	About age About gender Age and learning Positive perceptions Negative perceptions	Employees' perceptions of employer choosing not to invest in training (T12) Participation in training with or without small children (T14) Employees' perception of an employer unwilling to invest in training because of older age, according to manager's age (T16)

Source: Own survey and interview data, 2017; F=Figure; T=Table

The qualitative analysis focused on RQ2 and RQ3, which relate to how IT professionals perceive the learning environment and construct their agency. Related to institutional factors, four themes were identified: Finland as a learning society; the impact of a downturn in Finland; age discrimination in recruitment; and the gendered work and life course in IT workplaces. Related to organisational factors, interviewees and survey data revealed the priority of client work and the importance of work and team management practices, as well as human resource management practices and the role of managerial support. Related to individual factors and agency, the important themes were as follows: the imperative of increased individual effort and initiatives; motivational differences between employees; and perceived tensions between work and competence development.

The interviews were most revealing of the relationships between agency, employee structures, and social systems in employees' competence development, but the quantitative data tables (see Table 5) were also helpful. The different quantitative data by age cohort and gender revealed issues to be elaborated and analysed further using qualitative data. To understand the relationships between initial agentic orientation, employee structures, and social systems, a table of interview data was developed. Based on this and through applying Giddens' work, the analytical framework was developed (Figure 12) and agentic orientations were categorised (Table 17). A final step towards integrated analysis was taken after the viva examinations when the examiners addressed the possible linkages between social systems that had been partially recognised earlier. Consequently, three sets of social systems were identified that enhanced the development of the analytical framework.

The comparison of the findings from the qualitative and quantitative strands of data revealed some overlap as well as divergent aspects associated with employees' competence development. The process of finding these themes involved drawing inferences, seeking plausible explanations, and cross-checking the quality of the interpretations. In this mixed-methods study, interpretations not only included theoretical or empirical insights but also involved the utilisation of intuition and previous experiences of the researcher in IT work (Creswell, 2014; Kahneman & Klein, 2009). Neither the coding nor the data analysis processes were linear, simply moving

from one phase to another phase, but rather recursive with frequent reviews of data and literature.

5.6 Ethical and quality considerations

Throughout the research process, the ethical standards of the University of Westminster were followed as were those agreed upon in the Skills, Education and the Future of Work in Finland programme (Research Ethics in Finland, 2009). The Ethical Committee of the University of Westminster evaluated and approved the ethical considerations and procedures for interviews in June 2015 (Code of Conduct, 2015/16). In turn, the Ethical Committee of the Finnish Institute of Occupational Health managed the ethical assessment for the quantitative survey as part of the protocol in the programme in September 2015.

The survey respondents received official information about the programme in their letter inviting them to participate (Appendix 1). This information included the objectives, procedures, and outcomes of the research and also presented the ethical and data security methods involved (Appendix 2). In the letter or e-mail, survey participants were given a personal link to the online survey, where they specifically approved their participation, and they had an opportunity to voluntarily provide their contact information for a possible interview. During the interviews, the researcher provided a written interview participant information sheet (Appendix 4) and an interview participant consent form (Appendix 5) to the interviewees at the beginning of the interview, which participants accepted by providing their signature. Participants were advised verbally before starting the interview that they could contact the researcher for further information at any time, including to obtain the results of the study if they wished.

Related to the interviews, the researcher was aware of two additional issues. First, as always, a power imbalance exists between the researcher and the informant in a semistructured interview (Silverman, 2013). The interviewer may bias the answers of an informant by posing leading questions or signalling his or her own personal beliefs and stances through comments, body language, or follow-up questions. In this study, the researcher was aware that she personally has a proactive agency towards her own

competence development and holds highly positive attitudes and beliefs towards all kinds of learning. In addition, she is eager to communicate and share her experiences with others. Therefore, specific attention was paid to avoid such behaviour during interviews.

To achieve the abovementioned goal, the interviewer rehearsed the appropriate interview style with her mentor, Dr Johanna Vuori, and learnt during the pilot phase how to modify her communication. Secondly, even though this research does not aim to deal with highly sensitive topics, it was necessary to consider confidentiality and the safety aspects of the interview. Therefore, interviews were conducted in the office or university environment with the required facilities for health and safety (Code of Conduct, 2015). Only two interviews were held in a cafeteria because the participants requested this. These places, although public, were quiet and met health and safety standards.

A systematic process of collecting and storing the quantitative data was applied to the survey at the Finnish Institute of Occupational Health, as they contained personal data required for the programme. Therefore, the survey responses without identification information were provided to the researcher. As part of the wider programme, the survey data are owned by the Finnish Institute of Occupational Health, and managed on their premises following the security rules and procedures of that research institution. The author collected and stored the interview data and is the only person with access. The interview data are stored in a secure data environment at Haaga-Helia University of Applied Sciences and protected by a user ID and password, adhering to its data security rules.

Regardless of the research methodology, a well-designed study is one that includes appropriate validation and replication plans and checks to increase the quality of the empirical study. A mixed-methods study can be more complex than a single research design. Special attention was paid to ensure this study was well-designed and followed a systematic analysis and conceptualisation steps (Tashakkori & Teddlie, 2003). It was necessary to be persuasive and rigorous in both the quantitative and qualitative strands (Bryman & Bell, 2015; Creswell, 2014). Typically, in quantitative inquiries, the focus is on the reliability and validity of the data gathering and analysis. In qualitative studies, the

emphasis is on ensuring credibility, confirmability, transferability, and dependability (Denzin & Lincoln, 2011; Lincoln & Guba, 1985). This section outlines the key issues that were kept in mind when collecting data and integrating different methods into the mixed-methods study.

To ensure the validity of the survey and to establish whether the questions measured the concepts accurately, the questions were carefully modified according to the literature and feedback from supervisors during 2016–2017. In addition, face-to-face validity testing of the survey form was conducted in September 2017 among IT professionals at Haaga-Helia University of Applied Sciences, because they are experts in the area of competence development. The reliability of the quantitative data collection and analysis was ensured through carefully proceeding with data handling and analysis using SPSS and tables.

To increase the credibility of the qualitative results, rich, in-depth information was gathered in the interviews, and qualitative and quantitative analyses were integrated when applicable. Naturally, supervisors reviewed the findings and they were very helpful in illuminating possible blind spots and inconsistencies in the analysis process and findings. Utilising correct analytical methods and detailed reporting of data collection, coding, and analysis increased the dependability of the study, and indicated that the findings were consistent and could be replicated.

To enhance the confirmability of the findings and conclusions, a coding diary and a thematic matrix were completed to demonstrate how the findings evolved into the results. The idea of transferability can be problematic for a mixed-methods study, because so much depends on the social setting, context, and researcher (Johnson & Onwuegbuzie, 2004). However, this thesis provides not only the detailed description of the context and methods but also a novel analytical framework, which aims to provide a tool for further studies in other contexts, which increases the transferability of this study. Finally, as has been articulated, the clearer the conceptualisation of a study, the more value it can provide for theory and practice (Corley & Gioia, 2011; Johnson et al., 2006). Therefore, a specific effort was made to identify, clarify, and conceptualise the components emerging from the data.

As referred to earlier in this chapter, a total of 1,119 survey responses were eligible and taken into account from the survey invitation for a response rate of 10.7%, which can be considered relatively low. The response rate was expected to be rather low as a posted letter was not the most suitable method for capturing business employees. Under the circumstances, a postal letter was the only medium available and was chosen for that reason. However, the number of respondents obtained for the analysis was high, with over 1,000 responses across various industries (Creswell, 2014), enabling the usage of planned analytical methods and cross-tables with sufficient response numbers in each cell.

Sampling participants from the survey respondents to participate in the interviews increased the quality of the mixed-methods study and supported the integration of two types of findings into one consistent study (Molina-Azorín, 2011; Teddlie & Tashakkori, 2011). Recruiting interview participants from among the survey respondents was also a practical and convenient approach, as the respondents were open to the topic after replying to the survey. Moreover, the sample size of 27 interviewees can be regarded as credible for delivering a reliable, convincing, and substantial depiction of employees' competence development (Creswell, 2014; Teddlie & Tashakkori, 2011). As Saunders and Townsend (2016) reveal in their study of 248 articles published in top- and second-tier journals, the median number of interview participants is 32.5. In addition, scholars at the National Centre for Research Methods (Swindon, UK) advise students to aim for a sample of approximately 30 interviewees (Baker, Edwards, & Doidge, 2012).

5.7 Concluding reflections

To summarise, this thesis builds on pragmatism, including the respective ontological and epistemological choices. Accordingly, knowledge is understood to address the world partially from real and partially from constructed perspectives (Biesta, 2010; Martela, 2015). The qualitative-driven, mixed-methods approach was chosen as the research strategy because it is the most appropriate methodology for achieving the research objectives and addressing the four RQs. The mixed-methods research design also enables the gathering of data from multiple levels of knowledge and perspectives (Creswell, 2014).

First, both quantitative and qualitative methods were applied separately but then integrated into one study. This integration guarded against simplistic quantitative analysis or non-evidence-based interpretations of employees' competence development. Even though the planning and collection of both quantitative and qualitative data required more effort and time, the rich, broad data and integrated analysis provided a unique opportunity to gain a deep understanding of existing employees' competence development and the factors in their learning environment.

The complexity of analysis between the two types of data, as well as previous literature, was challenging for a novice researcher, although also offered an opportunity to develop competences both for statistical analysis and the interpretation of narratives. Biographical-interpretive insights and statistical analysis are crucial elements in a methodological approach designed to understand middle-aged and late-career employees' competence development and the relationships between agency, employee structures, and social systems. In essence, the combined thematic analysis in this study provided insightful and in-depth evidence concerning agency and employees' internal structures related to competence development. In turn, quantitative data provided evidence of education, training, and on-the-job learning differences between women and men, middle-aged and older employees, and IT and other industries.

However, combining two data sets can bear the risk of not achieving a high-quality analysis (Bryman, 2003; Hesse-Biber, 2010). Therefore, in this thesis, multiple processes and tools were applied to ensure the quality of mixed-methods research following both quantitative and qualitative traditions (Greene et al., 1989; Teddlie & Tashakkori, 2011). Special attention was paid to organising the analysis in practical steps, as presented in this chapter and Appendix 7. In doing so, this thesis contributes methodologically to future mixed-methods research concerning employees' competence development. Moreover, this thesis presents a robust method of how quantitative and qualitative strands of initial analysis can be integrated in one study, and through this gain a more in-depth understanding of the subject in question.

6. Existing employees' activities and motivation for competence development

The preceding chapters position this thesis in adult education and workplace learning systems in Finland, with a particular focus on older workers' training and workplace learning. It has been recognised that working life, particularly in the IT field, requires continuous education and learning, and also that the learning society and work organisations in Finland provide multiple enablers for existing employees in their competence development activities. To understand the complex relationships between employees and the learning environment, however, a new theoretical approach was proposed. Consequently, Giddens' theory of structuration was chosen as an appropriate lens for a conceptual framework to understand how employees engage in competence development activities.

The differences in employees' potential for continuous competence development activities may be fully realised only if it is understood how employees' agency and individual, organisational, and institutional factors in the learning environment are composed and related. The first part of this chapter is devoted to a summary presentation of the novel analytical framework, which will be expanded on step by step in the discussions in the following chapters.

Subsequently, this chapter continues by examining how much and what type of competence development activities employees participate in across Finnish business workplaces. In doing so, it draws an overall picture of employees' competence development in organisations in Finland and addresses RQ1: What types of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces? The chapter ends with a discussion of how the findings contribute to relevant research, particularly to research related to the training and competence development of the older workforce.

6.1 Proposed analytical framework

The core argument underpinning this thesis is that the frequency of competence development activities is an outcome of pre-existing interactions between employees and the learning environment. Consequently, the research proposed that employees' competence development depends on employees' agency and employee structures, as well as on their interaction with social systems in the workplace. The analytical framework illustrated in Figure 12 presented the elements required to be understood when exploring competence development activities and the differences between employees.

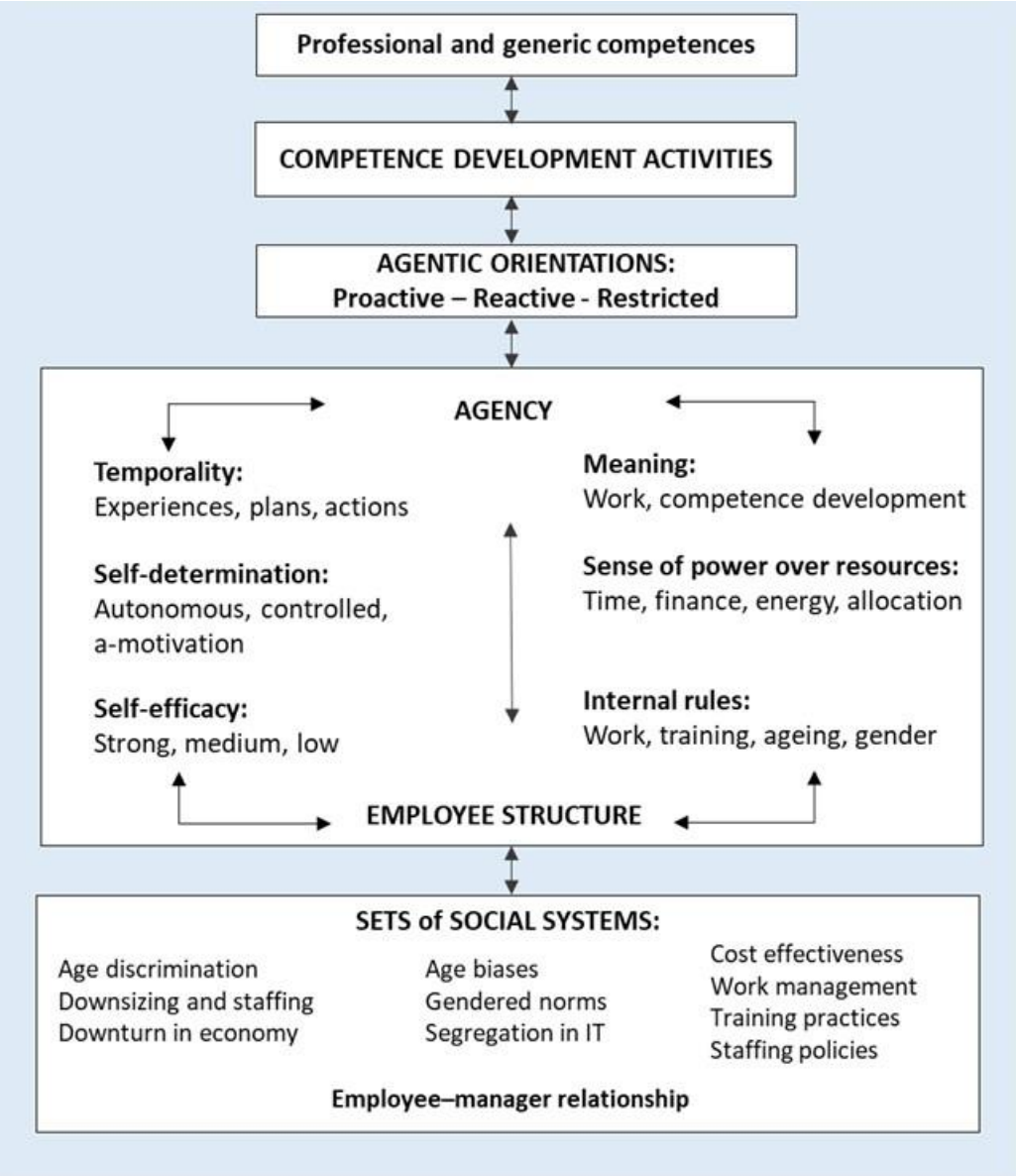


Figure 12. Analytical framework for competence development in Finnish workplaces

Moving from the top of the diagram downward, the analytical framework comprises (1) the professional and generic competences and competence development activities presented in the conceptual framework, (2) the agentic orientations of the employee categories, (3) agency, (4) employee structures, and (5) social systems, which were further applied to the conceptual framework, as illustrated in Figure 10. A short vignette defining these components is provided herein, and these components and the connections between factors are explored in depth in the following chapters.

Professional competences are skills, knowledge, and attitudes related to a particular work domain, such as IT and technical jobs, whereas generic competences include transferrable social, career, and personal competences that apply to different jobs, such as in project management.

Competence development includes adult education, training, and formal and informal on-the-job learning activities, which are outcomes of pre-existing interactions between agency, employee structures, and social systems.

Agentic orientations are distinct classifications of employees into proactive, reactive, and restricted orientations using the components of agency and employee structures. This categorisation demonstrates how employees perceive their learning environment, how they take agentic actions, and consequently how many and what types of competence development activities they participate in.

Agency is an employee's capacity for agentic actions and competence development constructed through temporality, self-determination, and self-efficacy. Temporality reflects the focus of competence development in relation to current, future, or past experiences; self-determination defines the type of motivation involved; and self-efficacy refers to a person's perception of their ability to learn and develop competences. Agency and employee structures are mutually dependent and form a duality.

Employee structures are employees' mental constitutions, comprising their sense of power over available resources, the meanings they assign to work and competence development, and the internal rules they follow in relation to competence development and work.

Social systems are the arrangements and relationships between people in societies and workplaces, which are organised into regular social and organisational practices. A social system comprises the particular individual, organisational, and social factors present in the interactions between people, such as those between employees and managers.

In accordance with the aforementioned conceptualisations, the proposed analytical framework features some fundamental propositions. Employees have proactive, reactive, and restricted agentic orientations towards competence development, which differ in terms of how they construct their agency, perceive the learning environment, and consequently initiate, participate in, or reject the offered activities. In addition, employees perceive similar social systems differently, and therefore, the importance of the learning environment for an employee is related to his or her agentic orientation. Finally, agency, employee structures, and social systems form multifaceted relationships, which together are involved in employees' competence development. An enhanced level of discussion regarding competence development activities and competences is undertaken in Chapter 6, whereas Chapter 7 focuses on sets of social systems in learning environments. Finally, Chapter 8 considers the construction of agency, employee structures, and the relationships between their components. Before the findings related to these concepts are discussed, the next section addresses the types of competence development activities middle-aged and late-career employees engage in.

6.2 Participation in education, training, and on-the-job learning

Competence development encompasses further higher education, training, and on-the-job learning activities that employees participate in, leading to the attainment of professional and generic competences. The analysis, based both on the survey (*N*=1,119) and interviews (N=27), reveals that many employees are active in further education after completing their bachelor's degree, and most engage in training and on-the-job learning in their workplace. As Table 6 illustrates, approximately 85% of respondents participate in at least one type of further education and training activity at work, namely either employer-driven, partner-organised, commercial training, or online learning.

Table 6. Participation by training type and duration

Participation in training	**%, *n***	**Training days in the last 12 months**	**%, *n***
No participation	14.4 161	0 days	15.7 176
One type of training	28.3 317	1–3 days	24.8 277
Two types of training	29.3 328	4–9 days	34.3 384
Three types of training	17.2 192	10–49 days	23.9 267
Four types of training	10.8 121	50 days and over	1.3 15
Total	100.0	Total	100.0

**Training types = Employer-driven training, Partner training, Commercial training, and Online learning*
Source: Own survey data, 2017; Scale Yes/No and open field for days; *N*=1,119

Typically, employees have 4–9 training days a year (34.4%), but 23.9% have long training periods of 10–49 days. In the interviews, it became evident that the long training periods are often related to online courses and employees' part-time self-education in further higher education at university. Table 6 also indicates that differences exist between employees based on their activity levels in training. On the one hand, a group of highly active employees (10.8%) participate in all four types of training activities, but on the other hand, 14.4% of respondents do not participate in any training. The findings thus verify the observation that in Finnish workplaces, there are those employees who can develop their competences and continue to work as well as a smaller group who do not participate at all. In the following two subsections, participation in adult education, training, and on-the-job learning are discussed in more detail and in terms of two key individual characteristics: age and gender.

6.2.1 Active training and further education

Most training in Finland is organised by the employer, as can also be observed in this study (see Table 7). Accordingly, 63.9% of respondents across industries participate in employer-organised training. An obvious explanation for this is that most employers are obliged to provide training for their employees in Finland, and consequently receive

additional cost-related benefits, which were discussed in Chapter 2. Many employees also engage in training organised by partners (44.5%) or commercial vendors (39.2%). On average, 41.5% of all respondents participate in online learning, and in the IT sector this figure reaches up to 56.3% of survey participants. Online learning typically includes courses and materials produced by employers, but particularly in IT, employers also provide commercial online training platforms. For instance, Lynda.com and Pluralsight training provide materials, exercises, examples, and tests of different technologies that employees can individually choose and engage.

Table 7. Participation in training and further education by age cohort

Variable	**Total %, *n***	**40–54 years %, n**	**55–64 years %, n**	**p**
Employer training	63.9 714	63.5 566	65.5 148	0.570
Partner training	40.9 457	39.3 351	46.9 106	0.039*
Commercial training	35.3 395	35.1 313	36.3 82	0.738
Online learning	41.5 464	40.7 363	44.7 101	0.276
Online learning, IT	56.3 138	56.3 111	56.3 27	0.991
Further education	16.9 89	18.3 77	11.4 12	0.094

Mann–Whitney test, significance p<.050*; .010**
Source: Own survey data, 2017; Scale Yes/No; *N*=1,119

Earlier studies have raised the concern that late-career employees in particular participate in adult education and training less compared with younger employees (Felstead, 2011b; Vickerstaff et al., 2015). Consequently, a specific focus in the quantitative study was to understand whether a difference exists between employees according to their age bracket. However, no significant differences (p<.010) were found in training or studying between employees by age group. In Table 7, the only indicative exception is that late-career employees participate more often in training arranged by partner organisations than do middle-aged employees (p<.050). In other words, late-career employees participate in training as much as middle-aged employees do, and their proportions also indicate healthy levels of activity in undertaking higher education

qualifications beyond bachelor's degrees. Accordingly, 22.4% of respondents already hold a master's degree (see Table 2) and 16.9% were studying in higher education at the time of the survey, either in conjunction with working or as full-time students.

The discovery that late-career employees participate just as much in education and training activities as middle-aged employees do can be considered a positive outcome, and one that differs from key quantitative studies related to training and development of the older workforce (Felstead, 2011b; Vickerstaff et al., 2015). As far as education and training are concerned, the age of 55 years has been regarded as the threshold for declining positions in work life, education, and training (de la Maisonneuve et al., 2014; OECD, 2015). In this study, by contrast, no such direct association was found between being aged 55 years and over and engagement in competence development activities.

The contradiction between this and previous studies regarding older workers' participation in education and training, as well as differences between genders, can be partially understood through examining the educational and occupational levels as well as socioeconomic backgrounds of respondents. In this study, participants were active in the labour market, meaning working, studying, or seeking a job. In nationwide research, data also contain inactive individuals, with older citizens maybe taking long sick leave or being retired. In many countries, older women have lower levels of education and employability (Liebermann, Wegge, Jungmann, & Schmidt, 2013), whereas participants in this study were well-educated with relatively high socioeconomic backgrounds. Consequently, well-educated employees are more likely to participate in education and training than are those with a lower level of education (Silvennoinen & Nori, 2017).

Another individual factor associated with competence development activities is gender, and the question that arises is whether women and men differ in participation in education, training, and on-the-job learning. Again, the quantitative analysis here can be regarded as positive. Women and men in the survey participate equally as much in employer and partner training as well as online learning. The only exception is that women (38.7%) appear to be more active in participating in commercial training compared with men (30.2%), as can be seen in Table 8 ($p<.010$). A possible explanation may be related to achieving certification, which is typically required in project manager roles in IT work. This topic is discussed further in Section 7.2.

Table 8. Participation in training by gender

Variable	**Total %, n**	**Female %, n**	**Male %, n**	***p***
Employer training	63.8 704	64.3 440	62.9 264	0.622
Partner training	41.1 454	40.9 280	41.4 174	0.872
Commercial training	35.5 392	38.7 265	30.2 127	0.004**
Online learning	41.5 458	42.1 288	40.5 170	0.594
Further education	16.9 520	19.2 323	13.2 197	0.077

Mann–Whitney test, significance p< .050*; .010**
Source: Own survey data, 2017; Scale Yes/No; *N=1,119*

This study's equal balance of women and men participating in higher education is aligned with studies where further higher education and training do not depend on gender (Inanc, Zhou, Gallie, Felstead, & Green, 2015; Felstead, 2011a). However, as indicated in Chapter 2, women outperform men in higher education statistics in OECD countries, and among the Finish population, women are more likely to participate in adult education compared with men (Kauhanen, 2018; OECD, 2015).

The difference between the statistics and findings in this study can be partially explained by the male-dominated nature of the IT and engineering businesses. Master-level qualifications are often required for higher-ranking job levels (Collin, 2006; Saarikangas, 2017); therefore, male professionals working in these businesses increase the total rate of male participation.

6.2.2 Significance of on-the-job learning

Not only are adult education and training crucial but so too is on-the-job learning in the workplace, particularly for late-career employees (Billett & Van Woerkom, 2006; Meyers, Billett, & Kelly, 2010). Accordingly, the conceptual framework for this thesis comprises on-the-job learning activities divided into two categories: (1) informal on-the-job learning activities, which are designed to increase employees' competences through activities ancillary to the specific jobs or tasks; and (2) formal on-the-job learning

activities, which comprise, for instance, mentoring, career counselling, and job rotation and are targeted towards competence development, although they are achieved in ways other than traditional training methods. IT professionals in this study regard on-the-job learning as particularly suitable for in-depth learning as it provides them with methods for developing their professional competence to an advanced level, as the following excerpt shows:

You can go to a course, but there is no benefit from the trained technology if you don't use it in your work because that is when the real skill in the technology comes into use. Male, Engineer, IT Developer (40).

This quote illustrates how formal training and informal on-the-job learning are interlinked when existing employees learn in the workplace. On-the-job learning activities in Finnish workplaces are presented in Table 9, which shows in particular those under the category of informal on-the-job learning, so essential in competence development across industries. Almost 90% of respondents participated in at least one type of on-the-job learning activity during the previous 12 months. As can be observed in Table 9, respondents most often develop their competences by gathering information on the Internet for their decision making at work (84.9%).

Knowledge gathering is connected to the job employees are doing, and particularly to the IT project to which they are assigned. The data in Table 9 show that employees learn on-the-job when working on a demanding project (53.9%) and in an internal development team (39.8%). IT professionals emphasised in the interviews that client projects are the most important work engagements for learning new technologies. A new project, job, or task is an important way of learning because it provides not only professional knowledge and skills but also new responsibilities, opportunities to work with new colleagues, and enhanced organisational culture and ways of working (Susomrith & Coetzer, 2015; Virtanen et al., 2009).

Table 9. Participation in on-the-job learning by age cohort

Variable	**Total % n**	**40–54 years %, n**	**55–64 years %, n**	***p***
Participation in informal on-the-job learning:				
Internet	84.8 948	85.2 760	83.2 188	0.451
Reading	66.2 740	64.7 577	72.1 163	0.035
Following social media	59.1 661	61.0 544	51.8 117	0.012*
Working on a demanding project	53.7 600	55.2 492	47.8 108	0.047*
Using an internal database	50.4 563	49.3 440	54.4 123	0.171
Internal teamwork	40.1 448	41.3 368	35.4 80	0.109
Content on social media	18.1 202	19.5 174	12.4 28	0.013*
Lecturing	20.1 225	19.8 177	21.2 48	0.640
Participation in formal on-the-job learning:				
Mentoring	25.4 284	25.1 224	26.5 60	0.658
Mentored	10.1 113	10.4 93	8.8 20	0.483
Career counselling	8.2 92	7.4 66	11.5 26	0.045*
Job rotation	5.9 66	6.1 54	5.3 12	0.672

Mann–Whitney test, significance p<.050*; .010**
Source: Own survey data, 2017; Scale Yes/No; *N*=1,119

In the survey and interview responses, the social nature of informal on-the-job learning activities is also emphasised in open data fields. On-the-job learning also occurs through discussions with interesting people, participation in external professional networks, and development of networks at the workplace, and also through guiding others both face-to-face and increasingly online. For some employees, social learning is the most important way to learn, as expressed in the following quote.

It is very nice to have colleagues who have something to share with you and who have different opinions and arguments about how things should be done. As a matter of fact, I have realised that discussions with others develops me the most. Of course, this does not apply to all, as some want to think of themselves. Male, Master of Engineering, Software Developer (48).

This statement indicates that on-the-job learning occasions include opportunities for social, informal learning, which occurs as a continuous, dynamic, and reciprocal interaction between individuals (Bandura & Walters, 1977; Lave & Wenger, 1991). Another good example of learning through interaction is mentoring, understood here as a form of formal on-the-job learning including the process of supporting and coaching a peer employee. In this study, mentoring is the only type of formal on-the-job learning to play a considerable role in employees' competence development: 25.4% of employees act as mentor and 10.1% act as mentee.

Remarkably, no difference existed between middle-aged and late-career employees in relation to mentoring. Typically, literature portrays middle-aged and late-career employees as holding the mentor role and supporting younger employees (Beck, 2014; Ragins, 2012). Traditional mentoring includes coaching, exposure, and visibility as well as behaving as a role model for the mentee; it concerns what the mentor provides and what the mentee receives (Ragins, 2012). In the present study, four late-career interviewees indicated that they learn from younger employees in particular. The following quotation expresses the mixed state of mind of a late-career employee while learning from a younger colleague.

When Java was new, we got two young men from the university into our workplace. I asked them to spoon-feed Java to me, as it was so different from what I was used to… I couldn't underestimate these young guys as they had the latest knowledge… It was a new kind of experience to learn from the younger ones. Female, BBA, Software Developer (59).

The abovementioned example of on-the-job learning is referred to in the literature as 'reciprocal' mentoring (Chaudhuri & Ghosh, 2012). Reciprocal mentoring means that a younger mentor familiarises and teaches technological topics to an older colleague and

both learn to understand the generational differences between them (Ropes, 2013). In this study, these intergenerational learning occasions are informal in nature and contrary to the usual definition of mentoring, which is organised by the HRM function. This kind of mentor–mentee relationship is not about what the mentee receives from the mentor, but rather includes relational behaviours such as personal learning and growth, inspiration, affirmation of selves, reliance on communal norms, shared influence and mutual respect, relational trust, and commitment (Ragins, 2012).

In addition, the employees developed their competences by reading professional material (66.2%) and following social media, such as on LinkedIn or Facebook (59.1%). The interviews revealed that reading formats have shifted from manual books to reading and listening on digital platforms, such as eBooks and electronically-published journals as well as via online learning, not necessarily by reading but rather listening and watching.

You can find lots of video material on YouTube. It is a good thing because you can quickly get the basic information of a topic rather than reading a tens-of-pages-long document. It is quite hard to read during a working day but it is easier to watch a video. Male, BBA IT, Senior Development Specialist (42).

Following and creating content on social media was more frequent for middle-aged employees than for those over 55 years old (p<.050). This may indicate that middle-aged employees have developed their skills to apply social media applications more than late-career employees have. However, considering the importance of project work for learning new competences, a more alarming finding was related to projects. Results showed that even though late-career employees can participate in education and training as often as middle-aged employees, late-career employees (47.8%) participate less frequently in demanding projects than do middle-aged employees (55.2%) (p<.050). This finding can be regarded as a severe issue because keeping up with new technologies in particular requires working on projects. If late-career employees are not recruited to projects that adapt the latest technologies, they may lose their jobs and face barriers to finding a new one.

Furthermore, a difference existed in relation to the receiving of career counselling, which favours late-career employees (11.5%) over middle-aged (7.5%) (p<.050). However, this is not a positive sign for late-career employees. IT professional interviewees expressed how mentoring was related to downsizing situations at work and the career coaching provided for (older) employees scheduled for dismissal. These findings indicate the social systems that are attached to older age and associated with employees' opportunities to participate in competence development in relation to downsizing and staffing, as discussed further in Section 7.1.

Research suggests that large employers with formal training facilities and on-the-job learning practices are better able to provide existing employees with training than are SMEs (Kyndt et al., 2018; Lazazzara, et al., 2013). Accordingly, employees working in large to very large organisations in this study participate more often in employer-driven and online learning than do those working in smaller organisations, as illustrated in Table 10.

Table 10. Participating in training by employer size

Participation in	***Total*** ***%*** ***N***	***Very large*** ***%*** ***N***	***Large and medium*** ***%, n***	***Small*** ***%*** ***N***	***p***
Employer-driven training	64.1 713	70.0 387	65.5 218	47.6 108	0.000**
Partner-driven training	41.0 456	38.5 213	42.6 142	44.5 101	0.232
Commercial training	35.5 395	32.4 179	38.1 127	39.2 89	0.094
Online learning	41.8 465	48.5 268	37.8 126	31.3 71	0.000**
Further education	17.1 90	14.9 38	18.0 29	21.1 23	0.335

Kruskal–Wallis test, significance p<.050*; .010**
Source: Own survey data, 2017; Scale Yes/No; *N*=1,119

The reason for this difference is that large organisations have formal training processes guided by the law and a wide scale of training opportunities online. The following quotation exemplifies such a process:

There is a learning hub on the intranet, you can find very much everything. You can categorise what you look for, but it is quite a jungle. Somebody in HR in Denmark or some colleague here in Finland might perhaps know what courses might be useful. You can of course look yourself at those (online) courses and participate as much as you are able. Female, BBA, SAP Consultant (42).

For the person above, the opportunities her large multinational employer could organise certainly act as an enabler, even though she perceives the need for help in finding an appropriate course. The association between employer size and training of enablers in the workplace is, however, not straightforward. As illustrated in Table 10, there do not appear to be any differences in terms of partner-organised and commercial training by employer size, which is quite an interesting finding. Interviews revealed that partner and commercial training includes the development of competences that enhance employees' expertise in, for instance, the latest technologies. An IT professional working in a small IT consultancy company stressed that training options exist beyond the workplace:

Now, we do not have an opportunity to participate in paid courses, but perhaps you could use [accumulated] working hours [to work] on something you have obtained yourself…but I don't see that this is a problem, because you can find all the information you need from the Internet and communities. Male, BBA, IT Consultant (46).

This employee observes that the Internet and professional networks are available beyond employers' offerings. In fact, almost all IT professionals referred to open access courses as sources of knowledge, which can be seen in the numbers of employees participating in competence development via the Internet (see Table 9). Small organisations might indeed provide more informal occasions and combine formal and informal competence development, as the following example reveals:

When I joined the company, I was a little bit afraid of whether the operations were broad enough, as this is quite a small firm of nine employees. In my experience, it goes that way, that the smaller the company, the wider spectrum of work you can do. This is because there are no departments, but you have only one pool of people where you can

quite freely move around and take the work you feel is best at that time. Male, Engineer, Software Developer (42).

The two excerpts above indicate that employees may perceive the opportunities their employer provides as enabling, regardless of the size of the organisation. The discussion thus far also indicates that employees differ in terms of how they perceive organisational factors in the learning environment, which will be elaborated further in Chapter 7.

6.2.3 Focus on generic or professional competences

All interviewees agreed that continuous competence development is required in IT work. Most IT professionals interviewed recognise the imperativeness of continuous competence development in society, particularly in the IT workplace with its accelerated pace of technological change. The following quotation shows how competence development is associated with the ability to work in the IT industry:

Continuous, intensive learning is an obligation for professionals to work in IT because we need to meet the competence requirements in both the internal and external labour markets. In other words, if you do not develop your competences, you cannot work in IT. Male, Master of Engineering, Solution Designer (49).

Interviewees explained, however, that there are two main career paths in the IT industry: generic roles, such as project manager, and technical roles, such as solution designer. Project managers are required to cope with a wide range of competences to manage large entities, such as negotiation skills, risk management, and change management, but they must also understand technical systems and environments to be able to lead the technical team. Simultaneously, they are expected to have generic competence, such as the right attitudes, as demonstrated in the following quotation:

You need to be emotionally and socially intelligent, so that you get along with people. You need to be able to discuss [a range of issues] with people, take them into account, praise whenever possible, and get people to do things.
Male, Engineer, Project Manager (49).

The interviews revealed an association between gender and the role of an employee in IT work. Women are perceived to be more suitable for generic roles, as the following excerpt shows:

Now we have more women in the company because of more research and service design work. When we look at the technical part, where I am, almost all employees are men. I have been in situations many times where men are technical solution developers and women are system users. Really, this is quite a caricature of IT!
Female, MBA, Service Designer (47).

The above female employee characterises the beliefs and expectations regarding what types of work women typically do in the IT field. These stereotypes belong to social systems emphasising the ideal of young male employees in the IT field, with implications too for women's opportunities in their career and respective on-the-job learning, to be further discussed in Section 7.2. In turn, technical (male) experts struggle with choosing which technology to focus on in their competence development. They consider that they need in-depth technological skills, and thus they feel pressured to select one technology to maintain high-level expertise in a world of changing technologies. Many of the IT professionals interviewed were uncertain what technologies to focus on, as is apparent in the following quotation:

It is a problem; in IT, technologies are developing so quickly that no one knows what technologies you need next. We couldn't foresee years ago that Java skills would now be needed everywhere. Female, IT BBA, Software Developer (44).

However, whilst focusing on a specific technology can be valuable for an expert in the field, it can also make them vulnerable to changes in internal and external labour markets. Specialising in a particular technology may lead to organisational silos and thus restrict future career opportunities. If a specific technology is replaced or becomes unusable in the workplace, or related work is outsourced, a worker with expertise in a certain area can lose his or her employability overnight. This is what happened to many ex-Nokia workers when the Symbian systems were outsourced to Accenture in 2011 and again when Nokia mobile technologies were discontinued in 2016 in Finland. In this study, technical experts did not refer to the anticipated disruption to IT work caused by,

for instance, robotics and artificial intelligence, as some research suggests will happen (Degryse, 2016; Fenwick & Edwards, 2016). Instead, technical experts regard automatisation and digitalisation as new opportunities to specialise in, amongst other technologies such as cloud services and big data analytics.

6.3 Motivation for competence development

Motivation to learn is connected to employees' competence development, revealing whether an employee is motivated and what reason exists to develop competences. The survey data show that the majority of middle-aged and late-career employees are fond of learning (3.95), and thus are willing to develop their competences, as displayed in Table 11. Employees develop their competences because they want to respond to the new competences required at their current place of work (3.43), or they want to obtain inspiration for their work, such as through using new tools (2.87).

Table 11. Rationale for competence development by age cohort

Variable	**Total** ***M/SD*** ***n***	**40–54 years old** ***M, n***	**55–64 years old** ***M, n***	***p***
Fond of learning	3.95/1.019 1,096	3.96 876	3.92 220	0.719
Current work requirements	3.43/1.206 1,087	3.43 872	3.47 215	0.736
Inspiration for work	2.87/1.310 1,082	2.91 870	2.72 212	0.049*
Compulsory	2.49/1.318 1,083	2.47 868	2.59 215	0.238
Career change	2.13/1.404 1,080	2.21 865	1.83 215	0.000**
Colleague recommendation	2.09/1.093 1,076	2.10 863	2.02 213	0.692
Manager initiative	2.02/1.080 1,081	2.02 866	2.02 215	0.964
Downsizing	1.94/1.305 1,077	1.92 863	2.02 214	0.258
Training plan	1.92/1.104 1,077	1.88 863	2.04 214	0.048*
Unemployment	1.55/1.223 1,084	1.49 864	1.81 220	0.000**

Mann–Whitney test, significance p<.050*; .010**; *M*=Mean, *SD*=Standard Deviation; *N*=1,077–1,096 Scale 1–5, (1 = not very important to 5 = very important); Source: Own survey data, 2017

A positive finding is that late-career employees do not differ from middle-aged employees in terms of willingness to learn. Contrary to previous literature, no significant differences ($p<.010$) exist between age brackets in relation to the most important motives for competence development, as illustrated in Table 11. Accordingly, the stereotypes related to older age and unwillingness to learn (Bertolino et al., 2011; Maurer et al., 2003) do not hold true for the well-educated Finnish workforce. However, motivation conceptualised through self-determination reveals that employees differ in terms of their type of motivation, to be discussed in conjunction with agentic orientations in subsection 8.1.

The workplace as a primary learning environment forms the framework and set of relationships in which employees develop their competences. The data in Table 11 also show that colleagues' recommendations (2.09) and managers' initiatives (2.02) are triggers for some employees to participate in competence development activities. However, the roles of colleagues and managers are not that influential for all employees, contrary to previous literature that shows that the manager has an essential role in supporting employees (Ellström & Ellström, 2014; Van Vianen et al., 2011). The survey also reveals that the implementation of a training plan plays a role only for some employees. Similarly, some employees participate in training because it is compulsory in the workplace (2.49).

The survey data in Table 11 reveal that middle-aged employees aim to change career more often (2.21) than do late-career employees (1.83). This illustrates the association between working life stage, career, and competence development (Biesta & Tedder, 2007; Evans, 2007; Meyers et al., 2010). In addition, more late-career workers report unemployment as a rationale for their competence development (1.81) compared with their middle-aged counterparts (1.49). This might be because employees aged over 55 years are aware of their relatively weaker position both in internal and external labour markets, and therefore they seek training. Most of the IT professionals interviewed recognised the association between motivation, work, and their engagement in competence development, as the following excerpt shows:

When I studied at a younger age, I was just aiming to pass the exams… and did not think about how to utilise what I was learning. Today, I am motivated to study and learn when

I see how to attach the learning to something concrete in my work. That is kind of a natural development. Female, Engineer, Purchase Manager (42).

This quote also indicates that even though a direct association does not exist between chronological age and participation in competence development activities, there are multiple social systems and perceptions related to older age. These social systems are an essential part of the analytical framework when investigating competence development, as discussed in the next chapter.

6.4 Discussion and conclusions

Existing adult education, workplace learning, and organisational research has often investigated training, adult education, and informal learning processes without providing specific definitions of the activities investigated (Billett, 2004; Ellström, 2011; Tynjälä, 2008). The conceptualisation of competence development in addition to the field study not only included further education and training but also explicitly defined formal and informal on-the-job learning activities. The analysis in this chapter verifies the definitions presented in Chapter 3 (Figure 4). The findings support the view that a distinction must be made between formal training and informal learning in any related analysis (Felstead & Unwin, 2017; Warhurst & Black, 2015); however, this thesis emphasises the importance of clear definitions and asserts that observable activities related to informal on-the-job learning are necessary.

In terms of the frequencies and forms of competence development activities in Finnish workplaces, the evidence in this chapter indicates three particularly positive outcomes. First, both middle-aged and late-career employees actively pursue further education after completing their bachelor's degrees, and engage in training and on-the-job learning in their workplaces. These results show that concerns relating to older workers' lower training participation levels (Felstead, 2011b; Vickerstaff et al., 2015) do not apply to highly educated professionals in Finnish workplaces. Consequently, this finding reveals that no direct association exists between employees' (older) age as an enabling or constraining factor and their participation in training, as previous literature has suggested (de la Maisonneuve, et al., 2014; Felstead, 2011a, 2011b; OECD, 2015).

The second positive outcome is that in both age groups, employees' willingness to learn new skills was the most important motivator for undertaking competence development activities, contrary to previous literature that has attributed lower motivation to older workers (Bertolino et al., 2011; Maurer et al., 2003). The findings thus show that employees' motivations for participating in training and learning are not associated with individuals' chronological age. In relation to employee motivation, the picture of older workers that emerged signified that the stereotypes of declining motivation and ability to learn (Brough et al., 2011; Finkelstein et al., 2015; Fisher, et al., 2017) are not valid for most employees in this context.

The third positive finding is that women and men in the survey participated equally in employer and partner training and online learning. This finding rather supports studies that indicate that competence development does not depend on gender (Felstead, 2011a; Inanc et al., 2015), in contrast to nationwide education and training statistics (OECD, 2015).

In addition, the activities under the category of on-the-job learning were found to be essential for employees to keep their competences up to date, which is aligned with earlier literature (Billett & Van Woerkom, 2006; de Grip & Smits, 2012; Fenwick, 2012; Malcolm, et al., 2003). This thesis enhances the understanding of employees' workplace learning by explicitly defining informal on-the-job learning in relation to project work with clients, internal teamwork, and discussions on social media. The value of the specific definitions is that they enhance the measurement of such activities and their planning and management in workplaces.

Moreover, the findings of this research raise serious concerns about age-related discrimination in on-the-job learning, which constrains late-career IT professionals' continuous competence development. The evidence reveals that late-career employees participate less frequently in new projects than do middle-aged employees in Finnish workplaces across industries. This is crucial information, because participating in new projects was found to be the most vital means of maintaining specific professional and technical skills, and it is more important than employer training activities, which tend to be generic in nature. Literature has addressed the importance of on-the-job learning for older employees, but neglected to examine the linkage between employers' HRD

practices and employees' access to on-the-job learning activities. Another critical finding is that differences existed between men, who were regarded as more suitable for technical jobs, and women, who were identified with generic roles in IT. This gendered segregation of IT jobs influences employees' access to on-the-job-learning, but is not yet recognised as a factor involved in informal learning. Both of these issues will be discussed further in the next chapter.

Learning environments in workplaces differ between large organisations and SMEs, as found in the previous literature, with those working in large companies having privileged access (Kyndt & Baert, 2013; Poell, 2014). The findings of this research, however, show that the size of an organisation does not directly affect employees' opportunities to participate in training and on-the-job learning; indeed, both enablers and constraints are associated with organisational size. It is thus indicated that employees differ in terms of how they perceive organisational factors in relation to learning environments, as will be discussed further in the following chapters.

It can be concluded that the association between individual factors and employees' participation in competence development activities is more complex than previous literature indicates. The quantitative analysis by age, gender, and motivation revealed that middle-aged and late-career employees, as well as men and women, actively participate in general competence development activities; however, the qualitative analysis revealed that age and gender exert subtle influences in staffing and are linked with other norms in the IT industry. As the holistic analytical framework presented at the beginning of this chapter addresses, the frequency of competence development activities is an outcome of pre-existing interactions between employees and multiple factors in learning environments. Consequently, a need exists to explore the different sets of individual, organisational, and institutional factors that influence employees' participation in competence development activities in a particular context.

7. Sets of social systems bundling individual, organisational, and institutional factors

The previous chapter painted an overall picture of existing employees as active and motivated in their own competence development. Evidently, the differences in existing employees' engagement in competence development must be approached in ways other than organisational size, chronological age, or gender *per se*. This chapter explores the factors that middle-aged and late-career employees recognise as being involved in their competence development, thereby addressing RQ2: How do different institutional (e.g., education opportunities and work legislation), organisational (e.g., size and type of work), and individual factors (e.g., age and gender) enable or constrain middle-aged and late-career employees' competence development in Finland?

This chapter reveals how psychosocial attributes of age and gender are associated with organisational practices of staffing, downsizing, and training, as well as with work management procedures. In addition, institutional factors related to the downturn, availability of young technical employees in the external labour market, and discrepancies in work legislation in Finland are involved in employees' perceptions of employers' practices as being cost-driven with respect to training, staffing, and downsizing. Most importantly, this chapter reveals that employees perceive three sets of social systems of importance in the Finnish workplace, which are present particularly in the relationship between an employee and a manager.

The social systems are arrangements and relations between people in society and in the workplace organised in regular social and organisational practices. Furthermore, a set of social systems comprises particular individual, organisational, and societal factors present in the interaction between people, for instance, between an employee and a manager and between employees and HRM staff. This chapter thus suggests that instead of investigating the influence of different factors under the categories of individual, organisational, and institutional, combinations of these factors must be understood when exploring employees' participation in competence development activities.

7.1 Set of social systems related to age discrimination in staffing and downsizing

This section discusses the first set of social systems in Finnish workplaces, comprising age-biased myths and subtle age discrimination in dismissal and recruitment procedures. Late-career and middle-aged employees participate equally in employer-organised training, as addressed in Chapter 6. This finding could indicate that there are non-age-related constraints for late-career employees in their access to training in Finnish workplaces.

In the interviews, none of the IT professionals claimed that their manager told them they were too old for competence development, even when a specific question regarding this was posed. On the contrary, there was an example of an IT employee being sent to an expensive commercial software training session at the age of 57 years. However, the interviews did reveal age discriminatory norms related to recruitment practices in the Finnish labour market. Age discrimination is understood to exist when employees perceive they are 'not being allowed to do something that they are capable or willing to do, just because of their chronological age' (Parry & Tyson, 2011, p. 122). As the following quotation indicates, 30 years ago layoffs were targeted at recently recruited employees, often those younger in age:

In the 1990s, if there was a rare need to downsize an organisation, the younger employees were fired because they were always expected to get a new job. It was thought that the old employees had already given their work effort to the organisation, and therefore, they needed to be taken care of. In the 2010s this has turned upside down. Male, Engineer, Development Manager (56).

Similar to the quotation above, four interviewees reported that 'the management' in the workplace considers them too old to even work in IT. These claims are aligned with literature showing that, in practice, employers do not retain or recruit older workers as much as younger workers, at least not in a downturn (Billett et al., 2011a; Conen et al., 2012). A novel finding of this study is that the priority for recruiting young employees also has implications for employees' opportunities to learn on-the-job, as expressed in the following quote:

If employers kept older employees at the workplace and their competences were appreciated and transferred to the next generations, it would be long-lasting competence development. Male, Engineer, Development Manager (56).

This quotation shows that age discrimination in staffing procedures constrains existing employees from developing their professional competences through on-the-job activities, and also from remaining in their current job. The set of social systems, including age discriminatory practices in recruitment and downsizing, has an impact not only on late-career employees' access to new jobs and projects but also on their training, as expressed directly in the following quote:

It seems to be that the older you grow, the younger they hire into the firm. It is perhaps ok, but it is also that we older [ones] are not trained any more. Male, IT BBA, Project Manager (53).

As this quotation shows, employees perceive the influence of older age on their access to training as being associated with the recruitment of younger employees. Earlier literature suggests that employers' focus on investing in the training of younger employees is because they regard them as bringing the best returns (Lazazzara et al, 2013). Since this type of human capital approach is dominant in the literature, the following specific question was posed in the survey: 'To what extent have the following factors hindered your competence development during the past year (12 months)?' The following option was provided as a response: 'My employer considers me too old to invest in my training'. As Table 12 demonstrates, late-career employees more often perceive their older age as more of a constraint on their employer investing in their training (2.29) compared with middle-aged employees (1.37) ($p<0.010$).

Table 12. Employees' perceptions of employer choosing not to invest in training

Variable	**Total *M/SD* *N***	**40–54 years M/SD, n**	**55–64 years M/SD, n**	***P***
Age discrimination, all	1.55/1.059 1,080	1.37/ 0.850 865	2.29/1.437 215	0.000**
Age discrimination, IT	1.54/1.055 242	1.34/ 0.803 196	2.67/1.498 46	0.000**

Mann–Whitney U test, significance p<.050*; .010**; *M*=Mean, *SD*=Standard Deviation, *N*=1,119; *n*=242
Source: Own survey data 2017; Scale 1–5, 1=does not influence at all to 5=influences very much

The previous analysis, however, revealed (see Table 7) that middle-aged and late-career employees participate equally in employer-organised training and online learning activities. Given the fact that in Finland age discrimination is forbidden in the workplace by legislation, an employer representative cannot communicate a preference for a younger candidate aloud. However, HR staff can communicate the competences they require from the external labour market, implicitly referring to younger employees having the skills needed. As in the following quote, an employer can also refer to the timing of the competences needed:

I was told directly that we hire externally because we get the competences needed right away. However, they also told me [during the recruitment process] that it was great that I applied for the job and showed my interest. But it may be that they only say that. Male, IT BBA, Project Manager (53).

Even age discrimination is not communicated openly; most of the IT professionals interviewed recognise the social systems embedded in recruitment and dismissal situations. Several interviewees indicated that the 'best before date' can be as low as 40 years old in the IT industry. IT professionals also recognise that younger employees are valued more compared with older ones because young IT professionals are regarded as more technologically advanced employees and, for instance, software development is more appropriate for them.

Therefore, HR can openly communicate that the competences required among existing employees is lacking, even though legislation states that employers should continuously

train their existing employees (Employment Contracts Act, 55/2001). This finding shows that the norm of employers organising three days of training annually for their employees does not actually increase the required professional competences, such as skills to use the latest technology. This is not only a constraint for employees but also an indication that organisations may not invest in the most beneficial training from the perspective of their business. A further discussion of social systems concerning cost-driven approaches in the workplace is found in Section 7.3.

Nevertheless, employees may perceive discrimination towards their older age in their access to training, even though this is not supported in the present quantitative analysis. The key finding is that the social systems related to younger and older employees in recruitment and dismissal may result in employees perceiving age discrimination in access to training. The perception of age discrimination can also lead to a situation where late-career employees start to consider their remaining working careers and the competences they might need in general, as indicated in life course and career theories (Biesta & Tedder, 2007; Evans, 2007; Templer, Armstrong-Stassen, & Cattaneo, 2010) that refer to the component of temporality in agency.

Older age is also associated with weakening health situation, and thus, declining opportunities for older employees to engage in competence development activities. This kind of approach is found in earlier literature, where poor health and lowered workability act as constraints on training (Beck & Quinn, 2012; Crawford, Lori, & Jones, 2011; Ilmarinen, 2009). The respondents in this study perceived themselves as having a relatively high level of workability, and no association existed between older age and the perception of workability (Table 4). More importantly, there was no association between workability and participation in competence development among IT professionals working full time.

7.2 Set of social systems related to gender and age biases in IT work

A second social system revealed in this thesis is related to age bias and gendered segregation in IT work, together with having small children. While prior literature focuses on the variables of age and gender and their influence on competence development (OECD, 2015), the findings presented in this chapter reveal that these characteristics are a linkage between and with other factors. Consequently, the combination of priority for younger employees and their technical skills, as well as the expectation of women to take care of children, influence women's on-the-job learning and their progress to more valued technical jobs during their career.

However, narratives in this study reveal that there are social systems reflecting parallel gendered attitudes and age biases to those in the IT industry. Both women and men face age discriminatory attitudes when seeking a new job, mainly compared with younger men. Late-career women may face double constraints, as expressed in the following quotation, which exemplifies the intersection of age and gender:

After I became unemployed at the age of 58 years old, I quite quickly noticed that I am a little bit too old to apply for a new job in IT. In one recruitment interview, I was told that 'We have better younger men here'. Think about it! He used three attributes that he should not have used. Better. Younger. Men.
Female, BBA, Software Developer (59).

The quotation illustrates the strong segregation between genders in IT work roles that can set constraints particularly for late-career women in their career and competence development (Longarela, 2017). Previous research reveals how men tend to have occupations that are well-paid and involve a degree of authority over others, such as management positions (Huber & Huemer, 2015; Ilmakunnas & Ilmakunnas, 2014). As presented in Table 13, women have significantly lower levels of participation in demanding projects and of acting as mentors or working as managers compared with men across industries.

Table 13. Manager position, demanding projects, and mentoring by gender

Variable	**Total** ***%, n***	**Female** ***%, n***	**Male** ***%, n***	***P***
Manager, all	21.1 231	16.2 110	29.2 121	0.000**
Project work, all	53.9 595	51.0 349	58.6 246	0.015**
Mentor, all	25.3 279	21.3 146	31.7 133	0.000**
Manager, IT	17.0 41	12.6 14	20.8 27	0.094
Project work, IT	58.1 140	55.9 62	60.0 78	0.517
Mentor, IT	24.1 58	15.3 17	31.5 41	0.003**

Mann–Whitney U test, significance p<.050*; p<.010**
Source: Own survey data, 2017 ; Scale Yes/No; *N*=1,119*; n*=214/IT

These findings reflect the fact that men work more often as managers, senior level professionals, and in technical roles, and they have higher learning demands and more opportunities for training and on-the-job learning through, for example, project work (Inanc et al., 2015). Women in Finland also work in administrative and supportive jobs, which might become a disadvantage with respect to on-the-job learning opportunities and the development of a woman's career. Furthermore, the data show that men mentor others more frequently than do women, indicating that men may be appreciated more as possessing the relevant competences that can be shared with others.

In contrast to other industries, the IT business is slightly different because there is not a significant difference in managerial positions between women and men working in IT workplaces (Table 12). Similarly, no difference exists between women and men participating in demanding IT projects, as is the case in other industries. The latter can be explained through the nature of IT work of being generally managed through projects, as discussed earlier; therefore, both men and women have opportunities to work in projects and learn on- the-job.

The equal number of managerial positions held by men and women can, at first sight, be regarded as a positive finding for women in IT organisations. However, narratives of

participants reveal that the manager's position, often leading a project rather than a function, has a lower status value compared with technical expertise within the IT field. Thus, even though managers can officially be in higher positions in the organisational hierarchy, technical roles are considered more valuable, also in terms of higher salaries. In addition, technical roles contain more opportunities to engage in continuous technical skills development, whereas when one becomes a project or team leader, it can be difficult to maintain specific technical expertise (Holth et al., 2017).

More crucially, this study shows how the vertical segregation of IT roles between genders influences middle-aged and late-career employees' employment, and consequently their on-the-job learning. In turn, women tend to be concentrated in the social and services sectors, whilst men are concentrated in technical occupations (Vuorinen-Lampila, 2016). This type of vertical segregation has resulted in more (young) men employed in the IT industry in Finland than women. The following example shows how men are considered to have superior technical competences to women and how that affects the credibility of (middle-aged) women working in IT:

There have always been those old men who call me 'girl' even now in my forties, similar to 20 years ago. I remember, when I was an under-30-years purchase manager and negotiated on something, then particularly older engineering workers asked 'Do you have any mandate on this or do I need to call your Manager?' That kind of situation. Female, BBA, Programme Manager (43).

The above quotation shows that the intersection of age and gendered norms, attitudes, and myths are present not only in workplaces but also in the wider network of client and partner IT organisations. Importantly, these attitudes also concern competences that women possess and the roles women are believed to be suitable for within IT. This may partly explain why women may take agentic actions that place them in less technical and more generic roles, such as project managers. Actually, such a move from a technical to a more generic or managerial role is common in the IT career path, particularly for women, although it can lead to a loss of technical expertise and, consequently, to a lack of confidence in skills and thus career development (Holth et al., 2017).

Another gendered expectation, particularly for younger women, is the norm of them taking care of small children. Women may prioritise children and family duties because they want to or because they are expected to do so, which naturally influences their career (Atkinson, Ford, Harding, & Jones, 2015). This study exemplifies how taking care of small children can constrain not only career progression, and balancing of work and other life, but also act as a barrier to competence development activities. From the survey, employees with small children (0–6 years) participate less in employer training and online learning than do employees who have older children or no children at all, as illustrated in Table 14.

Table 14. Participation in training with or without small children

Participation in	***Total*** ***%*** ***n***	***No small children*** ***%***	***Yes small children*** ***%***	***p***
Employer training	63.9 715	65.6 648	51.1 67	0.001**
Commercial training	35.3 395	35.2 348	35.9 47	0.883
Partner training	40.9 458	41.8 413	34.4 45	0.103
Online learning	41.6 465	43.2 427	29.0 38	0.002**

Mann–Whitney test, significance p<.050*; .010**
Source: Own survey data, 2017; Scale Yes/No; *N*=1,119

The numbers in Table 14 may partially be an outcome of the relatively long parental leave that employees, or typically mothers, are entitled to take in Finland. When on parental leave, an employee is allowed to participate in employer training, but the interviews indicated they rarely do so. Even though both men and women might perceive constraints in managing time and having the energy for training and learning when they have small children, in the interviews more women than men identified small children as a reason for less activity in their competence development. The following example effectively illustrates the intersectionality between gender, perception of being middle-aged, and the pressure for continuous competence development in IT:

For me, being busy at work takes all my time and energy in the workplace. If you want to keep your employability in your 40s, you should develop yourself in your free time and learn new ways of coding. Really, if you are middle-aged and have young kids at home and have full days… Who has the brain capacity? I feel many times that the only thing I can do after work is to gaze at Emmerdale or something like that… Female, BBA, Project Manager (43).

For many employees, balancing work, small children, and competence development is a challenge as in the case above. However, three of the women interviewed consider parental leave to also be an enabler for competence development, as explained in the following quote:

Last time I was on parental leave I applied and was accepted to masters studies in engineering. When I started working and had a small child, I had a couple of years break in studying. Now, when I began the current parental leave, I continued those studies. My idea is to participate in the courses I am interested in and that I can utilise when applying for a new job after the parental leave. Female, Engineer, Project Manager (42).

This excerpt reveals that for such a woman, categorised with proactive agentic orientation, parental leave is an enabler to study, even when full-time work and small children are combined. The impacts of gender and having small children is thus contingent on other factors in the learning environment, such as the availability of adult education during parental leave, the type of work, and the support an employee may have. As the discussion on agentic orientations will reveal, proactive employees possess a strong sense of power over resources related to competence development, which influences their capacity to take action.

Some women recognise these gendered and age-related social systems in the workplace, but for most employees, particularly men, these social systems are subtle in the sense that the employees may not necessarily recognise they possess and maintain the systems themselves (Holth et al., 2017; Riach et al., 2014; Zanoni, 2011). This became evident in interviews when most men and women wanted to stress that equality exists in the IT industry, at least compared with other industries. Several male

participants underlined that there was no gender discrimination in the workplace, as the following excerpt illustrates:

Women are a minority in our firm, perhaps 20%, but our HR director is a woman. We don't have such a thing [age discrimination]*. If we get a competent applicant, man or woman, then the person who is the most capable gets the job.* Male, Engineer, Hardware Specialist (44).

As in the case above, employees may implicitly refer to the norm that gender discrimination is forbidden, and therefore not possible. These employees also believe that competences are the primary selection criteria in recruitment and gender is not involved. The above quotation, however, reveals that employees do not notice the segregation of roles and domination of men in the technical field, which gives rise to constraints for women. Indeed, several of the men interviewed reflected on the gendered and stereotyped idea of 'feminine influence' at work (Riach et al., 2014; Zanoni, 2011), as the following excerpt demonstrates:

I feel like it is an assett to have both men and women in the workplace. It would be odd if everyone were men. Perhaps women bring the feminine 'touch', even though doing the job is similar to men and women. If you think about discussions during coffee break, women bring a nice atmosphere there. Male, Master of Engineering, Software Developer (48).

This quotation embeds the subtle gendered attitudes and stereotypes that represent 'second-generation gender bias' (Eagly and Carli, 2007; Ely et al., 2011; Ibarra et al., 2013). This refers to the overt discrimination of women not being able to access certain work or positions being replaced by more subtle, less visible forms of prejudice.

In the literature, constraints similar to taking care of small children are reported that are related to taking care of elderly parents (Kyndt & Baert, 2013). In this study, only 13% of respondents have other care duties, with no significant difference between men and women. In contrast to the literature, employees' other care duties do not make a difference in terms of training participation or on-the-job learning. This reflects the welfare regime. Older citizens in Finland are more commonly taken care of in elderly

homes and health institutions than by their adult children, which is the norm in Nordic countries and different from many other countries (Ilmarinen, 2001).

In addition, the family economy is recognised in the literature as a constraint on participation in education and training, particularly for a full-time student. The survey responses referred to in Chapter 5 show, however, that most middle-aged and late-career employees have attained economic stability by their current life stage. Approximately 70% of respondents perceived their family's economic status as good or very good (Table 1). In addition, the cost factor for employees' participation in training at work in Finland is eased because employers typically cover the costs of work-related training (Tikkanen et al., 2015). Thus, the family economy alone may not be a constraint, but when combined for instance with unemployment or health problems, it can lead to a sense of losing power over resources for education and training as part of employees' construction of agency.

7.3 Set of social systems related to client and cost priorities

A third set of social systems revealed in this thesis is the combination of prioritising clients at work and optimising costs in terms of employer training and recruitment. The way employers manage work and training is also associated with employees' perceptions of whether they have power over the time and energy they have to use for competence development activities. This section first reveals how employees perceive organisational and individual factors constraining their competences, and then reveals how the factors are intertwined within a social system, which eventually influences employees' perceptions of enablers and constraints in the learning environment.

In general, an IT workplace can be understood as an expansive learning environment in terms of stimulating work tasks and opportunities to learn anew, as identified in previous literature (Fuller & Unwin, 2011). As discussed earlier, IT professionals can develop their professional competences in particular when working on demanding projects. The workplace is also an arena for formal training and an environment that enables or constrains employees' adult education and self-learning.

Table 15 illustrates organisational factors that employees generally perceive as constraining their opportunities to engage in competence development. On average, employees regard the lack of adult education opportunities (2.57) and of employer training offerings (2.48) as more severe constraints compared with individual factors, such as poor family economy (1.92) or unwillingness to develop competences (1.77).

Table 15. Perceived constraints by gender

Constraint:	***Total M/SD n***	***Female M/SD N***	***Male M/SD N***	***p***
Lack of education opportunities	2.57/1.237 1,079	2.59/1.251 674	2.53/1.214 411	0.485
No employer offering	2.48/1.373 1,074	2.48/1.412 665	2.48/1.310 1,074	0.687
No time	2.40/1.264 1,073	2.40/1.314 665	2.40/1.181 408	0.626
Mental load	2.33/1.289 1,079	2.41/1.349 669	2.19/1.174 410	0.026*
No energy	2.32/1.214 1,080	2.35/1.251 669	2.27/1.151 411	0.514
Lack of information	2.14/1.199 1,080	2.16/1.236 666	2.12/1.139 412	0.899
Physical load	1.94/1.163 1,077	1.95/1.194 667	1.94/1.112 410	0.640
Economic problems	1.92/1.146 1,081	2.00/1.188 668	1.79/1.064 413	0.008**
Other life issues	1.79/1.131 1,080	1.81/1.155 671	1.75/1.090 409	0.534
Lack of willingness	1.77/1.002 1,080	1.68/0.977 667	1.91/1.027 413	0.000**

Mann–Whitney test, significance p<.050*; .010**; *M*=Mean; *SD*=Standard Deviation; *N*=1,119
Source: Own survey data, 2017; Scale 1–5; 1=not constraining at all to 5=very constraining

An interesting finding is employees perceiving that they lack adult education and training opportunities, because most respondents actively participate in different types of competence development activities simultaneously (Table 7). One explanation is that the standard deviation in relation to these constraints is at a relatively high level (over 1.0), illustrating that employees' responses are spread over a wider range on the 1–5 scale. This means that there are groups of individuals who perceive the lack of education and training as highly constraining and others who do not.

Another explanation is that that the lack of employer training could refer not only to access to training but also to the mismatch between, on the one hand, competence development activities and the content on offer from employers and, on the other hand, to the methods and competences that employees perceive they need in their current work and in the future. Interview participants stated that both face-to-face and online training organised by their employers are typically related to subjects targeting all employees, such as company-specific information or knowledge of new legislation. In one case, an employer openly informed existing staff that they were going to apply a new technology within the company but HRD staff concurrently organised training about corporate ethics, data security issues, presentation skills, or the English language, rather than on the new technology. Participants also referred to cost-driven approaches related to training practices; for instance, a decrease in face-to-face training sessions and increase in online training. The following is a typical example of the transformation implicitly entailed in the goal of lowering costs:

In the 1990s we had training abroad, for example, three-week sessions to learn some new hardware. Today, a support centre fellow comes to Finland for a day, and tells and shows pictures… or there are webinars including chatting with the trainer but I have never been in those. I have participated in online courses off-line… but I am such an old school man that I need to try it [hardware] myself. Male, Engineer, Hardware Specialist (58).

For employers, these perceptions embed the idea of aiming for optimal investments and following a human capital approach (Becker, 1964). The cost-cutting of training budgets is more visible, which some employees perceive as a constraint, as the following quote shows:

Before, I used to try harder to gain access to [external] training courses, but… If only one or two from our team per year can travel to a conference, it is more about luck. That has raised the bar for me to start seeking more information on these courses. Male, IT BBA, Project Manager (42).

The above employee has internalised the cost-related norms in the workplace. However, the following employee working in a small IT consultancy company found

another solution, which indicates how employees can also find resources beyond their employer:

Somebody found these courses on the Internet and shared the link in the company chat. He planned to participate in them and then I looked at it and decided to join too. I also did a Java Script programming course, which was quite cheap, as the training participants shared their assignments, and that way they could run training courses online with small resources. Male, Engineer, Software Developer (40).

In addition, the cost-driven approach in the workplace is recognised in relation to recruitment situations. Several interviewees consider that one driver for employers to prioritise younger employees is their lower salaries compared with middle-aged and late-career employees, as shown in the following excerpt:

Old employees are fired, and the young are retained because the latter have lower salaries and they do not argue back [laughs]. Male, Engineer, Development Manager (56).

This quote shows that there are social systems that include older employees being more expensive employees, and thus employers will prioritise younger employees. A similar social system, including the cost-element, is related to competence development in outsourcing situations, which have been typical in the IT industry over the last two decades. Finnish IT organisations have transferred technical work to employees in countries with lower costs compared with Finland, such as India, China, and Poland.

At some point, we had to transfer the knowledge to employees in a lower-cost country. People did not necessarily want to share their insights. That caused quite serious disputes after which people were not on good terms anymore. Female, BBA, Project Manager (43).

Understandably, teaching one's own skills to another employee who is about to take one's job is not a favoured task. In addition, outsourcing and downsizing may influence relationships between employees in the workplace. As the above excerpt shows, outsourcing and the related downsizing may involve long-lasting impacts on the

workplace learning culture, and also on the relationships between managers and employees.

In addition, the lack of opportunities to develop competences is associated with the availability of time and energy, as well as with the mental and physical load in the workplace. In a previous study, time constraints on competence development are typically recognised as a barrier to participation in workplace training and learning (Kynd & Bauert, 2013).

Table 15 shows that resources for competence development such as time and energy, as well as information on training practices, play a role for many employees, as discussed in the previous section (Hodkinson et al., 2008; Truxillo et al., 2017). Planning and budgeting training as well as scheduling time for training and learning create opportunities for employees to participate in competence development and a positive culture for training and learning at work (Billet, 2011; Kyndt & Bauert, 2013).

This study reveals that client solution projects can, on the one hand, provide opportunities to learn the latest technologies and access to-the-point training sessions, together with client representatives, which the workplace may not otherwise offer. On the other hand, pressures exist to deliver solutions for the client within a set timeframe, which may constrain the chances of undergoing competence development activities, as the following quote reveals:

The priority is to do client work you can invoice, and if you have much of that work, then you just need to forget competence development. Even though we have a training budget, no one follows up that employees really use the training time. Female, BBA, Software Developer (44).

This quotation refers to a norm in the IT workplace, namely prioritising client work over other actions. As the excerpt illustrates, prioritising the client can mean additional demands for high performance, a higher level of work intensity, and generally an extension of working hours (Holth, Bergman, & MacKenzie, 2017; Lohman, 2009). Said quotation also refers to the influence of work management on employees' opportunities to participate in training. The following excerpt reveals how the

management of teams can indeed create constraints for collaborative learning between existing and new employees:

In our company, new recruits with digitalisation competence form a separate department to do agile system development with start-ups from a clean table. The company recruits [new staff] increasingly to that department, but I have heard that they needed to fight for these talents and recruit employees direct from university. I wonder why they didn't coach and develop us [existing staff] for that new digital environment too. Male, Engineer, Project Manager (54).

This example of the subtle social systems involved in organising teamwork reveals two types of barriers. First, it prevents existing employees from learning new skills, and second, it delays newcomers from learning about organisational acumen and business relationships. Consequently, these social systems enforce age-related stereotypes and constrain multifaceted competence development activities between generations (Pritchard & Whiting, 2014; Ropes, 2013). Another constraining practice is related to existing employees' on-the-job learning; that is, a procedure whereby maintenance tasks are allocated to an older employee on purpose. The following interviewee regarded this kind of work as 'a bridging job to retirement'.

Those [older maintenance workers] are [performing] quite lonely expert jobs where you don't need to be connected with the work community. It looks, somehow, like these jobs are given to ageing employees, and I don't know if they want these jobs themselves. Male, IT BBA, Project Manager (53).

The above quotation also demonstrates how employees try to make sense of the social systems in relation to competence development and work management in the workplace. Work management practices, whereby employees are divided into small teams or solo tasks, show employers' power over allocating and authorising resources for on-the-job learning. The relationship between an employee and a manager is of specific importance as the manager can be regarded as the gate keeper for access to training and on-the-job learning. The following section reveals how the employee–manager relationship also embeds the three social systems discussed in this chapter.

7.4 Employee–manager relationship embedding social systems

Most IT professionals in the present study expressed two expectations of their manager: the first concerns goals and information on competence needs, and the second is related to the support offered in training and development procedures, reflecting traditional manager support (Harteis et al., 2015; Peeters et al., 2008). Thus, there are employees in IT workplaces who want to obtain strategic guidelines about which competences to develop, as the following quote demonstrates:

In my opinion, the manager should show guidelines and provide some milestones for my training. I feel motivated when we have written a personal development plan as one of my goals. It is also important to know what kind of prospects you might have at your workplace. Female, BBA, SAP Consultant (42).

Employees such as this expect their line managers to also be aware of competence development procedures, norms, and resources available for employees, which the IT professionals recounted as not always being the case. In the IT workplace, the manager may also lack information about what competences are required in the workplace in the future.

I would say that in every workplace, I have had to understand myself what competences to develop. The only thing you could get from managers is information about compulsory courses, such as project management. Female, BBA IT, Software Developer (59).

The above quotation questions the idea that the line manager is always able to provide (superior) knowledge, guidance, and feedback related to work and informal learning (Berg & Chyung, 2008; Kyndt et al., 2018). Indeed, it is shown that in deeply technical and specified fields, the employee and his or her professional network can provide more valuable advice and feedback compared with constantly changing managers who are unskilled in that area.

Another novel finding related to managers is that IT professionals expect their managers to enable and support them to achieve new and meaningful job opportunities, which can be both a means to develop competences and a goal for competence development

moving forward. IT professionals recognise the relationship between accessing a new job and, in so doing, being able to develop new competences.

It is so that the manager and organisation enable learning through changing job descriptions. It is a little bit indirect… It is so that as the organisation changes and your job changes, it nourishes you to learn. Most importantly, it is you, not your supervisor. Male, Software Developer, Master of Engineering (45).

This finding emphasises the role and power of managers in terms of access to jobs and dismissals significantly constraining access to on-the-job learning, which is not sufficiently recognised in workplace learning literature (e.g. Billett, 2008; Ellström & Ellström, 2014; Harteis et al., 2015). Consequently, when managers have age biases, this can influence recruitment and dismissal situations as well as the way work is organised and managed. When a manager appreciates young employees due to their current technological skills, as well as their ability and flexibility to learn new skills quickly (Pitt-Catsouphes et al., 2011), this may indirectly influence decisions concerning existing employees' competence development.

Established workplace learning literature does indeed recognise that access to training and the support provided are related to the attitudes, biases, and stereotypes towards older workers by managers and HR personnel (Lazazzara et al., 2013; Loretto & White, 2006). Age discrimination is suggested to occur particularly if a manager is younger than an employee (Armstrong-Stassen & Seung, 2009; Cogin, 2012; Shore, Cleveland, & Goldberg, 2003). In Table 16, a similar trend can be observed in the present survey.

Table 16. Employees' perception of employers being unwilling to invest in training, according to the manager's age

Variable	**Total M/SD N**	**Group 1 M/SD N**	**Group 2 M/SD N**	***P***
Age discrimination in access to training, all	1.55/1.062 1,080	1.30/ 0.870 669	1.88/1.267 387	0.000**
Age discrimination in access to training, IT	1.52/1.055 232	1.31/ 0.833 131	1.79/1.219 101	0.000**

Mann–Whitney *U* test, significance p<.050*; <.010**; *M*=Mean; *SD*=Standard Deviation; *N*=1,119
Group 1 = Manager same age or older than respondent; Group 2 = Manager younger than respondent
Source: Own survey data, 2017, Scale 1–5, 1=not at all, 5=very much;

Consequently, employees whose manager is younger than they are (Group 2) perceive age discrimination as occurring more often (1.88) than do employees whose manager is older or of the same age (1.30) (Group 1). However, the question concerns employees' *perception* of possible age discrimination in their access to competence development, and any association they draw with their manager's age. As already discussed in Section 7.1, none of interviewees claimed that their manager regarded them personally as too old for competence development. This indicates that age as a psychosocial attribute is embedded in the complex set of divergent social systems present in the relationship between an employee and a manager and the other factors involved in the situation.

As the discussion this far has indicated, the extent to which social systems and relationships have an influence *in situ* depends on the differences between individuals. Employees are differently positioned in the organisation in regards to shaping and changing the learning environment (Billett, 2011). Further analysis of employees' agency in this study reveals that employees perceive the social systems in their environment differently, according to their agentic orientation, as proactive, reactive, or restricted. Following this avenue, a small number of proactive IT professionals welcome the organisational culture where their role is regarded as more significant than that of their managers. This is shown in the following quotation, which exemplifies IT professionals with a low level of expectation towards managers in terms of their competence development:

If managers keep out of my way, they best enable my learning. I am very self-directed. To me it is important that there is no bureaucracy. In this kind of a small company, they have succeeded very well in that the manager is not disturbing but trusts me. Male, Engineer, Software Developer (42).

The above excerpt indicates that for proactive employees, the manager's role can be more administrative in nature rather than a learning partner who provides, for example, feedback and content for competence development. However, for most employees the discrimination related to staffing and downsizing is of importance and can indirectly cause discrimination in access to competence development activities, a factor not yet indicated in previous studies (Dymock et al., 2012; Harteis et al., 2015). Agentic

orientations and the components of agency/employee structures are discussed in depth in the next chapter.

7.5 Discussion and conclusions

Earlier literature categorises the individual and organisational factors affecting employees in their learning in the workplace (Fuller & Unwin, 2011; Kyndt & Bauert, 2013; Truxillo et al., 2017), and this chapter reveals the key interconnections between these factors. In general, at a macro level, the enablers in the Finnish learning society and the constraints caused by the downturn in the economy are the key institutional factors involved. At the organisational level, access to informal on-the-job learning, in particular to new jobs and projects, greatly affects middle-aged and late-career employees' opportunities to develop their competences. Related to individual factors, older age and gender are understood as psychosocial attributes and part of social systems in an organisation and society. A novel finding is that employees perceive three sets of social systems, comprising individual, organisational, and societal factors as well as the relationships between people, as being of importance between an employee and a manager.

First, one set of social systems, which includes age discrimination in staffing and downsizing practices during the downturn in the Finnish economy, constrains many middle-aged and late-career employees' opportunities to participate in on-the-job learning activities. The evidence suggests that although equality and work-related legislation aims to support existing employees to develop themselves at work, there are consistent and widespread perceptions of older-age discrimination related to layoffs and parallel recruitment in IT workplaces. Consequently, this set of social systems constrains employees from participating in on-the-job learning and simultaneously increases the perception of not having access to training because of older age. The findings indicate that, whilst there is no direct age discrimination related to access to training, age discrimination associated with staffing and downsizing also constrains employees' perception of their access to on-the-job learning, a connection not yet sufficiently recognised in workplace learning literature (e.g., Fuller, 2017).

The social system approach enhances individual-based approaches to age, such as self-categorisation theory (Tajfel & Turner, 1986; Turner et al., 1987) and the similarity–attraction paradigm (Byrne, 1997), comprising biases and attitudes present in the workplace. Accordingly, understanding age discrimination as part of a social system embedded in organisational practices and relationships reveals the influence of the age factor, not as a direct variable but indirectly in terms of employees' competence development. In addition, the analysis of social systems emphasises the nature of age as a psychosocial attribute (Sterns & Doverspike, 1989) and combines it with organisational practices. Chronological age has been recognised as not solely explaining learning activities (Froehlich et al., 2015; Pitt- Catsouphes et al., 2011), but the evidence in this chapter demonstrates how perceptions of age embed different meanings and norms, which also influence the relationship between employees and managers.

Second, the findings in this chapter reveal that there are social systems that reflect parallel gendered attitudes and age biases in Finnish IT workplaces. Despite equality and family legislation to drive, not only does gendered segregation exist between occupations and lines of business in Finland but also the exclusion of women inside the IT industry. The evidence suggests that even though women hold an equal number of managerial roles as men in many IT workplaces, these roles are regarded as generic, and therefore suitable for women. These social systems have an impact not only on career plans for women in IT but also on their access to technical on-the-job learning activities.

When looking at the intersection of age and gender, it can be recognised that both women and men face age discriminatory attitudes when seeking a new job. Young men are prioritised over other employees in the IT industry, which may constrain middle-aged and late-career employees' perceptions of their access to competence development. However, women face double constraints as, in addition to age, they must cope with gendered attitudes concerning what is 'natural' for women. As recognised in previous studies, feminine and masculine genders comprise values and ideals that can result in social inequality related to work life (Aaltio et al., 2014; Ainsworth, 2002; Riach, Loretto, & Krekula, 2015).

The findings in this chapter also reveal that the social systems related to gender and caring for small children not only influence women's careers but also their opportunities

to participate in competence development activities. In addition, age-related biases can be open but also cover the need for competences, whereas gendered attitudes in turn are recognised as subtle in nature. Combining gendered attitudes with the priority for young men in the IT workplaces, middle-aged and late-career women face more obstacles than men do. A particularly novel finding is that women perceive these constraints differently. Some women are capable of managing the obstacles and indeed are able to instigate opportunities for competence development activities, whereas others align more both with visible and subtle norms in the learning environment.

Thirdly, there is a set of social systems related to client priority and cost-effectiveness, which employees perceive as constraining their participation in competence development activities. The findings show that even though client work provides opportunities for employees to develop specific professional competences as features of an expansive learning environment (Fuller and Unwin, 2011), the priority of client work over training and on-the-job learning can also set barriers in terms of the time and effort available for competence development activities. In addition, the evidence suggests that many employees perceive a lack of education and training opportunities, which are associated with a perceived lack of benefits in training for work. As a result, employers might offer and run generic training unconnected to the company's business strategy and changing technological needs, even though they are expected to continuously develop their existing employees to carry on their work.

In addition, this chapter reveals that employers' focus on costs and clientele influences mid- and late-career employees' perceptions of their abilities to access new projects as well as the training they regard as beneficial. However, the evidence indicates that a mismatch also exists between employers' competence needs for their business and the employers' focus on the cost of training. According to the human capital approach dominant in HRM literature, employers should focus on workforce development following their business strategy (Becker, 1964; Ployhart & Moliterno, 2011). In line with this, employees perceive that employers have transferred face-to-face training to cheaper online learning courses and recruit younger employees because of their lower salary. The evidence shows that organisations invest in training that do not increase the competences required in the workplace, and simultaneously obtain the technical

competences required from young employees. The chapter thus suggests that the human capital approach alone has a limited perspective for theorising participation in competence development, and indeed that cost-effectiveness must be included as one factor in the sets of social systems in the analytical framework of competence development.

Moreover, the evidence in this chapter points to the importance of the employee–manager relationship in relation to the social systems discussed. Said relationship reflects the political and power relations in the workplace that also influence access to training. The evidence reveals that, more than access to training or a manager's support in giving feedback as suggested in earlier research (Felstead, 2011b, Vickerstaff et al., 2015), the manager has an important role in ensuring employees' admission to new projects and jobs. The results highlight that the relationship between an employee and a manager is about leadership and the re-negotiation of said relationship, an approach not sufficiently addressed in training-focused HRM and workplace learning literature.

In conclusion, a learning environment embeds sets of social systems comprising significant bundles of individual, organisational, and societal factors. As defined, social systems are arrangements and relations between people in society and in the workplace organised in regular social and organisational practices. The findings presented in this chapter contribute to knowledge by addressing which institutional, organisational, and individual factors are interlinked in relation to employees' participation in competence development activities in the Finnish context. Accordingly, employees interlink particular factors as sets of social systems, which together influence their perceptions of the learning environment as enabling, supporting, or constraining.

It is further proposed that employees perceive similar sets of social systems differently; therefore, the importance of the learning environment for an employee is relative to his or her agentic orientation. Accordingly, employees differ in their perceptions of the sets of social systems, which embed for instance age biases and gendered norms concerning work, training, and on-the-job learning. The following chapter reveals 'the black box', when employees make sense of their competence development in a situation before they initiate, accept, or reject the offerings in their learning environment.

8. Construction of agency and its relationship with the learning environment

Having discussed the factors, and more precisely the sets social systems in the learning environment, it is necessary to understand the role of an employee in his or her participation in competence development. The discussion in this final analysis chapter starts by addressing RQ3: How do IT professionals construct their agency in relation to their competence development in the workplace? The concept of agency is shown to include not only the elements of self-determination, temporal approach, and self-efficacy but also mutual dependency with employee structures composed of a sense of power over available resources, meaning of work, and competence development as well as internal rules in relation to competence development and work. The discussion throughout the chapter reveals that agency, employee structures, and the social systems discussed in the previous chapter form multifaceted relationships.

The key argument in this chapter is that employees represent three agentic orientations, namely proactive, reactive, and restricted, which actually reveal why some IT employees develop their competences during their mid and later career very actively whereas others do not. The agentic orientations also expose employees' perceptions toward the learning environment and particularly the social systems therein. The discussion throughout this chapter, and in particular in Section 8.2, answer RQ4: What is the relationship between agency and institutional, organisational, and individual factors in employees' participation in competence development?

8.1 Agentic orientations in competence development

The enhanced conceptualisation of agency in this chapter reveals that agency is interlinked with employee structures, which together demonstrate how employees exercise their agency, take their agentic actions, and accordingly participate in competence development activities. Consequently, employees expose different agentic orientations between proactive, reactive, and restricted agency, which eventually demonstrates their construction of agency. The narratives of IT professionals reveal that, out of 27 participants, six can be categorised as proactive, 18 as reactive, and three as having restricted agentic orientations (see Appendix 7). The differences between

agentic orientations, summarised in Table 17, also reveal how employees have different agentic actions and perceptions towards social systems and factors in the learning environment.

Table 17. Categorisation of employees' agentic orientation

Agentic orientation	**Proactive**	**Reactive**	**Restricted**
Components of agency:			
Self-determination	Autonomous	Controlled	A-motivation
Temporality	Future oriented	Current focused	Current–past approaches
Self-efficacy	Strong	Medium	Low
Agentic actions	Initiation and participation	Acceptance and participation	Rejection or compulsory participation
Components of employee structure:			
Meaning of work and competence development	High importance	Medium importance	Low importance
Internal rules	Own rules beyond norms	Own rules adapted by norms	Own rules over norms
Sense of power over resources	Strong sense of possessing power	Partial sense of own power vs. organisational	Low sense of own power
Perceptions towards social systems in the environment	Enabling and Working out obstacles	Supportive and help in working out obstacles	Constraining

Source: Own qualitative data (*N*=27), 2017

The first column of Table 17 presents the components of agency and employee structures derived from the conceptual framework presented in Figure 10 and further elaborated in the analysis of the qualitative data. In each row, a short vignette of the agentic orientation is presented to indicate how employees demonstrate their agency in terms of competence development activities. As Table 17 shows, the categories of agentic orientations are distinctive, but to some extent, reactive and restricted orientations can be overlapping, as discussed and revealed in the following subsections.

The following discussion also shows how the components of agency and employee structures are intertwined, and therefore, they need to be analysed together.

8.1.1 Proactive agentic orientation

The narratives of the IT professionals reveal that employees with a proactive orientation are highly active in their engagement in education, training, and on-the-job learning activities. In addition to employer, partner, and commercial training, two out of six proactive employees hold master-level degrees, and one was studying during her parental leave at the time of the interview. It is also recognised that proactive employees may undertake self-education in open universities and UASs, viewing learning activities as a hobby, which means that they engage in competence development opportunities beyond what is formally required (Crant, 2000). The following example reveals a highly demanding combination of a proactive employee developing technical competences when working in a generic role such as project manager.

I have worked as Project Manager and Site Manager but all the time I have kept my agenda in such a way that I have been able to engage in coding. It has been a back-up [in my career] as I am not a marketing or manager type of a person. Coding is fun, and that's why I entered into this industry anyway! Male, Engineer, Project Manager (49).

As the above quotation indicates, proactive employees are motivated to work and develop their competences, and furthermore, they demonstrate autonomous self-determination (Ryan and Deci, 2000b). Proactive IT professionals express a desire to work in the IT sector, and in particular technical professionals show enthusiasm for coding and technologies. For proactive employees, competence development is a means to become inspired and maintain employability in both internal and external labour markets. The proactive person quoted below is eager to learn new technologies, even though he does not yet know how to utilise them.

Somehow, I get moving and my engines start up [laughs] when I get involved with something new that has not been done before… It is also a personal characteristic that you look for new competences. Male, Engineer, Project Manager (56).

Following this avenue, employees construct their own internal rules; for example, regarding which employer training they want to participate in when building on their own learning competence development strategies. Thus, the meaning of competence development for autonomous engagement includes the desire to develop the self by acquiring new skills, mastering new situations, and improving competences as recognised in recent motivation research (Kooij & Zacher, 2016). Proactive IT professionals have a 'can-do-attitude', which reflects strong self-efficacy (Bandura, 1997). They maintain a self-reflective belief in their capabilities to learn and engage in competence development activities throughout their career, as in the following excerpt:

I am such a person that I imagine I can learn all and everything. You just open-mindedly get to know what is new in IT. Female, Engineer, Purchase Manager (41).

Proactive employees also demonstrate a strong sense of power over the available resources, such as time, money, and energy, which will serve their competence development activities. In doing so, proactive employees exhibit the capacity to dissolve barriers in their learning environment. The following quotation demonstrates how proactive employees have learned to cope with the stress related to the high demands of client-related work.

One critical learning take-away during my career has been how to prevent overtime work. I learnt that you need to realise yourself if you are working too much. In the current workplace, we don't have to do overtime, but if needed, we do longer days and then can take those hours off later as free time. Male, Master of Engineering, Software Developer (48).

Even under the extreme situation of downsizing and layoffs, proactive employees actively seek new opportunities. The narratives express that they may even risk unemployment if not satisfied with their existing job. In other words, it can be claimed that they have the grit (*sisu* in Finnish) to achieve their work and competence development goals (Kwon, 2017). The belief in being able to learn new skills and overcome barriers is associated with proactive employees' future-orientation at work. They have a vision either to continue with the current role or to look for new challenges when not satisfied with the present. They are focused on work and have either not

thought about the question of retiring or maintain the idea of continuing working above the official retirement age, as the following example demonstrates:

I am work-oriented and fancy working. It is terrible to think about retiring. I have always said that I will never retire if they just let me come to work. Female, MBA, Project Manager (56).

The above excerpt indicates that employees with a proactive orientation do not follow the traditional life stage approach, which suggests that employees in their forties and fifties find value in lowering their competitive rivalry, instead supporting the development of others (Levinson, et al., 1978). Indeed, proactive employees continue to develop their competences and proceed in their IT career. However, the quotation also demonstrates that even with such a determination to work, proactive employees need to respond to the social systems in the workplace and the availability of jobs there.

Proactive women in particular exhibit the ability to overcome the social systems related to age and gender in the workplace. Proactive women utilise available resources, such as their husband's and grandparents' help as well as flexible hours and remote work, to balance their work and other life and enable their competence development. One proactive woman at the time of her interview was studying while on parental leave to develop her competences for the next step in her career. She appeared to have a large network of people to support her when studying.

My husband thinks it would be good to continue [my studies] to a master's degree… He helps me to organise time for studying and participate in exams. My mother is retired and can help me with kids, and we are planning to move closer to my parents-in-law. I also have friends to help me. Female, BBA IT, on-parental-leave (42).

Consequently, the narratives in this subsection show that proactive employees are highly active in initiating and undertaking training at work and/or on-the-job learning activities. Consequently, they participate not only in the competence development activities offered to them but also those that they have identified and organised themselves. They initiate self-driven education and training activities and participate in on-the-job learning frequently.

8.1.2 Reactive agentic orientation

The majority of participants interviewed (18 out of 27) exercise reactive agency, and typically respond to training and education offerings positively when an opportunity appears in the learning environment. The narratives of IT professionals reveal that employees with reactive orientation maintain a viable level of activities when engaging in training and on-the-job learning. While proactive employees are self-managed in their agentic actions related to work and competence development, reactive employees require external guidance, support, and offerings to which to respond. Reactive employees reflect controlled motivation, requiring an external rationale—a goal—for competence development, as in the following quote:

Competence development is highly correlated with motivation. If I get excited, I surely have the energy to learn, but perhaps during recent years there has been some decline in interest in learning anew. I am a character willing to change but now I don't see what the next goal [in his career] is. Male, Engineer, Software Developer (42).

Accordingly, reactive employees are driven by external triggers such as receiving rewards, avoiding punishment, or fulfilling the expectations of others (Ryan & Deci, 2000; Vanthournout, Noyens, Gijbels, & Van den Bossche, 2014). They are typically interested in training offerings available. The following example illustrates how a reactive employee responds to an employer's offering:

When I was in a technical expert's role, my employer bought IBM technical certification courses. When a new version of a certain product was released, it was officially obligatory for someone to know these, and therefore, I needed to participate and pass the courses. Female, BBA IT, Project Manager (43).

This excerpt informs us that reactive employees follow organisational norms and adapt them rather than create own internal rules regarding training. The primarily temporal approach to reactive agency is the focus on the present and on current work, but also crucial is the visibility of how to utilise the competence in the future.

In addition, past competence development experiences can be important for reactive employees because middle-aged and late-career employees already have a long career

history; therefore, they possess a wealth of work and training experiences they can reflect upon (Atkinson, et al., 2015; Haasler & Barabasch, 2015). Reactive employees, however, refer rather to their positive experiences about their employer's training offerings. They also think about their perceived time at work before retirement (Froehlich et al., 2015) in relation to their competence development. When asked about retirement, reactive employees provided two-sided answers. On the one hand, all reactive employees planned to continue working until the official retirement age but, on the other hand, those aged over 50 years in particular were already thinking about their retirement. The closer they were to the official retirement age, the more intensively they thought about it.

I will soon turn 54 years old and have about 10 years to go. I have started to think … and already plan what to do when I retire. I don't know if it is a bad thing at this point but anyway I think I should keep going 10 years, but it is a long time… I hope I can continue with this kind of a job but I don't think that I should leap up in my career anymore. Male, Engineer, Project Manager (53).

As this quotation demonstrates, work is an important part of life, but reactive employees want to rationalise the value or relevance of their action (Van den Broeck et al., 2010), for instance, by defining the benefits of competence development (Felstead, 2011b). The above excerpt also indicates that reactive employees show relatively lower self-efficacy (Bandura, 1997) than proactive employees do, which refers to a belief in the ability to learn and manage their education, training, and work. In the following quote, a reactive employee exemplifies the lowered ability to learn during his career:

Learning new skills is probably much harder today… I need to confess that I somewhat see that things are more complicated…you need to orientate for longer and think about the meaning of new information. Even though you may be interested and curious for the new, it is more challenging… There are other people who have the skill to [learn quickly]… they just need to see a new thing once and then they can do a miraculous job. Male, Engineer, Development Manager (59).

This quotation also refers to how the employee compares his ability to learn to other employees' stronger self-efficacy. Employees' own views of their ability to learn are

recognised as influencing the intention and execution of competence development (Kanfer & Ackerman, 2004). In addition, when an employee regards him or herself as not being able to manage his or her career, as well as the time or effort involved, it is clearly a constraint on reactive employees' competence development. The quotations in this section thus far show that reactive employees observe their learning environment carefully and their agentic actions are responsive to what said environment provides. Interviewees categorised under reactive employees spoke of how they require support from their manager and formal HRD practices to be activated for competence development, as in the following:

I don't know, perhaps I would need a small kick up the arse. For instance, if everyone needed to do training every year, I would do it. Otherwise, I feel that I am busy [with work] *and that training might not be useful, and I easily let it pass*. Male, Engineer, Software Developer (40).

The above quotation emphasises that reactive employees need support both from training processes as well as from their manger, who represents the average employee presented in the workplace learning literature (Billett et al., 2011b). Many of those who can be categorised as reactive employees are also reactive in terms of changes in the workplace, such as downsizing. On the one hand, remuneration can inspire them to think about their career, seek a new job, or perhaps even start a new career, but on the other, they experience the social systems discussed in the previous chapter as constraining. For reactive employees, age discrimination in recruitment is certainly a constraint, as it is in the following quotation:

My application has probably been put to the bottom of the pile and only because of my age. It seems that employers do not try to find professional expertise, but first look at the birth year. Since I finally got this fixed-term assignment here, I have not seen any discrimination at work. Male, Engineer, Hardware Specialist (61).

As this excerpt shows, reactive employees regard their position, whether a middle-aged or late-career employee, as not being an issue in terms of working in IT. Indeed, the constraints of social systems related to age are associated with dismissals and recruitment. However, reactive employees can perceive that they are not granted

access to training because of their older age, as discussed in the previous chapter. Indeed, IT professionals interviewed under the category of reactive employees did not recognise themselves as being an 'older worker'. When employees have such an internationalised identity, it could reduce their belief in their abilities for competence development, as suggested in some literature (Bal et al., 2015; Desmette & Gaillard, 2008; Marshall et al., 2014).

Overall, the narratives in this subsection present reactive employees as responding positively to training and education offerings as well as participating in training and on-the-job learning, particularly when supported. To participate in competence development, reactive employees need encouragement from their managers and for visibility in the next steps in their career and respective on-the-job learning opportunities. For reactive employees, competence development is important, but they willingly follow the training practices and plans in the workplace and adapt their internal rules accordingly.

8.1.3 Restricted agentic orientation

Three male, middle-aged IT professionals demonstrated restricted agency with a moderate level of activities related to engaging in training and on-the-job learning. They are not entirely passive in engaging in competence development activities but rather, as the following discussion reveals, reluctant to take advantage of the opportunities offered to them. In contrast to other agentic orientations, those with restricted agency reject not only training offerings but also work opportunities during their career. In the following excerpt, one of the restricted employees does not see an opportunity in his career:

A headhunter contacted me a while ago, but it was… It was clear to me from the beginning that the job was from another area and they were seeking an expert on this. He took my contact information and promised to inform me if some more operational jobs appear. Male, IT BBA, Business Support (41).

This response exemplifies how restricted employees expect someone else to instigate job opportunities for them and that these need to fit the internal rules related to their

work and competence development. Restricted employees may possess controlled motivation with respect to the clear benefits of their training and learning activities, and also in the short term. During the interviews, it became evident that a higher salary is one of the strongest motivational triggers to continue working and developing competences. When clear benefits are not seen, restricted employees' self-determination to participate in competence development may turn into 'a-motivation' (Ryan & Deci, 2000b), as illustrated in the following:

I don't know if I have inspiration and motivation to do this job. I could look at some information related to this business and others in the evenings, but I don't have that [motive]*.* Male, IT BBA, ICT Consultant (46).

As the quotation illustrates, a-motivation is the state of lacking the intention for competence development activities. Accordingly, employees with restricted agency may have lost the motivation for competence development and work in their lives, as is the case in the above. Restricted employees may participate in training only because it is compulsory or part of their training plan. However, such an action does not necessarily produce enthusiastic training participation (Meyers et al., 2010). In addition, when employees have had negative experiences of training or education in the past, they may not be willing to participate again (Billett & Van Woerkom, 2006; Billett et al., 2011b). Instead, restricted IT professionals may share a view of the 'good old days', including long training courses abroad no longer offered to them, and partially, therefore, perceive current training as not meeting their needs. Interviews revealed that restricted employees perceive the demands for continuous learning as difficult to achieve, as in the following quotation.

Now, as we are in IT and a world of open source, it means that everyone can own and contribute to open software. You can code a programme and then release it for others to use. That scope is so large, that you cannot adopt these open source techniques. Male, Engineer, ICT expert (49).

The above excerpt indicates a low level of self-efficacy in the ability to learn new technologies. A combination of a-motivation, focus on the past, and a lack of belief in the ability to learn may indeed constrain employees' perceptions of the opportunities in

the learning environment. Even though restricted employees may be aware of the opportunities for adult education as well as employers' duties to organise training for their employees, they may not take advantage of the offerings themselves, as in the following case.

The law says that we need to get three days' training per year. That is at least possible if you want to. Then, there is an opportunity for sabbatical, which some people have taken, and others have taken student leave in parallel with their jobs. Male, IT BBA, Finance Manager (41).

The above restricted employee sees other employees utilising the institutional opportunities for education, but does not view them as appropriate for himself. One reason for lower interest in competence development activities given by restricted employees is that they have 'become stagnant' in terms of their career and competence development. Consequently, employees with restricted agentic orientation perceive the risk of unemployment in the future and have a relatively low perception of their ability to obtain a new job quickly if they were to become unemployed. Restricted employees also have a sense of losing power over work, training and learning resources, and related time for performing competence development activities. They consider that it is not easy to gain access to training that will benefit them, and view a lack of time and energy as key barriers to their competence development. Restricted employees also plan for their retirement and know when their official retirement is, as the following employee stated:

When I was asked what my goals are in work, I put as the first objective that I can cope until retirement age. It will be when I am 64 years and three months old. I calculated that myself. I recognise that it is not a learning objective… if you think of it that way. Male, Engineer, Project Manager (49).

The narratives in this subsection demonstrate that restricted employees respond to training and education offerings unwillingly if no clear benefits and particular support are provided in the workplace. The characteristics of restricted employees reflect elements of the stereotypes of older employees as not being willing or able to participate in competence development (Finkelstein et al., 2015; Kulik et al., 2016).

Furthermore, restricted employees ascribe lower importance to work and competence development and have a low sense of power over time, energy, and access to training, which they regard as beneficial. Their internal norms may be opposed to the learning environment providing training offerings as well as adult education that they do not find interesting. Consequently, they may show unwillingness to participate in training and reject opportunities they do not find interesting.

8.2 Relationships between agency and the learning environment

The analytical framework enables the analysis of the relationships between agency, employee structures, and socials systems and their effect on employees' competence development activities. As discussed in the previous chapter, interrelationships exist between individual, organisational, and institutional factors, which employees perceive as forming sets of social systems. The discussion here focuses on three other relationships between agency and learning environment: first, there is mutual dependency between agency and employee structures, which means that the construction of agency/employee structure also enhances the interaction between these elements; second, there is a relational linkage between the agency/employee structure and social systems embedded in the learning environment; and lastly, following the idea of the structuration process, the results indicate that employees may sustain or change their employee structures over time when they draw on the social systems, take their agentic actions, and engage in competence development activities.

8.2.1 Mutual dependency of agency and employee structure

Firstly, evidence in this and previous chapters reveals that there is mutual dependency between, on the one hand, employees' self-determination, time perspective, and self-efficacy and, on the other hand, employees' meaning of work/competence development, internal rules, and sense of power over resources. Theoretically, this means that employees construct their agency not only in terms of their components of agency but also, and simultaneously, in relation to their own mental traces conceptualised as employee structures. The influence of that relationship can be recognised in the different agentic actions taken by employees, and eventually in the different frequency of participation in competence development activities.

Consequently, proactive, reactive, and restricted employees perceive their environment differently. Proactive agency resembles the ideal picture of employees' agency, identifying opportunities for significant changes (Billett, 2011; Eteläpelto et al., 2013), and seeking learning and working experiences that promote their career and/or chances for future employment (van der Heijde & van der Heijden, 2006).

Reactive employees partially represent the picture portrayed in the literature concerning older employees' training, as requiring additional support in their learning from managers and HRD staff. This view, however, depicts employees as not having active roles and agency, only as relying on the learning environment. In this categorisation, reactive employees do possess active agency, including the attribution of important meaning to competence development and medium self-efficacy in the ability to learn during the career, as well as the capacity to accept opportunities beyond their employer's offerings.

Lastly, restricted employees may be amotivated to participate in training and career development, have low self-efficacy towards their ability to learn, and tend to look to the past rather than to the future. According to this viewpoint, restricted employees may mirror the age-related stereotypes of older workers (Finkelstein et al., 2015; Ng & Feldman, 2012; Posthuma & Campion, 2009).

8.2.2 Relational interaction between agency and social systems

Secondly, there is a relational linkage between the agency/employee structure and social systems embedded in the learning environment. More precisely, a relationship exists between employees' construction of agency/employee structure, their perceptions of socials systems in the learning environment, and their insights about participation in competence development activities. Consequently, employees have different capacities to cope with social systems according to the following three orientations: proactive, reactive, and restricted.

It was shown in the previous chapter that the set of social systems embedding age discrimination in dismissals and staffing processes constrain employees from participating in on-the-job learning, and may simultaneously increase some employees'

perception of not having access to training because of older age. In addition, social systems related to gender and caring for small children may influence women's perceptions of their opportunities in technical careers and competence development, although one proactive woman had participated in higher education while on parental leave.

The narratives in this thesis thus show that employees may perceive similar circumstances differently, which means that the factors and social systems in the learning environment are relative. When employees make sense of their competence development in a situation, their decisions and actions are partially mediated through their own employee structures and partially through social systems embedding norms and attitudes influencing organisational practices and relationships. Proactive employees are better able to cope with complex social systems, including obstacles, and to utilise opportunities in the organisation and learning society beyond the workplace more than other employees are. The roles of social systems and other factors in the learning environment are smaller for proactive employees compared with their own role. Consequently, proactive employees' frequency of training and on-the-job learning is high in different learning environments.

Reactive employees benefit most from good practices of HRM and in the workplace, but they also have difficulties making sense of and coping with social systems in the workplace. For reactive employees, the social systems in the learning environment thus play a more substantial role than they do for proactive employees. Therefore, for reactive employees, HRM practices and the line manager have important roles in ensuring employees' access to education and training as well as to new meaningful jobs. When the manager recognises age discrimination and gendered norms in the workplace and in his or her own thinking, employees are better able to cope with these obstacles. Reactive employees also have a significant role to play in actively responding to opportunities in the learning environment. In a supportive environment, the frequency of reactive employees' competence development activities may be higher than it is in an environment with less support and with negative social systems related to competence development.

For restricted employees, the learning environment, particularly the relationships between an employee and a manager, is essential. Even though an employer can offer training activities, restricted employees need leadership, which especially encourages them in their career and competence development. For them, it is also important to discuss the social systems in the workplace and the beliefs and thoughts they may have, which together constrain them from accepting and participating in training. Because, for instance, age-related biases and gendered norms are subtle, wider recognition of social systems is required in the workplace and society. For restricted employees with a low sense of power over resources, the norm of prioritising clients and cost reductions in employer training can be a constraint, and therefore, this needs to be discussed in the workplace. Extra effort is required to recognise restricted employees and lead them in a way that does not exclude them from continuous competence development. This is important not only for presenting opportunities but also for discussing goals, benefits, and the meaning of competence development, as well as for strengthening belief in their ability to learn and the sense of power over their competence development.

8.2.3 Structuration of employee structure over time

Finally, because this study applies key concepts taken from structuration theory (Giddens, 1979, 1984), it is necessary to reflect on some points related to the structuration process in question. Structuration is typically applied in analytical enquiries to explain how people's actions are involved in governing the continuity or transformation of practices in society and organisations over time (Giddens, 1979, 1984; Whittington, 2010). Whilst the focus of this study has not been on structuration in terms of institutions, the analytical framework includes the idea that employees' agentic actions and competence development activities (re)produce societal systems, such as values and norms, as well as power distribution in the workplace and in the learning society over time (Giddens, 1979, 1984). Indeed, this study represents a snapshot of experiences at a specific time, and thus the research approach does not allow deep insights into the valid data of longitudinal research, which are required when investigating structuration over time (Giddens, 1984; Jarzabkowski, 2008).

The interview narratives provide an indication of how employees' perceptions have either remained the same or changed in terms of their learning and competence

development. The structuration process in this study thus indicates how employees' own structures related to competence development may have remained or changed during their career. From discussing age-related biases and discrimination, as well as genderism in the IT workplace, the evidence demonstrates that employees, with their agentic actions and respective competence development activities, might also produce and reproduce training and work practices in the workplace. The following IT professional, who was categorised as proactive, expresses how participating in competence development has remained important for her during her career:

When there has been an opportunity, I have been always been among the first ones to apply (in training). As I have always been very active… I have always said that I will never retire. Female, IT BBA, Project Manager (56).

The above excerpt indicates how the person has welcomed the offerings positively, regardless of any instant assessment of the benefits of training at work during her career. She also refers to her perceptions of the factors in the learning environment that have remained the same. The interviews indicate that proactivity can, to some extent, be a permanent orientation (Fuller Jr & Marler, 2009), although this study cannot provide answers regarding the stability of the construction of agency recognised. By contrast, some interviewees indicated that the meaning and motives for their competence development have changed over the years. The following quotation expresses how ambivalent the question of change is for interviewees:

I was more interested in gaining knowledge when I was younger. Yet, I am still following the latest subjects. I cannot tell if something has changed. Perhaps I have not been such an eager self-developer—rather, a person who learns what needs to be learnt when the need comes up. Female, IT BBA, Service Manager (43).

For this reactive employee, whilst her understanding of the need for continuous competence development has remained or even strengthened, her goals have become more focused than previously. It can be said that she has become strategic in her thinking about competence development, as recognised in mature-aged financial professionals' work (Fenwick, 2012). However, the following example shows how

employees' competence development can also change because the training methods have changed.

I don't learn as easily as earlier because there are no more hands-on courses where you can break down and assemble hardware…that is the way I learn best. There were more effective courses, where we carried out tasks ourselves rather than just looking at pictures that others are doing. Male, Engineer, Hardware Specialist (56).

Thus, the process of maintaining or transferring employee structures in his case is associated with producing or reproducing training practices and social systems in the learning environment. Consequently, it can be recognised that changing practices transform reactive and restricted employees' construction of their agency, and accordingly influence their competence development activities. According to the structuration process, participation within or rejection of training will also produce or reproduce training practices in the workplace.

8.3 Discussion and conclusions

Earlier literature discusses agency in training and workplace learning as an ideal type, emphasising highly active and change-driven agency in the workplace (Eteläpelto et al., 2013; Vähäsantanen, et al., 2017; Messmann & Mulder, 2017). A particularly novel result in this chapter is the detailed composition of agency, including mutual dependency on employee structures illustrated in the middle box in the analytical framework in Figure 12. Prior literature has also recognised multiple features involving agency in relation to learning process (Billett, 2008; Evans, 2007; Eteläpelto et al., 2013), but this chapter exposes three components in particular that can explain differences in employees' agency, namely self-determination, self-efficacy, and temporal approach. A new finding is that self-determination varies from autonomous (proactive agency) to controlled (reactive) and a-motivation (restricted) in relation to employees' competence development. Self-efficacy, as the belief in one's ability to learn, varies from strong (proactive) to medium (reactive) and relatively weak (restricted). The temporal focus for employees with a proactive orientation is the future, for reactive ones it is the present situation, and for restricted employees it is their past experiences.

The evidence emphasises another novel viewpoint for agency, namely the linkage between agency and employee structures, which applies Giddens' (1984) idea of duality of structure (Figure 7). Employee structures are composed of employees' perceptions of meaning (signification) and internal rules (legitimation), as well as the sense of power over resources (domination). The evidence shows that, similar to components of agency, the meanings of competence development and work vary from very important (proactive) and quite important (reactive) to less important (restricted). Internal rules towards competence development and work differ from one's own positive rules (for proactive employees) through following general rules (for reactive employees) to one's own negative rules (for restricted employees). In addition, employee structures include their sense of power over resources at work and other areas of life, from strong through medium to a weak sense. The duality means that, whilst concepts of agency and employee structures can be defined separately, they are also mutually connected and form a duality. This enables the analysis of agency as well as the relationship between the employee and the learning environment.

The novel conceptualisation of agency and the categorisation of agentic orientations thus draw a nuanced picture of agency, which is also related to the learning environment. Even though Billet (2008), Evans (2007), and Hodkinson et al. (2008) recognise that a relationship exists between social contributions to learning and personal agency, the discussion in this and previous chapters exposes the missing element of how agency is interlinked with the learning environment. More precisely, a relationship exists between employees' construction of agency/employee structure, their perceptions of socials systems in the learning environment, and their insights concerning participation in competence development activities. As demonstrated in this chapter, employees have different capacities to cope with social systems, which can be condensed into the following three orientations: proactive, reactive, and restricted.

Proactive, reactive, and restricted employees not only perceive their environment differently—the learning environment also has a different role for them. Proactive employees have greater variety in their capability to interact with norms and practices, and rather rely on their own employee structures. This leads to perceptions of an enabling learning environment, which promotes greater initiative and participation in

competence development activities. For reactive employees, social systems in the workplace are important because they want to adjust to the norms and practices there. Their capability to accept the competence development activities being offered is good, but their agency is by nature contingent upon the learning environment. Lastly, restricted agency includes delimited capability to recognise opportunities in the learning environment, which leads to perceptions of constraints and a greater likelihood of rejection of competence development activities on offer. For those with a restricted orientation, the influence of the learning environment is significant and, among all employees, their relationship with the line manager is of the greatest important.

Even though the analytical framework of this thesis focuses on understanding employees' actions in competence development *in situ*, it is also aligned with the notion of structuration. The discussion in this chapter indicates that employees, with their agentic actions and respective competence development activities, produce and reproduce their own mental structures—meaning, internal rules, and sense of power over resources. In addition, structuration theory proposes that, when participating in or declining employer training, employees may also reinforce or reject, respectively, employers' willingness to offer training in the future. However, this process of structuration and the retaining of an orientation during an individual's life course are matters for further research.

In conclusion, it has been demonstrated in this chapter that agency, employee structure, and social systems form multifaceted relationships, which eventually explain the differences in the frequency of competence development activities between employees. The proposition is that an enhanced conceptualisation of agency reveals how employees construct their agency not only in terms of agentic components, as presented in previous literature, but also simultaneously in relation to their own mental traces, conceptualised here as employee structures. Consequently, it is proposed that employees represent proactive, reactive, and restricted agentic orientations toward competence development.

The agentic orientation demonstrate how employees exercise their agency, and perceive the learning environment as enabling, supporting, or constraining. Consequently, employees demonstrate different capabilities to initiate, accept, or reject

competence development opportunities, finally resulting in a very high frequency of activity (proactive), a vital level of competence development (reactive), or reluctant participation in competence development activities (restricted). The agentic orientations also show how employees cope with the sets of social systems in their learning environment, such as age discrimination in downsizing and recruitment, gendered bias, and the priority of client work over other IT work, as well as cost-driven practices in the workplace. Lastly, it must be emphasised that the categorisation is not based on employees' age or gender; indeed, both middle-aged and late-career men and women can be placed into any of these groups.

9. Conclusions and implications

This thesis has explored existing employees' participation in competence development activities in Finnish workplaces, focusing in particular on middle-aged and late-career IT professionals. The overall aim has been to understand the question of why some employees continuously develop their competences while others lose the skillsets required in the workplace. Drawing on prior knowledge of the subject, particular attention has been paid to the association between the psychosocial attributes of older age and competence development activities in IT workplaces, dominated by young men.

Existing literature on adult education and workplace learning argues that older workers have lower training participation rates than younger workers do, which is related to their age (Bown-Wilson, 2011; Felstead, 2011b; Maurer, 2001; Urwin, 2006). It is also suggested *a priori* that employees participate more often in training and learning when the learning environment is enabling and expanding (Fuller & Unwin, 2005; Kock and Ellström, 2011). Thus, it has been suggested that the frequency of participation in competence development actives is contingent upon either individual or organisational factors. While it has been recognised that employees' agency is bounded (Evans, 2007), the relationship between agency and the learning environment has remained open.

This final chapter concludes first with the theoretical contribution to knowledge, based on the key argument in this thesis: the frequency of participation in competence development activities is an outcome of the interaction between the employee and the learning environment. It has been shown that agency, employee structure, and social systems with multifaceted relationships form a framework for understanding employees' competence development, as illustrated in Figure 12. The analysis of these components reveals differences between employees in how they construct their agency and perceive their learning environment, and consequently how many and what type of competence development activities they participate in.

Subsequently, this chapter concludes with the empirical insights of this thesis in relation to the particular challenges faced by well-educated, middle-aged, and late-career employees in Finnish workplaces. Following this, the limitations and ideas for future

research and recommendations for policy and practice are addressed. The closing reflections reveal my own agentic orientation during the journey involved in studying for a PhD. Before these discussions, as an introduction to the conclusions, short summaries of the findings addressing each of the four RQs are presented.

1. *What kind of activities do middle-aged and late-career employees engage in to develop their competences in Finnish workplaces?*

This research has demonstrated that the majority of middle-aged and late-career employees actively engage in training organised by their employer, partner, or commercial vendor, including online learning. The most significant activities for developing professional competences in particular are informal on-the-job learning activities, such as participating in demanding project and development teams. However, some employees participate in all possible competence development activities, whereas some participate less or not at all. Differences in the levels in participation cannot be directly explained by age and gender or by organisational characteristics such as size.

2. *How do different institutional (e.g., education opportunities and work legislation), organisational (e.g., size and type of work), and individual factors (e.g., age and gender) enable or constrain middle-aged and late-career employees' competence development in Finland?*

This thesis shows that employees recognise particular sets of social systems they perceive as important. Firstly, age discrimination in staffing and downsizing practices during a downturn in the economy influence middle-aged and particularly late-career employees' opportunities to participate in on-the-job learning activities. Secondly, gendered segregation in IT work, together with small children at home and age-related biases, influence women's education, training, and on-the-job learning as well as their progress to more valued technical jobs during their career. Lastly, the norm of prioritising clients and costs in employer training and work management impacts employees' access to training and new jobs, as well as the time and energy perceived as being used for competence development activities. While the different agentic orientations of proactive, reactive, or restricted manifest employees' construction of agency/structure, these orientations simultaneously illustrate employees' perceptions

of the competence development environment as enabling, supporting, or constraining, respectively.

3. *How do IT professionals construct their agency in relation to their competence development at the workplace?*

The evidence reveals that agency, as an employee's capacity for competence development activities, is composed through self-determination, temporality, and self-efficacy. Furthermore, agency is mutually dependent on employee structures; that is, employees' perceptions of the meaning and internal rules of competence development, as well as their sense of power over training and learning resources. Applying the construction of agency/employee structure, this thesis introduces a novel categorisation of employees' agentic orientation as being proactive, reactive, or restricted. These orientations expose the differences between employees' capacity for competence development activities and their different perceptions toward the learning environment.

4. *What is the relationship between agency and institutional, organisational and individual factors in employees' participation in competence development?*

This thesis reveals that multiple interrelationships exist between factors in the learning environment, conceptualised as socials systems. As referred to above in the response to RQ3, there are interrelationships between individual, organisational, and institutional factors, which employees perceive as forming sets of social systems. There is also mutual dependency between agency and employee structures, which means that the components of self-determination, self-efficacy, and temporal approaches are contingent upon the meaning, internal rules, and sense of power over resources corresponding to employees' agentic orientation. There is also a relational linkage with the agency/employee structure and the sets of social systems embedded in the learning environment. Employees regard the sets of social systems as enabling, supporting, or constraining based on their orientation as proactive, reactive, or restricted, respectively. Lastly, employees may sustain or change their employee structures over time when they draw on the social systems, take agentic actions, and engage in competence development activities.

9.1 Theoretical contribution

The core argument in the thesis is that the frequency of competence development activities is an outcome of the pre-existing interaction between the employee and the learning environment. Consequently, it is proposed that employees' competence development is contingent upon employees' agency and employee structures as well as the interaction with the sets of social systems in the workplace and the socioeconomic context. These proposals lead to a further proposition as to how employees differ in their perceptions and actions before their participation in competence development activities.

Firstly, it is proposed that employees represent proactive, reactive, and restricted agentic orientations toward competence development, which differ in terms of how employees construct their agency, perceive the learning environment, and consequently initiate, participate, or reject activities offered. Secondly, employees' agency is composed through self-determination, self-efficacy, and a temporal approach, as well as by employee structures as meaning, internal rules, and a sense of power over resources. Thirdly, a learning environment embeds sets of social systems comprising significant bundles of individual, organisational, and societal factors. Fourth, employees perceive similar sets of social systems differently, and therefore, the importance of the learning environment for an employee is relative, following employees' agentic orientation. Fifth, agency, employee structure, and social systems form multifaceted relationships, which together are involved in employees' competence development.

Overall, it is proposed that the key concepts of structuration—agency, employee structure, and social systems—are valuable analytical tools for investigating employees' perceptions and actions. In doing so, this thesis also contributes to the debate on the usefulness of structuration theory in empirical research, particularly in an organisational setting and from an individual viewpoint. In the following subsections, the theoretical contribution and propositions probed here are discussed in turn.

9.1.1 The enhanced agency and novel categorisation of agentic orientations

The novel categorisation of agentic orientation represents a typology, which is rationally conceptualised, based on the enhanced construction of agency and employees' perceptions of the learning environment. The categorisation questions simple assumptions in prior literature about the ideal of agency as exercising only the capability to develop one's competences and work practices in the workplace learning context (Goller & Harteis, 2017; Messmann & Mulder, 2017). Furthermore, the identification of the categories of agentic orientation contributes to HRD literature (e.g. Crouse, et al., 2011; Lazazzara et al., 2013; Truxillo et al., 2017) by showing how existing employees differ in how they perceive their own role and in the influence of the learning environment. Rather than presenting late-career employees as a group with declining learning behaviour, they can be, as any other employees, positioned in the categories of proactive, reactive, or restricted agency. These orientations also demonstrate that employee agency in the workplace is multidimensional, comprising not only positive execution of agency but also opposite viewpoints and agentic actions towards education and training offerings in the workplace and society.

The enhanced construction of agency demonstrates that agency and employee structures can be defined separately but, at the same time, these concepts are mutually connected, forming a duality. The conceptualisation thus follows Giddens' (1979, 1984) idea of mutual dependency as well as the suggestions of 'knowledgeable' and 'practically conscious' agency. As demonstrated, this thesis clearly extends Giddens' conceptualisation of agency (Figure 6), which is insufficient for explaining how employees construct their agency in relation to their competence development activities.

The analysis confirms that agency can be defined as *an employee's capacity for agentic actions and competence development activities constructed through temporality, self-determination, and self-efficacy*. The conceptualisation of agency delimits the focus of agency into three components, namely self-determination, self-efficacy, and temporality, and simultaneously extends the depth of these same elements.

Rather than divisions between motivated and non-motivated employees (Kooij, 2010; Maurer et al., 2003), it is shown that the types of motivation taken from self-determination theory (Ryan & Deci, 2000b)—autonomous, controlled, and antimotivation—are more accurately ascribed to employees' goal orientation in competence development and in their construction of agency. While previous studies recognise self-efficacy to exist in the landscape of agency (Biesta et al., 2015; Evans, 2007), this thesis enhances knowledge of the differences in employees' self-efficacy, and also the linkage with other components of agency/employee structures. Furthermore, this thesis reveals that employees have different temporal approaches in their competence development following the agentic orientation, thereby enhancing prior conceptualisations referring to temporality in agency (Emirbayer & Mishe, 1998).

In addition, the construction of agency is suggested to encompass employee structures, defined in the thesis as *employees' mental traces comprising their sense of power over available resources, meaning of work, and competence development, as well as internal rules in relation to competence development and work*. The components of employee structure build on the structural dimensions of signification, domination, and legitimation (Giddens, 1984). However, the detailed composition of employee structure in this thesis responds to critiques of Giddens' rather vague and difficult conceptualisations (Jones & Karsten, 2008; Mutch, 2014). Therefore, instead of using Giddens' abstract notion of interpretative schemes, as applied by Orlikowski (1989) and by Neu Morén (2013), in this thesis the component of 'meaning' referred to is signification. Meaning resonates with beliefs about the purposes of education, influencing perceptions, judgements, and decision-making that motivate and drive employees' actions as well as beliefs about work and the social environment (Biesta et al., 2015; Evans, 2007).

Similarly, the term 'facility' (Giddens, 1984; Orlikowski, 1989) is replaced by the notion of 'sense of power over resources', which better illustrates an employee's ability to mobilise available resources allocated (time, money) and authorised (access to training) for competence development, and refers to domination. The notion of 'norm' (Giddens, 1984; Orlikowski, 1989) can be easily connoted to the societal or

organisational realm. Therefore, it is transferred into employee's 'internal rules', which relate to the legitimation of competence development.

9.1.2 The relative learning environment and the interlinkages between elements

It is further proposed that the learning environment embeds sets of social systems comprising significant bundles of individual, organisational, and societal factors. Social systems are defined as the *arrangements and relations between people in the society and in the workplace organised in regular social and organisational practices*. Consequently, this research reveals that arrangements in the workplace reflect age biases and gendered norms. These are interlinked with the organisational practices of staffing, dismissal, training, and work management. The economic downturn and legislation related to training are associated with the other factors. Consequently, it is shown that the employees perceived three sets of social systems of importance in the Finnish workplace, which are present in particular in the relationship between an employee and a manager.

Furthermore, this thesis suggests that employees perceive similar sets of social systems differently; therefore, the importance of the learning environment for an employee is relative and follows his or her agentic orientation. Consequently, a proactive employee can cope with and find a way to initiate a new job even in the presence of downsizing and embedded age discrimination, whereas reactive employees take the opportunity that appears, and restricted employees might reject offerings given to them. Similarly, employees perceive the relationship with their manager in different ways. Proactive IT professionals regard the manager's role as less important than their own agency. By contrast, reactive and restricted employees view their manager as a support required to instigate competence development opportunities. Thus, differences in agentic orientation reveal not only differences between the frequency of employees' competence development activities but also how they perceive the learning environment, a novel finding to be further elaborated in future research.

Finally, it is concluded that agency, employee structure, and social systems form multifaceted relationships, which together are involved in employees' competence development. The components of agency and employee structures have mutual

dependency—reflected in the categorisation of agentic orientation. The individual, organisational, and institutional factors are interconnected as employees perceive particular sets of social systems. Employees' agency and the sets of social systems are in interaction, resulting in employees interpreting their capability for competence development differently and having different perceptions of their opportunities in the learning environment.

The relational nature of the interplay between agency, employee structure, and social systems suggests that the factors involved in competence development are relative. This means that the learning environment is not uniform for all employees, whether it be expansive or restricted. Furthermore, there is no single optimal environment for competence development, for instance, with respect to training processes or learning opportunities, contrary to the concept of an expansive–restricted learning environment (Fuller & Unwin, 2005). Agentic orientations indeed demonstrate that organisational features such as the availability of extensive training offers can be both enabling and also constraining, depending on the employee's agentic orientation and respective perceptions.

Overall, the propositions in the thesis attempt to open up and overcome dualisms between the ideal agency and excluded older employees, as well as between expansive and constraining learning environments. While consideration of the relational bases between individual agency and the learning environment is not entirely new, this thesis exposes the holistic construction of relationships between the employee and the factors in the learning environment. As a result, employees represent three different agentic orientations, demonstrating respective frequencies of participating in competence development activities in the workplaces.

9.1.3 The key concepts of structuration in empirical research

Structuration provides a novel theoretical lens through which to explore competence development, compared with earlier key approaches, explaining (older) workers' training participation as being motivational, as well as learning theories and economic approaches. Structuration (Giddens, 1979, 1984) has been referred to in workplace literature as a promising approach (Billett, 2008; Evans, 2007), but is yet to be used on a

large scale for conducting empirical analysis in the field. This thesis reveals the analytic value of structuration in an individual context, contributing also to the debate on the application of the theory in empirical analysis.

The theoretical lens of structuration serves not only to frame the theoretical approach and the findings but also to guide the analysis of the qualitative and integrated data sets in this mixed-methods study. The key concepts are applied as a leading approach, enhancing earlier approaches, which often apply structuration theory and its key concepts selectively and peripherally (see Jones & Karsten, 2008; Mutch, 2014; Whittington, 2010). The focus has been on individual actions rather than the (re)production of organisational practices, as has been the strategy in organisation studies (Jarzakowsky, 2008; Orlikowski, 2000; Stones, 2005). However, rather than making an ontological argument between the analytical dualism of structure and the duality of structure, as Archer (1989) and Mutch (2014) do, the focus is on the epistemology and practical usage of these concepts in an empirical inquiry.

The premise of the novel framework applied is that employees' agency and structure can be involved without giving primacy to either (Bryant & Jary, 2011; Pozzebon, 2004; Whittington, 2010), as suggested in structuration theory (Giddens, 1984). This thesis clearly demonstrates what the misunderstood concept of 'duality' means in applications of structuration (Whittington, 2010). The duality of structure reveals the interaction between employees' own mental structure and the social systems in the workplace. This interaction portrays agency and its components and employee structures as having separate elements, whilst being in interaction aligned with agentic orientation.

A particularly novel proposition here is the recognition, based on the duality of agency/employee structure, of three distinctive agentic orientations. Furthermore, it is demonstrated that agency and employee structures can be defined separately but, at the same time, these concepts are mutually connected, forming a duality. This addresses the critique by Archer (1996) of the central conflation of both agency and structure. The duality of employee structure and agency does not diminish the essence of these concepts, as Archer (1998, 2010) suggests, but serves as an analytical tool to

identify different agentic orientations and the interrelationships between these components.

The analytical framework developed here extends the adaptations of structuration by Orlikowski (1992) and Stones (2005) discussed in Chapter 4. While Orlikowski (1992) recognises the duality of structure and agency, this study clearly exposes how employees' perceptions are mediated through the components of employee structure. Furthermore, both Orlikowski and Stones reject the virtual nature of employee structure and apply Giddens' concept of structure in a way that he directly denies. The proposed framework in this thesis understands organisational factors, such as access to IT resources, as parts of bundles that are embedded in sets of social systems in the workplace. Consequently, technology is not understood directly as a component of employee structure but as an object an employee perceives as being an enabler or constraint. In doing so, the concept of employee structures as mental traces is applied in the way Giddens asserts, an aspect missed in the earlier adaptations of structuration. Consequently, the factors embedded in social systems do not have an autonomy or power of their own, as Archer (1998, 2010) and Stones (2001, 2005) argue, but employees' actions are mediated by employee structures with a relational nature.

Overall, the arguments in the thesis demonstrate that the interaction between agency, employee structure, and social systems can be analysed in one study. The operationalisation of agency/employee with social system provides an integrative view of the influence of factors that are embedded, simultaneously, in the individual, organisational, and societal domains (Whittington, 2010). However, the empirical enquiry also shows that Giddens' idea of methodological bracketing (1984, pp. 281–354) is required. Due to the multiple social actors and relationships involved in competence development activities in the workplace, the study must maintain a specific research focus.

9.2 Empirical contribution

The empirical contribution revolves around the debate concerning education and training among an ageing workforce, and particularly the concerns of older workers of having fewer opportunities to participate in further education and training in the workplace compared with younger workers (Billett et al., 2011; Carmichael, 2011). This has been explained partly through age discrimination related to training practices (Ng & Feldmann, 2008; Dymock et at., 2012), and partly by lower expectations of a return on training investment from older workers' development (Kock & Ellström, 2011; Lazazzara et al., 2013; Van Vianen et al., 2011). In addition, it is suggested that expansive workplaces provide good opportunities for training and on-the-job learning activities, whereas constraining learning environments prevent existing employees from developing themselves (Fuller and Unwin, 2005; 2011).

This thesis' findings in the context of well-educated, middle-aged, and late-career employees contribute to existing adult education, workplace learning, and organisational knowledge from four perspectives. First, the thesis enlarges the association between age discrimination and competence development activities. Secondly, it reveals that there are age biases and gendered expectations in IT workplaces, which together influence in particular women's participation in on-the-job learning. The third contribution relates to age and gender as categories and attributes in empirical research, and finally, there is a contribution related to the activities categorised as informal learning. In the following paragraphs, these contributions are discussed in turn with respective arguments.

First, it is suggested that age discrimination related to staffing and dismissals has a stronger influence on existing employees' competence development than older employees' direct exclusion from education and training does. The evidence in the thesis is that concerns related to older workers' lower adult education and training attainment levels do not apply in this context. However, it is shown that an association exists between age discrimination in recruitment and access to informal on-the-job learning, a connection not recognised in earlier literature.

In addition, late-career IT employees perceive that age discrimination towards older workers in recruitment and dismissal is why they are not trained. These factors, thus conceptualised as a set of social systems, include age discrimination in staffing and downsizing practices during the downturn in the Finnish economy, which have together influenced employees' perceptions of opportunities in the learning environment. However, the evidence suggests that proactive employees in particular initiate and participate in activities beyond their workplace, which increase employees' opportunities for competence development activities despite the social systems in the workplace. Consequently, it is proposed that age discrimination related to staffing and dismissals exists in IT workplaces in Finland, which constrain reactive and restricted employees in particular from accessing new projects and jobs; that is, they are restricted from accessing on-the-job learning.

Second, it is suggested that there is a set of social systems reflecting visible and subtle attitudes, biases, and norms related to both age and gender in the workplace, which eventually influence women's opportunities for competence development. The thesis reveals that the frequency of education and training activities does not differ according to a respondent's chronological age or gender; there is indeed a more complex association between age, gender, and on-the-job learning. It is proposed here that there are parallel age discrimination and gendered norms in IT workplaces that influence reactive women, particularly in accessing new projects and jobs.

The parallel gendered expectations of women taking care of small children and the priority given to young men in the IT industry are shown to influence women's perceptions of their capabilities. In addition, the segregation of jobs is shown to influence women's participation in technical roles and their subsequent on-the-job learning as the most important activity for achieving professional competence. Moreover, it is revealed that most middle-aged and late-career women face double constraints in accessing on-the-job learning activities compared with young men in Finnish IT workplaces. Women IT employees in particular recognise a set of social systems reflecting parallel gendered attitudes and age biases in Finnish IT workplaces, resulting in gendered segregation between jobs. This in turn affects women's perceptions of their opportunities for on-the-job learning and new technical jobs.

The third empirical contribution relates to age and gender as categories and attributes in empirical research that are not without their problems. Previous research (see Kyndt and Bauert, 2013) tends to dilute the attributes of age and gender into a one-dimensional variable, leaving little scope for recognising the subtle means of discrimination and normative expectations and biases attached to both. It is argued here that age and gender are psychosocial attributes, which are manifested in sets of social systems in organisations across industries and society. Following this avenue, this thesis enhances the broad category of 'older workers' used in empirical studies in different fields. Instead of applying one broad age cohort category extending from employees in their forties until the official retirement age of between 64 to 68 years in Finland, this thesis defines two age groups: middle-aged (40–54 years old) and late-career (55–64) employees. These thresholds are justified by life course changes, typically around the forties and then when the position in the labour market rapidly changes at the age of 55 years. These definitions contribute to research sampling concerning the definition of employee categories based on chronological age, where appropriate. However, this thesis suggests that differences between employees' competence development need to be approached holistically, and with all the elements of the proposed analytical framework included.

Finally, this thesis contributes to workplace learning through enhancing the concept of informal learning. While previous studies regard informal learning as experience-based, non-routine, and often tacitly happening spontaneously, unconsciously, unintentionally, and incidentally (Ellström, 2011; Eraut, 2004; Marsick & Watkins, 2001), this thesis suggests that on-the-job learning activities are observable activities relevant in a real-life context. More precisely, informal on-the-job learning activities are designed to increase employees' competences through activities ancillary to the specific job; for example, working on a project and information gathering. Formal on-the-job learning activities are aimed at increasing the level of competences in ways other than training, such as mentoring, career counselling, and job rotation.

This thesis demonstrates how informal learning and training can be defined in an inquiry whether in qualitative and quantitative studies. In addition, it is revealed that open access knowledge and training can democratise employees' competence

development in different workplaces, although not sufficiently addressed in workplace literature. Open access knowledge and training offer new choices for employees' competence development that can, of course, also put more pressure on employees to carry greater responsibility for their continuous learning activities.

9.3 Implications for future research, policies, and practices

The philosophy of the research, the mixed-methods strategy applied, and the sampling achieved set several limitations, as in any other research (Johnson & Onwuegbuzie, 2004; Martela, 2015; Morgan, 2014). Simultaneously, however, these recognised limitations serve as prospects for the future research, which are discussed in this subsection. From various discussions in the thesis, fruitful directions for further research can be identified and fall into four areas: testing the framework in other contexts; investigating if agency changes over time; exploring more sets of social systems involved in competence development in a different context; and finally developing a model and an instrument for investigating large samples of employees.

In accordance with pragmatism and the mixed-methods design applied in this thesis, the knowledge generated is based on employees' experiences, perceptions, and understanding of the consequences of their actions. Therefore, the associations and relationships proposed hold empirically for employees in these historical and socioeconomic conditions, but should not be held as ever-present explanations of the subject. Thus, even though the analytical framework and employee categorisation enable the exploration of employees' competence development from a holistic viewpoint, these are probably best described as low- or middle-level theories (Eisenhardt, 1998). The conceptualisations and interlinkages therefore need testing in a range of different contexts to facilitate development, in a different socioeconomic context and line of business other than IT.

Concerning the sampling of informants to both the quantitative and qualitative surveys, participants replied on a voluntary basis; therefore, it represents those employees who were able and willing to respond to the survey questions and participate in the interviews. Nevertheless, the findings are relevant for well-educated professionals in Finland, although further research could expand on this by researching

competence development in diverse populations of employees and workplaces across industries and countries. The analytical framework proposed is robust enough to explore dynamics and tensions in employees' agency and structures and the environmental factors in employees' competence development. However, due to the limitations concerning the sample size of interviewees and the relatively low response rate in the survey, there is evidently an avenue for future research to test the framework in other contexts. For instance, research on professionals influenced by automation and robotisation could provide a deeper understanding of how employees respond to the imperative for competence development and career change in that context.

The research was undertaken at a specific point in time, and thus further research is suggested when focusing on changes in agency and practices over time. Future research could investigate how employees' agentic orientations—that is, their construction of agency, including components of agency/employee structures and their relationship with the social systems—change over time. Furthermore, this type of study design would elucidate whether an employee's agentic orientation changes, for instance, from restricted to reactive, and if so, why? The analytical framework could also be utilised by those interested in how employees' competence development activities (re)produce organisational practices in the workplace, following the structuration process. Crucial here is to include all observable activities relevant in a real-life context and cover further education, training, and formal and informal on-the-job learning. For that type of research, the proposed framework provides an enhanced conceptualisation of agency, employee structure, and social systems and the interlinkages to be analysed.

The research reveals three sets of social systems, each comprising a bundle of individual, organisational, and societal factors as well as the relationships between an employee and a manager embedded in these systems. For well-educated middle-aged and late-career employees, age discrimination in staffing and downsizing influences their access to on-the-job learning. Parallel gendered attitudes and age biases especially affect women's opportunities for new technical jobs. Client priority and cost-effectiveness act as enablers, supporters, and constraints for different employees. Further research could investigate if these sets of social systems and the relationship

between the employee and manager apply in other contexts. An interesting question is whether there are other combinations of social systems that influence young employees' competence development in Finnish workplace across industries? A particularly interesting avenue for future research is the intersection between age and gender in terms of employees' competence development.

The construction of agency/employee structure provides a detailed conceptualisation, which can be applied in particular qualitative-driven studies, and also provides the option to develop a detailed model based on the proposed framework and to build an instrument that includes agency/structure, social systems, and the relationships between them. This kind of instrument could be applied to different contexts and large samples to be generalised upon a wider population, requiring a more positivistic ontology than the research provided here.

The findings of the study have great potential for policymaking and implementation related to Finnish adult education and workforce development in workplaces. The legislation and norms in society as well as the decisions and practices in the workplace have a long-lasting impact on employees' perceptions of their access to competence development activities. These perceptions play an important role as planned and executed education and training offerings and courses in the workplace. Particularly crucial are perceptions and processes of staffing/dismissals, which influence employees' access to new jobs and competence development.

Consequently, it is of the utmost importance that the legislation and formal norms of education, training, as well as recruiting and dismissal processes form a seamless combination. It is shown in this thesis that existing Finnish legislation enables IT employers to utilise the mismatch between, on the one hand, their duty concerning existing employees' competence development to achieve professional competences and, on the other hand, the regulations related to downsizing in Finnish legislation. They are also shown to take advantage of the availability of graduate students from universities and UAEs with the latest knowledge and skills of emerging technologies, instead of developing existing employees' professional skills. Consequently, it is suggested that legislation should be developed to ensure that middle-aged and late-career employees' also have access to adult education and training opportunities in

the workplace that continuously develop the competences required in the labour market. In addition, there should be financial benefits for employers in having a combination of existing employees and new, younger, employees working and developing together.

The results show that subtle age and gender discrimination exists in IT work related to jobs and on-the-job learning. While women, in general, are recognised as actively participating in higher education and training in male-dominated industries such as IT, they face challenges that policymakers and practitioners in the workplace may not recognise. Even though legislation related to discrimination and genderism is in place, there is still room for policy making and practices to enable the low number of middle-aged and late-career women to continue in the IT industry and technical jobs in Finland.

Finally, it is recognised that the question of existing employees' participation in competence development is rather about leadership and relationships in the workplace, particularly between a line manager and an employee, rather than only about HRM. However, both managers and HRM staff can apply the novel analytical framework and categorisation of agentic orientation to understand the different components related to employees' initiation, acceptance, and rejection of employees' competence development. Consequently, managers and HRM staff can better facilitate employees' competence development based on their orientation, rather acknowledging the (subtle) association older age and gender might have in the industry and in their thinking. Finally, the relatively low level of formal on-the-job learning activities in this study reveals that potential exists for more on-the-job learning activities in Finnish workplaces, including, for instance, mentoring between existing (late-career) employees and new (young) recruits. Overall, employers might revise their HRD strategies and practices to develop competences that facilitate existing employees maintaining their current work and preparing for the future competences required in the workplace.

9.4 Closing reflections

In this final section, I would like to reflect on the journey of my doctoral studies and the process of undertaking this thesis work. Looking back, I can see that the subject of this thesis was ahead of its time. The challenges for continuous competence development among highly educated employees in Finland was hardly recognised in 2014. Nevertheless, the topic was meaningful for me because I wanted to understand why employers appeared to be laying off highly educated employees in a country with multiple societal and organisations enablers. Moreover, I wanted to understand a phenomenon I regarded as unfair. Consequently, I initiated the research that was significant for me, as a typical proactive employee would do.

Conducting a programme of doctoral studies has generally been an enjoyable experience. I have gained both generic and professional competences, including knowledge and intellectual abilities and methods to undertake scientific field research. In addition, I have learnt the procedures regarding ethical considerations as well as academic presentation and publishing not previously familiar to me. An aspect specifically valuable for me was learning the usage of the tools and methods of quantitative field study with a survey and of qualitative field study with interviews.

These studies have, however, enabled me to recognise the limitations of these commonly used methods. For a quantitative survey, the deductive approach with previous knowledge and predetermined measures can offer accurate results, but these describe only the questions set in advance. The importance of sampling as well as the formation of survey questions are of great importance in terms of obtaining valid and generalisable results. I was surprised how interviewees interpreted the survey questions in different ways. Deeper understanding and explanations could then be found using qualitative interview data and analysis. These provided implications, for example, of agentic orientations and the components of agency and employee structure. In turn, these results are context-specific and further studies are required to determine whether employee orientations can be recognised in other contexts.

Nevertheless, combining these methodologies has enabled me to build a holistic view of employees' competence development and indicative explanations of the

differences between employees. I must admit that despite my strong self-efficacy, the process of this academic work has been more challenging than expected. It required me to step out of my comfort zone on many fronts. The major pitfalls of the project mostly pertained to the wide scope of the research, and the challenging theoretical foundation. During these five years, I became acquainted with multiple fields of study and skimmed journal articles, many of them not corresponding to the scope of this thesis. Combining several fields of studies meant that there was no academic community to join, resulting in a lonely journey. Giddens' work is opaque to understand, even to native English speakers, but for me on many occasions, it has been almost incomprehensible. That is why the pleasure I gained when beginning to fully grasp the meaning of difficult concepts, as well as the enjoyment in analysing and interpreting data, are positive learning experiences that will be remembered.

Even though I had experience in conceptualisation gained from my previous consultancy career, the theoretical thinking and the level of conceptualisation in academia turned out to be very different from business practices. It became increasingly obvious that my English overall, particularly in writing, did not meet the academic standards necessary, which also made the whole process harder than I expected. It was, however, clear from the very beginning of the studies that I was going to continue as long as needed to complete them. My self-determination to achieve my goals has always been strong. I also had strong autonomous motivation to carry on and to achieve my degree. I also kept my eye on the future, and obtaining a PhD degree is certainly an enabler for my future work.

As the relationship between an employee and the competence development environment is relative, I can only reflect upon the practices at Haaga-Helia UAE and Westminster University on my own behalf. Above all, Haaga-Helia UAE made this journey possible by organising and financing the studies, as well as providing work in a research project close to the subject of this study. Working in a research project could be considered an enabler for the thesis but, occasionally, it was stressful to produce reports and presentations for this separate project and then maintain a different focus in my thesis.

Having a better understanding of the cultural nuances between English and Finnish higher education processes and supervision would have helped me to manage my own and—probably—my supervisors' expectations better. At the beginning of the studies, I perceived the annual progress review (APR) process in Westminster to be a constraint with formal steps and administrative due dates. Towards the end of the studies, I started to realise how APR 2 and APR 3 could be of value. Actually, feedback from the internal assessor was very valuable and enabled me to identify any potential issues or problems in my project.

Finally, this research has demonstrated that there is an increased need to focus on further education among middle-aged and late-career employees in Finland. During the last two years, I have been able to present my initial study results in conferences in Finland, where both education policymakers and work-life researchers have participated. It was a pleasure to recognise that in May 2019, the Ministry of Education and Culture proposed that Finland should reform the continuous education model to better enable workers to maintain their employability throughout their career. The financing model of higher education is to be changed to cover not only studies aimed at obtaining a degree but also the continuous education of workers, in effect from 2021. I would like to believe that the increased knowledge of my research has contributed to emerging discussions and policy formulations to increase higher education opportunities, particularly for employees aged over 40 years in Finland. Personally, I regard my PhD study as a driving school for me, and the degree represents a driving licence, after which I will be able to execute academic research and participate in both academic and public debates.

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APPENDIX 1. Invitation to survey by letter

INVITATION 18.1.2017

Welcome to the project of Skills, Education and the Future of Work to strengthen your career management and professional competences!

Do you want to succeed in your work and change your work life? Are you looking for a new job or is there something happening in your workplace? Do you need to update your skills? If you answered positively to any of these questions, you can benefit from this programme.

Please follow these instructions to access to the web-survey:

Go to Link; https://www.webropolsurveys.com/ttl.net

Enter Password: taidot

Please answer all questions and press 'send' button.

The due date of the survey is 31st January 2017.

All survey respondents are allotted into two groups, of which one will receive personal feedback on their own competences, and the other is invited to a tuition-free career counselling workshop at UAE of Haaga-Helia. You can obtain more information about the programme from the enclosed programme information sheet.

The source of your contact information is the Student Register of Haaga-Healia UAE. The project is funded during 2016–2019 by the Strategic Research Council (SRC) at the Academy of Finland. The SRC provides funding for long-term and programme-based research aimed at finding solutions to the major challenges facing Finnish society.

Thank you for your participation!

APPENDIX 2. The project information of the survey

Dear respondent, 18.1.2017

The Finnish Institute of Occupational Health, Haaga-Helia University of Applied Sciences and VATT Institute for Economic Research have a development project, which aims to seek new solutions for developing careers and competences in work life. The project is focused on employees over 40 years old, who face changes in their career or work and want to find ways to cope with these changes. You will find more information on the project in this information sheet. In addition, you have received an invitation, which includes instructions on how to participate in the survey.

The progress of the project

In total, 10,000 persons have been invited to participate in this survey, as the first step of the journey. All respondents who answer the survey questionnaire will be allotted into two research groups. Group 1 will receive information on the status of their competences, whereas Group 2 will be invited to the tuition-free career workshops. This research is investigating the difference between these two groups before and after these workshops, which increases knowledge of the impact of these career workshops. Therefore, both groups will receive a shorter survey questionnaire some weeks after the workshops and a year after the workshop. The reason we ask for your contact information is that these survey responses are anonymously linked to the data from Official Statistics of Finland to observe the longitudinal impact.

Gathered information

In addition to the background information, there are questions about current work, professional competences, competence development, future plans and workability in this survey.

Participation

Participating in the research project is entirely voluntary, and you can withdraw at any time during the data gathering. However, by answering all three surveys, you can support the career and competence development study. In so doing, you can contribute to Finnish research on work and the practical development of methods and tools for middle-aged employees.

Confidentiality

The information will be used only by researchers in the Finnish Institute of Occupational Health, Haaga-Helia University of Applied Sciences and VATT Institute for Economic Research. They have a professional confidentiality clause in their work and the data are managed and stored according to Finnish law and the rules of ethical research in Finland. The data are stored electronically in archives situated in the Finnish Institute of Occupational Health safeguarded with passwords and firewalls. The reporting of the studies will be presented at a group level and there is no possibility of recognising any individual information or responses in these reports.

More information can be obtained:

Salla Toppinen-Tanner, PhD
Director of the Research
Finnish Institute of Occupational Health
salla.toppinen-tanner@ttl.fi
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PhD student
Haaga-Helia University of Applied Sciences
niina.jallinoja@haaga-helia.fi

APPENDIX 3. THE SUB SET OF QUESTIONNAIRE – January 2017

Gender Female Male

Year of birth 19____

Family status:
Single
Married, cohabitation or registered cohabitation
Divorced
Widow

What education have you achieved after elementary school? Please tick all that apply.
Vocational degree
Matriculation exam
Vocational college degree
University of Applied Sciences
Bachelor of Business Administration
Bachelor of Engineering
Other, please specify? ___
Master's degree (UAE)
University, Bachelor's degree
Master's degree
MPhil or PhD
Vocational certificate, please specify
Other degree, please specify

Are you currently
Employed permanent
Employed fixed term
Employed on a period of notice
Unemployed, how many days have you been unemployed?
Entrepreneur
Student
On a family leave
Other, please specify____

Who do you live with (please tick all that apply)?
I live alone
I live with a spouse
children (0-6 years of age)
children (7-18 years of age)
children (older than 18)
other grown-ups

In addition to your employment, do you take care of someone who needs help due to his/her age, sickness or injury?
Yes
No

What is the economic situation of your family/household at the moment?
excellent
quite good
satisfactory
quite bad
very bad

Is your line manager
Older or the same age as you?
Younger than you?

Does your current job match your education or did your last job match your education?
Yes, entirely
Yes, partially
Little or not at all

How much have you developed your competences during the past year (12 months) with the following ways? Please tick all that apply.
I have attended trainings organised by employer, how many days? _____
I have attended trainings organised by an external party, how many days? _____
I have attended events organised by partners, subcontractors, customers etc., how many days?
I have attended online trainings or lectures, how many days?
I have studied in education institution, how many points?

Which methods have you used to develop your competences at work during the past year (12 months)? Please tick all that apply.
I have been on a job rotation.
I have worked in a challenging project.
I have attended an internal development group or work group at workplace.
I have lectured at my workplace or outside of it.
I have red professional literature and trade journals.
I have acted as a coach or mentor.
I have been mentored or coached.
I have attended career counselling or coaching.
I have used databanks to solve a problem at work.
I have used the Internet to solve a problem at work.
I have followed work-related social media channels (Facebook, Twitter, blogs, LinkedIn)
I have produced work-related content to social media channels (Facebook, Twitter, blogs, LinkedIn etc.)

To what extent have the following factors made you develop your competences during the past year (12 months)?
Compulsory at work
A training plan
A superior's initiative
A recommendation or an example by a colleague
Requirements by current work
Changing career or line of work
A need for change at work
I like learning
Employment negotiations or insecure employment situation
Unemployment
Other, please specify____

To what extent have the following factors hindered your competence development during the past year (12 months)?
Lack of suitable training options.
Problems in working environment or physical load at work
Problems with work community or too much load on mental ability
Lack of interest to study
Challenges outside of work (family, economic situation etc.)
I do not know what competences to develop
I do not have time to develop my competences
I do not have the energy to develop my competences
My employer does not offer the opportunity to develop my competences
My employer considers me too old to invest in my training

Does your employer show interest in your career or maintaining your competences?
Not at all or very little
Quite little
To some extent
Quite much
Very much

WELL-BEING AT WORK
Let's assume that your work capacity has scored 10 points at the best. What grade would you give your current work capacity?
I cannot work at all 0……10 My work capacity is at its best. WORK HISTORY
The following questions concern your work history and your current work. If you are not currently employed, think of your latest position.

What's the size of your current employer?
A very large company (more than 500 employees)
A big company (250-499 employees)
A mid-sized company (50-249 employees)
A small company (2-49 employees)
I am an entrepreneur or a self-employed person

What is the line of business of your current/latest employer?
Industry
Construction
Trade
Information and communications
Finance and insurance
Public administration
Education
Health and social services
Other, please specify

How many years have you worked for your current employer or how many years did you work for your latest employers?
0-1; 2-5; 6-10 ; 11-14; More than 15

Are you in a managerial position?
Yes, How many followers?
No

APPENDIX 4. PARTICIPANT INFORMATION SHEET 24/01/2015

Research Project – IT employees' competence development at work

Researcher: M.Sc. Niina Jallinoja

Supervisors: Doctor Elisabeth Michelson, Professor Linda Clarke

You are invited to be part of a case study aiming to examine employees' perceptions and actions related to their competence development at work. This live case study research is being undertaken as part of PhD studies in the University of Westminster. There are likely to be academic conference presentations as part of the PhD programme and the reporting of the degree based on this research.

The study will involve you in:

Participating in an interview with me which will take approximately 60 minutes. The discussions are tape-recorded, then transcribed to be used as data for this research. The transcript will be deleted after the PhD has been approved.

Granting me access to your public LinkedIn profile or deliver similar information by e-mail to me.

Please note:

Your participation in this research is entirely voluntary.

You have the right to withdraw at any time without giving a reason.

You have the right to ask for data to which you have an association to be withdrawn as long as this is practical.

You do not have to answer particular questions in interviews if you do not wish to do so.

No individuals are identifiable from any collated data, written report of the research, or any publications/presentations arising from it.

All computer data files are password protected. The researcher will keep files in a secure place and will comply with the requirements of the Data Protection Act.

All achievable hard copy documents, e.g. consent forms, will be kept securely and in a locked cupboard, wherever possible on University premises.

Documents may be scanned and stored electronically. This may be done to enable secure transmission of data to the University's secure computer systems.

If you wish you can receive information on the results of the research. Please indicate on the consent form if you would like to receive this information.

If you have a complaint about this research project you can contact my mentor, Doctor Johanna Vuori, at Haaga-Helia University of Applied Sciences.

APPENDIX 5. PARTICIPANT CONSENT FORM

Title of Study: **IT employees' competence development at work**

Lead researcher: *Niina Jallinoja*

I have been given the Participation Information Sheet and/or had its contents explained to me.	Yes ☐	No
I have had an opportunity to ask any questions about the intentions of the study and I am satisfied with the answers given.	Yes	No
I understand I have a right to withdraw from the research at any time and I do not have to provide a reason.	Yes	No
I understand that if I withdraw from the research any data included in the results will be removed if that is practicable (I understand that once anonymised data has been collated into other datasets it may not be possible to remove that data).	Yes	No
I understand the study includes research as part of my involvement with the module design and delivery process and that it is not intended to determine the extent of my performance as an employee.	Yes	No
I would like to receive information relating to the results from this study.	Yes	No
I wish to receive a copy of this Consent form.	Yes	No
I confirm I am willing to be a participant in the above research study.	Yes	No
I note the data collected, (which will be fully anonymised) may be retained in an archive and I am happy for my data to be reused as part of future research activities.	Yes	No

APPENDIX 6. INTERVIEW GUIDE, 2017

What is your current work?

Occupation, duration Current employer

Your role and main tasks (nature of the work, autonomy of work) Duration in this organisation

Career stage

What is your personal life situation?

Spouse – working/not, Children, ages, living home

Age and feeling about it at work

Life stage and feeling about it in relation to work

Please can you tell me your education history?

Degrees and qualifications

Reasons for these, other options Critical learning incidents

Usage of government education support

Work history?

First employer after degree - employability level then

All employers and duration - key roles - nature of work

Any unemployment periods - training during that time?

Your competences?

What are you good? Why?

What competences needed (professional, general, personal)? Why need these (nature of the work, autonomy of work)?

Current job match with education? Why? What competence would like to have? Why?

How have you developed competences at each of your workplace?

Favourite methods to learn at work? Why?

What formal training (employer-led, self-learning, eLearning) Why these?

What learning at workplace, Why these?

(planned: job rotations, mentoring, development discussions) (unplanned/informal – project work…)

Can you recall any example how your competence development is different now versus earlier, when you were in your 20s or 30s? How? Why?

Can you tell me examples what has enabled you for training and learning at work?

How? Why? When? Now different?

Who initiates

Manager attitudes Manager support HR support

Norms at workplace on training and learning (other employees/directors) Competence development policies and processes

Age management processes

Family support

Societal support (money, leave)

Can you tell me examples of constraints you have faced?

When? How? Why? Now different?

Life stage related (age, gender, children) Occupation related

Health related Money, time related Employer related Societal related?

How would you describe your role in competence development?

Summarise in three lines? Strengths?

Mentoring, supporting others?

Are you happy with your own role as it is? Why?

Future time perspective in work life?

Importance of work life versus other life

Career inspirations next 5 years (retirement?)

Role of competence development

Competence development desires and plans

Any questions for me?

Thank you!

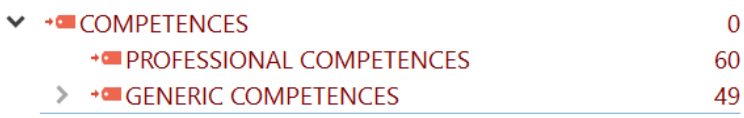
APPENDIX 7. CODING AND ANALYSING DIARY OF QUALITATIVE DATA

Appendix 7. presents the key steps involved in analysing interview data for the conceptualisation leading to agentic orientations and the novel framework developed in the thesis. The first step of qualitative analysis and respective coding followed the earlier knowledge of workplace learning and agency. Consequently, the coding comprised: competences, competence development forms/methods, agency and enablers/constraints. The second step aimed to further understand differences in employees' agency and employees' different perceptions towards individual, organisational and institutional factors in their learning environment. Therefore, the second round of qualitative analysis revolved between the concepts of Giddens (1979; 1984) and analysis of the data against these.

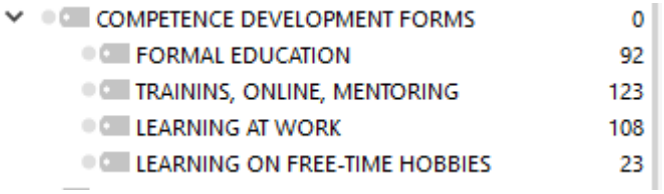
In the following, these two steps of analysis with respective codes are presented by the research question and respective sub-titles - competences and competence development activities (RQ1), agency (RQ2) and enablers/constraints - followed (RQ3) by the identification of employee structures and social systems (RQ 4).

Competences and competence development activities (RQ1)

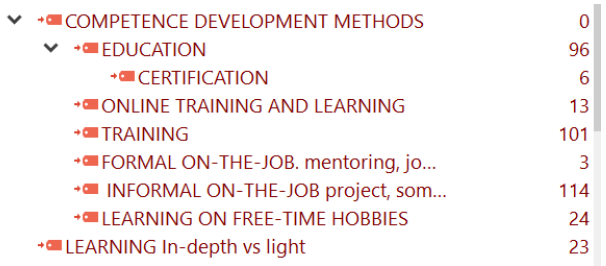
First, the sentences including statements of skills and competences were coded as 'competences' and sub-codes as 'needed competences' and 'not used competences' in January 2018. Secondly, when analysing coded segments in May 2018, the difference between technical and non-technical roles were identified; therefore, the sentences related to interviewees' 'professional competences' and those that referred to 'generic competences' were coded respectively. These codes were interpreted when analysing which competences employees perceived they needed and which competences they had developed.



Competence development was coded in January 2018, as education, training, online and mentoring which were based on workplace learning literature. During the coding, a new aspect of learning as a hobby was also added. Two other categories were, at that phase, learning at work and learning in free time, hobbies.



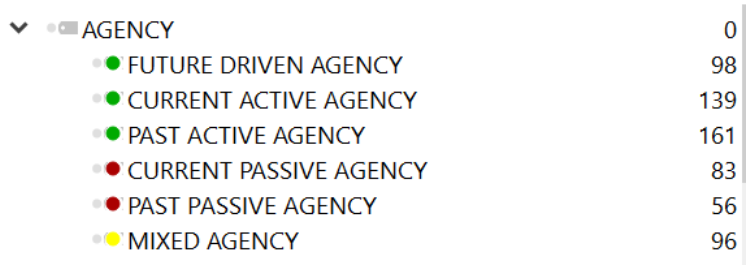
During the second step, the conceptualisation of competence development was sharpened; therefore, the data were re-named and coded accordingly. The sentences related to reflection on the learning and the level of competences achieved were coded as 'Learning in depth versus light'; this was however rejected as not being in the scope of the research. Indeed, there was a recognition that some activities are more informal, on-the-job learning whereas others were more formal, on-the-job learning.



These codes supported the development of the definition of competence development activities (see Figure 4.). Consequently, it was clarified that competences are divided in generic and professional competences, which could be obtained through competence development forms of education and training as well as formal on-the-job learning and informal on-the-job learning. The coded data informed also the analysis of agency, as the level and type of competence development activities that turned out to have an association with employees' agency.

Agency (RQ 2)

The first step of coding agency in interview narratives included two dimensions of agency, namely temporal (past, current and future taken from Emirbayer & Mische, 1998) and level of activity - active versus passive – (Evans, 2002; Hitlin & Long, 2009). During the coding, there were multiple paragraphs, which did not address only active/passive, and were; therefore, coded as mixed agency, planning to be re-coded after further analysis of data. Green, red and yellow colours were used to help the coding.



The second level of analysis related to agency revealed that there seemed to be different groups of agency based on not only temporality and their activity level in competence development methods, but also other components. It was recognised that interviewees were different in terms of what motivated them (Self-determination), how they reflected on their own ability to learn (Self-efficacy). There was also different kinds of activities they demonstrated in relation to competence and career development before actually participating in the activity (Agentic actions).

These elements were identified by each interviewee and consequently a table format of the initial conceptualisation of agentic orientations could be identified by proactive, reactive and, at this point, inactive employees, as presented in the following Table 18. It needs to be emphasised that individual factors of age and gender did not have an association with agentic orientation. As can be seen in Table 18, there are both middle-aged and late-career employees in all three categories of agency and both genders were represented in proactive and reactive orientations.

Table 18. Initial components of agency by interview participant

Age	Gender	SD	Self-Efficacy	Temporal Approach	Agentic actions	Competence development activities
PROACTIVE						
42	F	A	Strong	Future	Initiates own studies	Certification, all training
56	F	A	Strong	Future	Seeks new job	On-the-job-leaning focus
42	M	A	Strong	Future	Initiates own training	All training, also hobby
45	M	A	Strong	Future	Initiates business ideas	All training
48	M	A	Strong	Future	Initiates own studies	All training Collaborative learning
56	M	A	Strong	Future	Seeks new job	All training, Collaborative learning
REACTIVE						
40	M	C	Medium	Present	MOOC studies	Joins sessions at work
42	F	C	Medium	Present	Accepts training	Joins online learning
42	M	C	Medium	Present	Accepts training	Joins seminars
43	F	C	Medium	Present	Accepts training	Employer training
44	F	A	Medium	Present	Accepts training	Training and hobby
44	M	A	Medium	Present	Accepts training	Certification
44	F	C	Medium	Present	Accepts training, rejects manager role	Employer training
46	M	C	Low	Present	Seeks new internal job	On-the-job learning
47	F	A	Medium	Present	Accepts training	Employer training, hobby
47	M	C	Medium	Future	Accepts training	Employer training
49	M	C	Medium	Present	Accepts training	Partner training
54	M	C	Medium	Future	Rejects training	Employer training, study
56	F	C	Medium	Present	Accepts training	On-the-job learning
58	M	C	Medium	Present	Accepts training	On-the-job learning
59	M	C	Medium	Present	Accepts training	No training, unemployed
59	F	A	Medium	Present	Accepts lay-off	Career coaching
61	M	C	Strong	Future	Seeks new job	Career coaching
53	M	C	Medium	Present	Accepts training	Employer, partner training
First step- Inactive – later RESTRICTED						
41	M	A-M	Weak	Past	Participates unwillingly, Rejects new job	Employer training
46	M	C	Weak	Present	Participates unwillingly, Unwillingly takes responsibilities	On-the-job learning
49	M	A-M	Weak	Past	Participates unwillingly	Employer training in the last minute

Gender: F=Female, M=Male; SD=Self-Determination: A=Autonomous, C=Controlled, A-M=A-motivated
Source: Own interview data, 2017; N=27

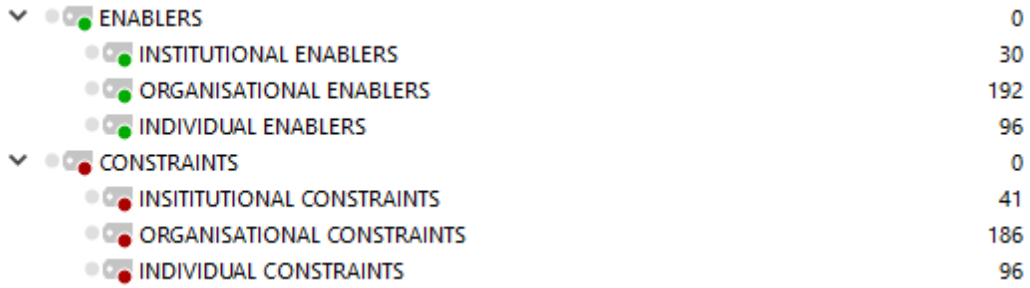
As can be realised in Table 18., it could be comprehended that there were employees who had autonomous motivation ('I am eager to develop my competences for my own good'), controlled motivation ('I need what is needed and asked') or were anti-motivated towards competence development activities ('I don't mind competence development'). There were also narratives, which pointed out that an employee had strong self-efficacy towards his or her ability to learn and manage his or her career (labelled as strong in Table 18.). Similarly, there were interviewees, who expressed that their ability to learn was at the level of need and had remained the same during their career (medium). There were three interviewees, who believed they had difficulties to learn and learning has become harder when growing older (weak).

Temporality was recognised from the way interviewees told their work and competence development history and future plans. If the focus of the present time was expressed to be rather towards future in their career and they nominated competence development activities, the temporal approach was labelled as future. When an interviewee focused on current work and competence development, this was related (only) to the temporal category 'present'. When a person displayed a remembrance of previous work and competence development activities, less attention to present actions and no indication of future competence development, the label was marked as 'past'.

There is also a relationship between employees' agentic orientation and the level and forms of competence development activities. It appeared in the second round of the analysis that employees with proactive orientation were very active in participating in all types of competence development activities, both employer-initiated and their own plans. Reactive employees typically responded to training and education offerings positively when an opportunity appeared and, consequently, participated actively in training at work. Restricted orientation entailed lower level participation in training, even though two out of three unwillingly participated in the employer training activities expected from them.

Enablers and constraints (RQ 3)

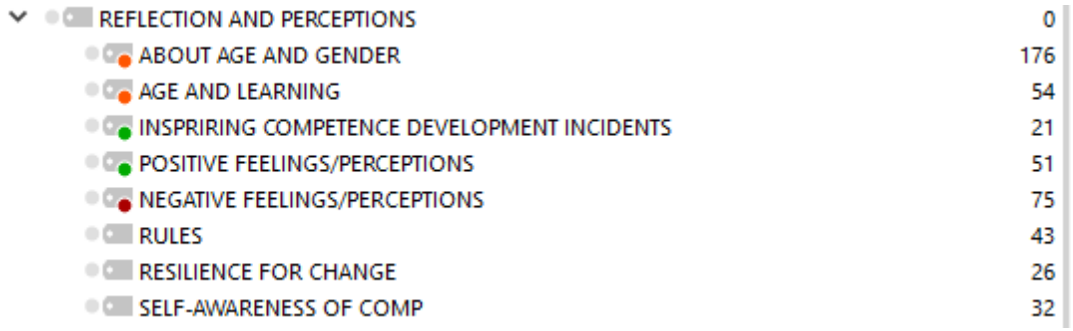
Based on earlier literature, contextual factors in the first step were coded as enablers and constraints, divided also into groups of individual, organisational and institutional categories.



However, already in the first round of the coding some contextual factors, such as manager and money, did not refer only to enabling factors but also to constraints. Therefore, after a lexical search of 'manager', all paragraphs including talks about manager or 'boss' were coded separately. Further analysis of institutional (such as access to further higher education), organisational (such as training opportunities) and individual factors (such as age and gender, as well as having small children) showed that the same factor could be perceived as enabler, supporter or constraint for an individual. Therefore, it was no longer useful to continue coding factors from the viewpoint of enabling/constraining but to move to apply the concepts of (employee) structure and social systems from Giddens (1984) structuration theory. These concepts enabled analysis of the relationship between agency and employee's perceptions and the relationships between agency and other factors.

Employee structures and social systems (RQ 4)

In the second analytical step, the more careful reading of institutional, organisational and individual factors revealed that specific reflections and perceptions related to age, gender, learning in their age. There were also some inspiring occasions as well as perceptions, which could simply be labelled positive or negative. These analyses informed the design of the second round of coding.



Analysing these coding categories, and applying Giddens' concept of structure, made it possible to identify that interviewees were different in terms of the meaning attached to work and competence development (identified from the coded sentences under labels positive/negative feelings/perceptions). They also had an opposite or similar perception toward norms and rules related to competence development at their workplace (code rules) and a different sense of the power over the resources related to competence development (resilience for change and self-awareness of competence development opportunities).

Applying Giddens concept of social systems, it was possible to further analyse the relationship between an employee and managers as well as between interviewees and their perceptions of other people at the workplace, for instance between existing older employees and younger newly recruited employees as well as between men and women in IT workplaces. Accordingly, age and gender were identified and coded in two categories, 'age and gender in general at work' and 'ageing related to learning'. However, reflections and perceptions related to structures and agency were still unclear at this point in the research; and therefore, only indicative coding was done emerging from the data, as the above illustration shows. However, it was no longer purposeful to continue coding the interviewee narratives but to start collecting quantitative data tables and drawing on figures to further analyse and interpret the data through mixed methods analysis. The social systems were presented in the viva examination on January 2020, divided by categories of individual, organisational and institutional factors, even though multiple linkages were identified. During the finalisation of the thesis, three particular sets of social systems were identified combining the findings under enablers/constraints and reflections/perceptions.

APPENDIX 8 - GLOSSARY

This glossary is an alphabetical list of concepts related to the proposed analytical framework and the definitions of the key terms used in the thesis. The purpose is to help to understand the vocabulary applied and developed because readers may have a particular perception of the meaning and significance related to, for instance, agency and structure. As these concepts are developed throughout different chapters, the glossary provides a convenient source for checking the terms used in different pages of the thesis.

Agency; own conceptualisation

An employee's capacity for agentic actions and competence development activities constructed through temporality, self-determination and self-efficacy. Agency is mutually dependent on employee structures forming a duality.

Agency; generally in sociology

An individual's capacity to act independently and to make his or her own free choices, despite the structural constraints in their environment (Barnes, 2000).

Agency; Giddens' (1984)

Knowledgeable human agents have practical consciousness to communicate the motives of their competence development and particularly the capacity to choose otherwise. Human agents always know what they are doing on the level of discursive consciousness under some description.

Agentic actions; own conceptualisation

According to the proposed framework, agentic actions manifest employees' agentic orientation and in the frequency of activities in education, training and on-the-job learning employees participate in. Agentic actions are for instance initiation, acceptance or rejection of competence development activities, which prompt the orientations of proactive, reactive and restricted agency.

Agentic orientations; a novel categorisation

A distinctive classification of employees into proactive, reactive and restricted categories using the components of agency and employee structures. The categorisation demonstrates how employees perceive their learning environment, how they take agentic actions, and, consequently, how much and what kind of competence development activities they participate in.

Competence(s), used as in earlier studies

A set of integrated capabilities consisting of content-related clusters of knowledge, skills and attitudes (Brockmann et al., 2008; Mulder, 2014; Winterton, 2009). Following this avenue, professional competences in this thesis are understood as skills, knowledge and attitudes related to a particular work domain, whereas generic competences include social, career and personal competences needed across different jobs and industries.

Competence development; own conceptualisation

Activities through which employees learn at work, including both formal education and training organised by universities, adult education institutions employers, partners and commercial vendors, as well as different activities associated with informal learning. According to the proposed framework, competence development is an outcome of the pre-existing interaction between employees' agency/structure and social systems leading to agentic actions.

Duality of structure; Giddens, 1984

Interaction between employee structure and social systems. Employees refer simultaneously to social systems, related to, for instance, gendered IT work embedded in practices and norms in the workplace, and to their own employee structures concerning gender equality in their lives.

Employee structure(s), own conceptualisation

Employee's mental traces comprising their sense of power over available resources, meaning of work and competence development as well as internal rules in relation to competence development and work.

Formal on-the-job learning, own definition

Activities aimed to increase the level of competences in other ways than training, such as mentoring, career counselling and job rotation.

Informal on-the-job- learning, own definition

Activities designed to increase employees' competences through activities ancillary to the specific job; for example, working on a project and information gathering.

Social systems; own conceptualisation

Arrangements and relations between people in the society and in the workplace organised in regular social and organisational practices. A set of social systems comprising particular individual, organisational and societal factors present in the interaction between people, for instance between an employee and a manager.

Social systems, Giddens, 1984

Arrangements in society, in organisations and between people; reproduced relations between actors or collectives, organized as regular social practices.

Structuration; applied from Giddens, 1984

Process of maintaining or transferring employee structures and, at the same time, also producing or reproducing the practices and social systems in the learning environment. Consequently, the learning environment constitutes distinct social systems, which are simultaneously structuring employees' competence development activities, and which are structured through the employees' agentic actions.

Structure(s); generally in sociology

Social relations (class, gender) that are understood to constrain people's actions and lives in society (Archer, 1982; Porpora, 1989) and patterned social arrangements in society that are both emergent from and determinant of the actions of the individuals (Burns & Flam, 1987).

Structure, Giddens, 1979, pp. 63–64

'Exists as memory traces orienting the conduct of knowledgeable human agent', which are 'continuously re/produced by individuals' actions'. Structure has a 'virtual existence', which is 'temporally present only in their instantiation, in the constituting moments of social systems'.

Structures, Giddens, 1984, p. 17

Rules and resources, or sets of transformation relations, organised as properties of social systems', which occur 'in a material time-space presence'.

Workplace learning, multiple scholars

A variety of formal and informal learning elements covering, for instance, formal teaching and assessment as well as informal learning as a part of everyday living focusing on investigation of individual's learning process (Billett, 2004; Ellström, 2011; Eraut, 2004)