

**PAY FLEXIBILITY IN AN AGEING WORKFORCE –
A MODEL OF PAY FOR THE GERMAN BUILDING TRADE**

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Abstract

Starting from the demographic change, the average age of work team members in the German building trade is expected to increase in the following decades. The findings of this study show that the performance of work teams also change due to a higher average age in organisations. The changes are not uniformly positive or negative; sometimes they are even contradictory. Some relevant theories and models demonstrate that performance and pay are in a causal relationship. They affect each other or are in mutual dependence. The data analysis of the expert interviews and focus groups carried out in twelve different business types from the building trade has revealed that a change in performance does not trigger necessarily an adaptation in pay. An adaptation of pay could prove if it reduces or compensates a possible negative impact of a higher average age on team performance in work teams. The Four-dimensions-model of pay flexibility which is developed by the researcher based on the results and the findings of this study identifies the different fields of action distributed on four dimensions. The model is based on the current pay conditions of the German building trade and represents a new approach to pay. It has been worked out that pay flexibility can be expanded based on the existing conditions and has to be built up on new structures which consider the demographic change. The model is broadly set up and takes into account the individual and contractual as well as collective and market-oriented dimensions. As the German building trade is traditionally not a pioneer in future-oriented change processes it is a challenge to implement the Four-dimensions-model of pay flexibility in this trade. The establishment of the model in practice aims to preserve the competitiveness and increases the attractiveness of the occupations in the trade, in order to counteract the shortage of skilled workers.

Keywords: work team, age, pay flexibility

Declaration of Original Content

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

Signed Date

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1 Introduction

Lower birth rates and increased life expectancy mean for the German population that the number of older people will increase (Federal Statistical Office 2015b; Pack et al. 2000). The number of immigrants from abroad is unlikely to stop this development. A migration rate of approximately 200,000 people a year is expected (Federal Statistical Office 2015b; Richenhagen 2007). In addition, firstly, the lead time to achieve general university entrance qualification has been matched to the European conditions and reduced by one year (Federal Ministers of Education 2015) and secondly, the legal age of retirement has been increased to the age of 67 (RV-Altersrentenanpassungsgesetz [pension adjustment law] 2007). In the 2015 Ageing Report of the European Commission, it is expected that by the year 2030, the population of working age (15-64 years) in Germany will decrease from 66.1% (2013) to 59,0% , by the year 2060 to 54,5 (European Commission 2014). By 2020, it is also expected that the largest age group in Germany will be between 50 to 64 years, representing 39% of the total population (Federal Statistical Office 2015a). Today the largest age group is formed by employees in the age group between 35 and 49 years at 37%. Currently, the 50-64 age class accounts for 32% (Richenhagen 2007). All these figures point to the fact that the average age of the workforce will rise (Brücker et al. 2012; Vogler-Ludwig & Düll 2013). In total figures, there will be 10.684 million less employable people in Germany by 2060 than in 2013 (European Commission 2014). On the other hand 14.7 million employable people in the age group of 30-49 years by 2050 - in contrast to 22.6 million in 2008 - will be available on the labour market (Anger et al. 2014; Fuchs et al. 2011). It has been suggested that the ageing workforce impacts organisations (Seitz & Wagner 2009).

This predicted change of the population profile is the starting point for this research. It is assumed that the workforce composition in work teams is also changing (Kunze & Reinwald 2017), as well as in the total workforce of organisations, directly derived from the changing population profile. Work teams in the German building trade and their individual team members are the focus of the investigation. Changes in structures - in this case, the age structure - may require an adjustment of internal systems. In particular, the aspect of payment for the individual worker in these work teams is examined. There are various components which constitute the system of payment. But the question posed by this research is: Is the pay adaptable to the upcoming changes in demographic make-up? Therefore, the research asks what the implications are of changing demographics for team related performance and

thereby pay. It is to analyse which interrelations there are between the changing workforce composition and related pay.

This study starts with the research strategy by pointing out the problem definition, the purpose and the research questions. Then the ontological and epistemological assumptions show the researcher's values. After that the research methodology is represented. The main part of this study deals with the findings of the literature review and of the case studies. Thereafter, the analysis and synthesis follows. In the centre of the results' chapter the model of pay flexibility is developed which is based on theory and empirical research. Finally, the study ends with the contributions to theory and practice summary, an outlook and recommendations for further research.

1.1 Statement of the problem

The increasing average age of the population has a direct impact on organisations and the labour of work teams in terms of performance, team effectiveness and outcome. Team composition (Boersch-Supan et al. 2005; Cohen & Bailey 1997) and the team design (Belbin 2010a) are crucial for the team performance, combined with the individual knowledge and skills (Cohen & Bailey 1997; Porter et al. 1975) which depend among other factors on the age of the team member (Backes-Gellner & Veen 2008; Boersch-Supan & Weiss 2016). There is no uniform statement about the direction of these effects. The range varies from weak to strong depending also on the type of tasks, team composition, team roles or individual skills. The effects can be either positive (Backes-Gellner & Veen 2008; Boersch-Supan & Weiss 2016; Gellert & Kuipers 2008) or negative (Backes-Gellner & Veen 2008). The team performance refers to the team result (Becker 2002) and is defined as productivity per man-hour worked (Jung 2006). In general, performance is linked to pay. Rewards and payments can lead to higher performance if they are attractive for the individual (Adams 1963; Karau & Williams 1993; Thierry 2001; Vroom 1964). Lawler and Cohen point out that designing a pay system means a mix of team-level and organisational-level pay of performance (1992) taking into account that a pay system can displace the intrinsic motivation (Lawler 1998).

The pay system in the German building trade is characterised by collective bargaining agreements that enable only limited design options for pay. Elements of pay are related to the job combined with individual skills, job tenure and the seniority of the individual. Performance-related elements may be paid above the collectively agreed rates. In some agreements there is also the possibility to pay less than the wages agreed. Regulations for team-based pay are not provided in the collective agreements. Thus, team performance, team composition or team roles are not currently aspects for paying team members. They are paid individually, independently of these aspects. A change in performance due to the ageing workforce and irrespective of the direction of the change in performance is not taken into account in the payment arrangements. For economic reasons of profit maximisation or safeguarding, both contracting parties, employers and workers, are interested in making a wage adjustment. Negativity is not at the center of this research, an adaptation is open to all directions and can have a direct or indirect approach. There is, however, no systematic development for adapting pay to performance.

1.2 Research aim with questions and objectives

The aim of this research is to develop a model of pay flexibility for work teams in the German building trade related to the changing workforce composition. The model of pay flexibility may include new thinking about pay and thus performance forms a basis for new concepts of payment.

The need for pay flexibility is essential because the changes of the workforce composition will have consequences on the team work results. By adapting the pay of the workers in the work teams, the team work results can be positively influenced. Possible negative effects of the increasing average age can be counteracted by a system of pay flexibility which can have both a direct or indirect approach.

The definition of the research questions is of central importance for a successful completion of this research work. With it, the research questions must relate to the problem definition and to the aim of this research. To reach the aim of this research it is necessary “to discover answers to questions through the application of systematic procedures” (Berg 2007:8). Before describing the research strategy with its systematic procedures, the research questions and

research objectives are explained. The research strategy is the general approach to answer the research questions and to reach the research objectives (Anderson 2009).

Based on the research aim, three main questions are to be answered:

- 1) What are the effects of changing work team demographic composition on team performance?
- 2) What are the interrelations between the effects of team performance on related pay?
- 3) How could a flexible payment system be established in order to realise pay adjustments for the team members?

This research explores the way in which pay flexibility for work teams may be adapted to meet their changing demographic composition.

To answer these questions, the following objectives have to be fulfilled:

- To identify the effects of changing work team demographic composition on team performance
- To explore the interrelations between the effects of work team demographic composition on team performance
- To explore the interrelations between the effects of team performance on related pay
- To examine the options available to introduce a flexible payment system that considers changing work team demographic composition in combination with team performance
- To examine the practical implications and potential of a flexible payment system as proposed.

1.3 Overview of the methodology

This section outlines the methodological approach, the research setting and the methods of data collection and analysis used.

This research is based on the ontology and the epistemology of relativism under the paradigm of constructivism (Easterby-Smith et al. 2008; Guba 1990). To achieve the research aim of developing a model of pay flexibility for work teams in the German building trade related to the changing work team demographic composition an exploratory research purpose has been

chosen. Through this purpose new insights should be found or social phenomena can be reconsidered (Anderson 2009). An inductive research approach provides the basis to lay foundations for further research. An appropriate strategy is necessary to answer the research questions. A qualitative research strategy in combination with the methodology of the case study design is selected for this purpose. Multiple cases with the type of configurative-idiographic in connection with an extensive literature review provide a sufficient amount of data to derive findings for answering the research questions. Twelve different businesses in the German building trade are involved in this research. The selection of these businesses are made in order to set up the study broadly. The businesses cover different trades but they are comparable in their organisation and their management of team composition. Applying triangulation two methods of data collecting are chosen: semi-structured in-depth expert interviews and focus groups. On one hand, the decision-makers in the case study organisations are the experts and on the other hand, the workers in the case study organisations are the participants of the focus groups. The method that Yin (2011) called the 'Five-phase cycle for analysing qualitative data' is used for analysing and interpreting the data. Five phases are given for this process: compiling, disassembling, reassembling, interpreting and concluding. The aim is achieved when the model of pay flexibility for the German building trade is developed and explained.

1.4 Rationale and significance

Many scientific publications deal with the consequences of the demographic change. They include, among other topics, the extent to which a higher average age affects the performance of individuals or work teams. For various reasons the results are different and not uniform: they are positive, negative as well as there being no effects (Backes-Gellner et al. 2011). But only rarely further questions are asked, especially the link between demographic change and pay seems to be very loose. Pay increases in the course of a working life are considered usual and self-evident. The discussion that the pay of an older employee, whose performance decreases, should be adjusted, has not been given attention. An older worker is defined by an age of 50 years and older (Warr 2000). The topic of "pay cuts in old age" does not seem to be explored. The source for this lack of attention can be due to moral reasons. This research is not centred on negativity but is about the variations in pay and pay flexibility for the

particular sector of the German building trade to which a higher average age of its workers will occur.

As there is no uniform direction of change in performance with increasing age it is significant to discuss the related pay, based on the approach that pay follows performance (Weißerrieder 2014) or pay is related to performance (Lawler 1998). Currently, pay is usually disconnected from the performance. This is particularly evident in the structures of collective bargaining agreements. The collective bargaining partners mostly use professional training, age, tenure and tasks as the basis for pay, apart from the actual performance. So far it was not necessary to deal with the effects of the demographic change on pay because the age structures in work teams have not drastically changed. But technical developments in particular by digitisation (Klebig 2017) and increased complexity will continue increasing and the working conditions will change steadily (Federal Ministry of Labour and Social Affairs 2013). Continuous professional training is necessary so that the performance can be maintained with increasing age (Dostie 2011; Landmann 2013). Already, the employed workers are mostly not qualified in the digital innovations (German Confederation of Skilled Crafts 2017). With the demographic change in the following years, however, the age structures in the work teams will change markedly so that the ‘price for performance‘ has to adjust because the age differences expand (Federal Statistical Office 2015b). Some institutions and scientists have dealt with this issue such as the BDA Confederation of the German Employers‘ Associations (2003), Rump and Eilers (2006), Kienbaum Consulting (von Hülsen 2011), DGFP German Association for People Management (Femppel 2012), Bloom and Sousa-Poza (2013), Cologne Institute for Economic Research (Lesch et al. 2014), Schmierl and Weimer (2014) and Hoffmann-Remy (2016). They ask for a connection between performance and pay or offer suggestions for pay systems with increasing average age.

For economic reasons I as a researcher regard this research as an adventurous exploration to shed light on this topic. If one of the contracting parties (employer or employee) changes its performance during the course of the contractual relationship, the other contracting party has at least the right to question or even to adjust its consideration supported by employment law. It is important to proceed systematically today, in order to provide a basis for a flexible approach. A flexible approach offers the possibility to manage pay for performance in an individual way on an organisational basis if it is considered necessary. Changing paths often takes time. This is the reason why it is important that the acting parties perform an early start to initiate changes. The possibility should be available for both contracting parties to discuss

the agreed contractual content on an equal basis, as long as changes occur. It is the matter of the individual contracted parties whether wage adjustments are actually realised. Addressing the question of pay flexibility in the German building trade is a particular challenge because the activities in the building trade are not uniformly oriented. Organisational as well as physical and manual activities are carried out in the building trade. Certainly, the building trade is still characterized by the fact that predominantly physical-manual activities have to be done. The research is particularly interesting on this topic because of the mixture and the variety of the tasks. Design and compensation possibilities can be perceived. Entrepreneurs or decision-makers in organisations of the building trade as well as trades associations, chambers of crafts or the affiliated trade unions are therefore entities who might be interested in the research. Workers in the building trade should also be aware of their situation and be open-minded to the consequences of the demographic changes at an early stage. They are also the target group. Pay flexibility is an important success factor that can benefit both parties, the employer and the employee. The goal of this research - to develop a model of pay flexibility - is a contribution to reduce the gap between demographic change with an ageing workforce and pay. This study generates theoretical understanding in the field of pay flexibility in the environment of higher average age in the particular sector of the building trade. It aims to contribute to knowledge in a number of different ways and will add to the knowledge basis, both theoretical and empirical, in demographic change, human resource management, organisational analysis and business management and to the development of professional practice with regard to pay flexibility.

1.5 Role of the researcher

This section explains my personal role as the researcher of this study taking into account the planning and the conducting of the study.

I have been working for more than 20 years as a human resource manager in different companies of the industry. I have been in contact with almost all subjects in the area of human resources. With regard to the research topic concerning the human resource element, I feel myself to be a practical expert, who has applied practical application experience in my professional life. In my studies, the focus was also on human resources so that I do not have

only practical application knowledge but also considerable theoretical knowledge in human resources. But until now I have never worked in the German building trade. Due to the years of work experience that I have gained in the industry, an access to an industrial organisation would have been easier, but not challenging for me. My personal interest in this research project lies in the fact that I can combine my knowledge with a business in which I have no deeper insight. Thus the topic is a personal gain in addition to the scientific contribution.

In principle, there are two possible roles to work as a researcher: as an insider or as an outsider. An insider is someone who undertakes the research in his/her own organisation or someone who wants to get information about people's inner attitudes or feelings. Someone who works as an outsider is not part of the organisation in which the research takes place or who has little or no personal contact to the participants of the research (Anderson 2009). I take on the role of the outsider because I am not a part of any organisation in the German building trade. For this study, I consider this role to be advantageous, since I belong neither to one side nor to the other, employer or employee. In this role, my independence allows me to detect and evaluate the findings of both sides without bias. I do not have to be especially sensitive in the area of pay with the participants or prejudiced, because I am in no personal relationship with them. They regard me as a researcher who is not familiar with their business. However, it is disadvantageous not to be a member of the organisation, because it is more difficult to classify the importance of individual statements. In assessing whether a statement is of less or significant importance, the comparison from the various case study organisations can help me. If an argument is used several times, for example, this is an indication of a higher importance. The literature review helped me to prepare myself for the issue of the German building trade and its specific structure and thinking.

Considering three research analogies - researcher as a detective, doctor or explorer (Anderson 2009), I take on the role of the explorer in this study. The explorer is the one of the three types who is interested in seeking new insights and finding out what is behind the social phenomena. I want to obtain new approaches to the current situations or issues (Anderson 2009). To achieve this goal, I need to be curious and open-minded to new ideas and approaches. The role of the outsider supports this way of proceeding.

Personal competences I need especially for the successful conduct of the interviews are the following features (Saunders et al. 2003):

- opening the interview

- using appropriate language
- questioning with moving from one question to the other
- listening actively
- testing and summarising understanding,
- recording.

The competences listed above are available because I have received these skills through my many years of professional experience.

To summarise, I was really looking forward to this study because I could combine using my experiences and entering new areas at the same time to reach the research objectives.

Developing something new is exciting and a special challenge for me. This study is a further personal component to deal with new additional scientific questions in the future.

1.6 Organisation of the thesis

This thesis starts with a detailed literature review which deals with - in a broad sense – performance of work teams and its interrelation to pay. Further topics are group dynamic processes, team communication, motivation, different forms of payment and their rules in the collective bargaining agreements. In addition, the dynamic in pay is discussed. I have reviewed the current management literature. Particularly scientific models were added, which contain a combination of age, performance and pay in order to understand the interrelations. As I worked on my diploma thesis in 2008 on the topic of performance-based pay systems with a critical consideration from the perspective of the motivation theories, I was aware that the subject of motivation is also a topic in this context. I added this topic to this research, because performance, pay and motivation are closely linked (Wunderer & Kuepers 2003). As the behaviour of individuals, here employers or employees, is also determined by the framework conditions which they find, I put aspects into consideration relating to markets or contract relationships. I also included the terms of collective bargaining agreements and examined the extent to which pay flexibility is provided and possible.

After the literature review, the research methodology is clarified. This section starts with the methodological foundations with the embodied philosophy and the research design.

Afterwards the research sample and data sources are mentioned. The description of the data collection and data analysis methods follows. Before the section of interpretation, the data collection of the case studies are explained in detail. I worked as a research outsider in organisations of the German building trade, which I defined as case study organisations. In the interviews with the decision-makers and with the workers, I discussed the research topic with the aim of finding out about their behaviour, thoughts, patterns, points of views and their expectations. In the section of the results of the research I describe the Four-dimensions-model of pay flexibility which I developed from the findings of the literature review and the field research. For that, new ways of thinking and ideas, which I gained from the interviews, I reconciled with the literature. The thesis ends with presenting the contributions, limitations and an outlook to further research.

2 Literature review

This literature review is based on the research objectives above and provides a broad picture of concepts, theories and scientific data which are relevant to the topic of this study. It presents a critical view of the existing literature according to the different subjects in which the topic is divided. First, after giving an overview of group dynamic processes and team communication it deals with the analysis of different theories and studies to answer the question of effects of increasing average age in work teams. Based on these findings the interrelation between the recognized effects and pay in general is determined. Afterwards, the possibilities of paying workers in work teams are demonstrated and assessed with regard to the previous findings. Beside representing what is already known about the topic the review also addresses gaps in the literature. Various sources are used, such as books and articles of specialist magazines and the internet. After the critical analysis of the literature this section ends with a conceptual framework created by the relevant contents and interrelations. It represents elements of pay that could be adapted to take into account increasing average age.

2.1 Working with teams

If individuals work together in teams group dynamic processes start running. These processes and also the team cognition affect the productivity and group effectiveness. People working in teams go through different group phases. Social loafing or intergroup conflicts can occur. These processes are accompanied by differentiated communication requirements and structures. When working with teams it is helpful to know about these processes in order to work effectively and to achieve a team success. These are shown below.

2.1.1 Team processes and group dynamics

If two or more individuals work together in a team, group dynamic processes affect the work results of the team. In the following, group dynamics in teams are presented in more detail.

Regardless of the group targets or group results, group processes are constantly changing and are permanently subject to a circular course (Worchel et al. 1992).

If two or more individuals enter into an interpersonal relationship, interactions arise and develop (Thibaut & Kelley 1959). The individuals are aware of each other and interact with one another. Communication between individuals arises. The extent of the interaction is determined by factors which reduce costs or generate rewards. The individuals of the group strive to reach their personal goals or to maximize their results through this interaction (Thibaut & Kelley 1959). If the group works in a company in team work, higher productivity or group effectiveness can be the result. For this, it is necessary that the group members perceive the company as a supportive setting for achieving their group goals. If this is not the case, productivity can be restricted (Thibaut & Kelley 1959). For the team composition, it is therefore important to know as much as possible about the goals of the group members and their common team goal. Thus a higher productivity can be realized.

The success of a team also depends on whether an optimal interface management is carried out by the team responsible. In the theory of the dynamics of groups, these interactions

between the different interfaces are discussed (Berne 1963). The various interfaces affect the team success. High-quality-interfaces make a team powerful and efficient (Müller 2013), poorly structured interfaces reduce success (Stock-Homburg 2010).

The sum of the knowledge of each team member is not equal to the sum of the knowledge which is available to the team. The dynamics of team cognition is an essential component of the theory of team knowledge emergence (Grand et al. 2016). The theory describes the relationship between individual knowledge and shared knowledge in teams. Starting from internalized knowledge of the individuals the path leads over the process of learning and sharing in the knowledge pool to externalized knowledge which becomes noticeable in the team performance. The knowledge is available in three different stages: non-overlap, partial overlap or full overlap because it is differently encoded or decoded, selected and integrated. Information and communication are essential core processes. As not all information or knowledge the individuals have is converted into externalized knowledge provided for the team, team performance is critically influenced by team cognition. In this theory, it is concluded that processes on the individual level are responsible for the team-level outcomes. Thus, a higher team performance is achieved when the team members quickly convert their individual knowledge into externalized team knowledge which can be shared and used by each team member. In particular, the entry of new members or the departure of old members influence strongly the knowledge pool in terms of task-relevant knowledge within a group (Moreland 2006).

In addition, when evaluating the success of a team, it is important to consider that teams do not provide their full performance right from the start. Teams go through a development that Tuckman (1965) is split into four phases. In 1977, Tuckman and Jensen added a fifth phase to their model. Figure 1 shows the model.

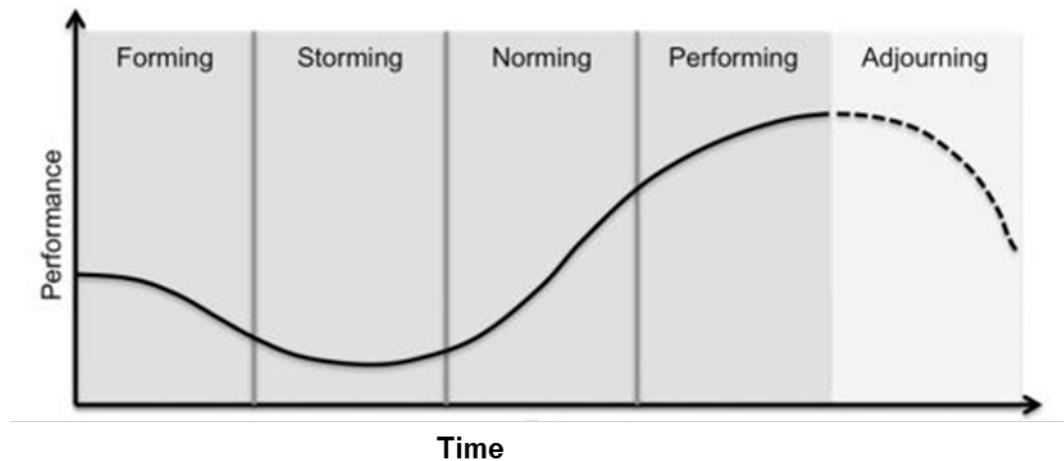


Figure 1: Five stages of team development (Tuckman & Jensen 1977)

In the fourth phase of development, the team will be the most successful. This phase is called “performing”. Therefore, the goal of team development must be to go through the first three phases as quickly as possible so that the team can achieve its best possible performance. The person who composes and controls the team must be aware of the phases preceding the performing phase. Through appropriate management, he/she should try to support and promote these upstream phases so that they are of short duration.

Social loafing is another phenomenon which can occur in groups. Social loafing is the decrease of performance combined with a decline of team members’ motivation (Pearsall et al. 2010). Social loafers in a group keep their performance down and ultimately benefit from the group's profit (Comer 1995). Different reasons can trigger social loafing (Comer 1995):

- The individual achievements are difficult to evaluate
- The individual recognizes that the group result is achieved even without his efforts
- The individual can take only limited impact on the group result
- Other team members also operate social loafing.

In order not to suffer a performance decline, social loafing effects must be recognized and avoided by taking measures against the above mentioned triggers.

When considering team processes, intergroup conflicts are also to be taken into account, which arise and exist in teams. Conflicts are the result of the team members’ behaviour (Tajfel & Turner 2001). Based on social identity and social comparison inter-group discrimination can arise or competition can develop.

When considering team processes, it is also important to deal not only with the group itself but also with each team member who is subject to a life cycle within the group. Each team member goes through different stages of membership: prospective member, new member, full member, marginal member and ex-member (Levine & Moreland 1994). At each stage (entry, acceptance, divergence and exit) the team member invests a different intensity of commitment in the group. Figure 2 shows the model of group socialization with the individual passage.

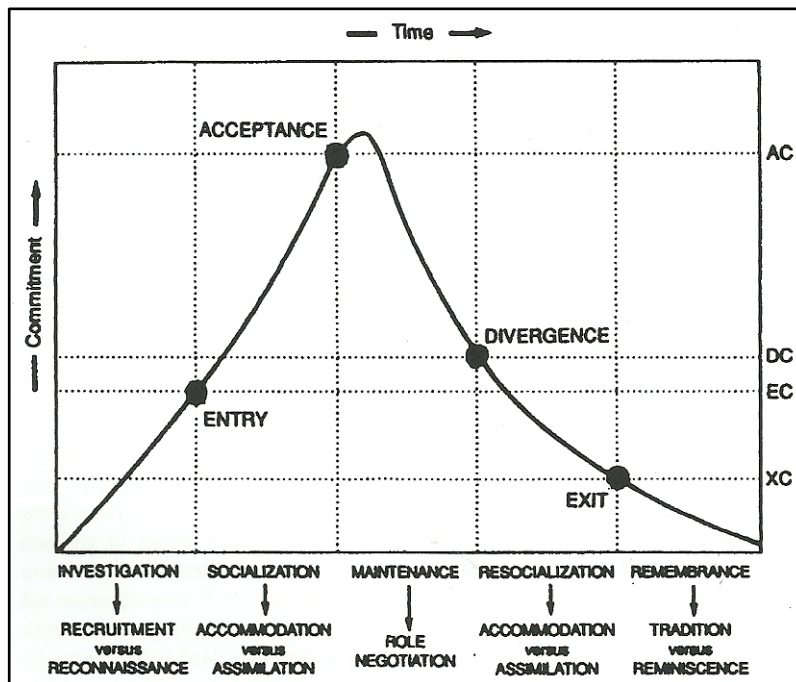


Figure 2: Model of Group Socialization (Levine & Moreland 1994)

Each individual of the team passes five phases of group membership: investigation, socialization, maintenance, resocialization and remembrance (Levine & Moreland 1994). In terms of the team composition, it must be taken into account that the commitment is differently characterised in the certain stages, in particular, if the team members enter the team at different time points. In relation to the group there is no uniform commitment if the team members have different histories in their group life cycle.

Team processes are determined by “basic building blocks“ (Levi 2011) which lead to successful team performance. These include motivation, group cohesion, role assignments, and performing both task and social behaviours. In the following each block is described in more detail. Motivation can be integrated into the team by several means. Interesting, involving and challenging tasks are one of the key factors for increasing motivation in the

team. The motivation for an increased performance of the individual is given when the team members need each other to fulfil the tasks. Evaluations and rewards are necessary for each team member because they are indicators for feeling the importance of responsibility for the team tasks and the recognition of their individual performance. Defining team goals is also a means for increasing motivation. Furthermore goals provide direction to the whole team. The team members can plan with more foresight and can monitor their performance more exactly (Weldon et al. 1991). Overall, goals can inspire support to a higher group commitment and to group cohesion. If teamwork leads to a better result than the sum of the each individual work group cohesion is encouraged (Levi 2011). A commitment to the team tasks and shared social identity also increase team performance. Group cohesion increases if team membership is important for the individual. Each team member assumes a certain team role. A role is a “set of behaviors typical of people in certain social contexts” (Levi 2011: 64). Team roles describe what the team members have to do, indicate the position which each team member has to fulfil within the group and ensure therefore the achievement of the team tasks. In teams two basic types of behaviours are available: task behaviours and social behaviours. On one hand task behaviours concentrate on the goals and tasks of the team, on the other hand social behaviours focus on the social and emotional needs of the team members. As work teams are more task-oriented more task behaviours are observed. Social interactions occur in the background. While considering the different stages which a team passes the team shows more social behaviours when the team is in the forming phase. During the phase of performing there are more task behaviours. Time pressure, for example, can be better handled if the team has learned social behaviours because teamwork has been better trained. This is an advantage when dealing with conflicts or challenges. Overall, an adaptation of individual behaviours to the needs of the team promotes the team performance (Levi 2011).

In summary, if people come together, unavoidably interactions arise between individuals. Team processes are set in motion. It is important for the team success that the team members receive a base on which they can offer their knowledge to the team. Simultaneously, both the entire team passes through a certain life cycle with defined phases, as well as each individual member. When working with teams it has to be taken into account that phases in which high team performance can be achieved do not necessarily match with high performance phases of the individual. In addition, each team member initially pursues his/her own goals. If the team goals agree with the individual goals, the individual is more motivated to perform for the team. The phenomenon of social loafing should be recognized and avoided because this

behaviour reduces team performance. As rewards offered to the team members influence individual behaviour they should be designed so that they provide motivation. In this paragraph, only a selection of group dynamic processes was made. The variety of different fields of research on the subject (Brown 1988; Cartwright & Zander 1968; Levi 2011) shows that the subject is extensive. Team dynamics are often difficult to predict or to control because processes, interactions or behaviours take place in parallel.

Regarding the development of a model of pay it is important to take into account that each team member is considered individually because the contribution of each individual impacts on the team performance and the team success. The interactions of the individuals form the team composition which is responsible for the fulfilment of customer orders and therefore for the competitiveness of the organisation. Disturbing behaviour of the individual, for example social loafing, can lead to a performance loss of the entire team.

2.1.2 Communication in work teams

Communication is one of the most important processes that take place between individuals. In order for interactions between individuals to take place, communication is required. Through communication, individuals can exchange information, needs, thoughts and feelings among themselves. Three elements determine the communication: the sender, the receiver and the message (Levi 2011). In the sender-receiver model (Hall 1973) the sender wants to transmit a message to a receiver. To transmit the message, the sender must encode the message by converting it into speech, mimic or gesture. Then the receiver translates and interprets this verbal or non-verbal message. The response of the receiver informs the sender of his understanding of the message. With the receiver's response, he initiates a new communication process. If the communication is disturbed by different coding methods, understanding problems arise (Polzin & Weigl 2009).

If the task to be accomplished in the team is to be done faster, more easily or more effectively than by the individual alone, communication processes arise in the team. The person who leads a team can influence the processes through targeted control. This is done through communication. These communication processes serve the flow of information (Bavelas 1968). In teams, communication is essential for coordination. Especially in work teams, where a substantial interdependence of team members exists to complete the tasks together,

coordination is important. A work team is a “full-time, permanent team that is the major part of the members’ work“ (Levi 2011:283). Work teams are responsible for producing a product or providing a service (Cohen & Bailey 1997; Lawler 2000).

According to Jewell and Reitz (1981), communication provides the foundation for team orientation, goal setting, the distribution of information and rewards and the maintenance of relationships between team members. One of the most important reasons to communicate within a team is the enforcement of standards and norms of the team members (Festinger 1968).

In order to achieve the team goals and to develop a team, it is important that the team leader regularly communicates with all team members. In work teams in the building trade, the team leader is usually integrated into the team. He is given title of foreman or column leader. He reports to the decision-makers in the organisation of the building trade. Relating to communication, he decides what issues are relevant for the whole team. Topics on individual behaviour or personal development, especially with regard to the individual performance, are discussed between the individual team member and the team leader (Rosnagel 2008).

Targeted coaching can be used here. Communication within the team should be characterized by openness and trust so that disagreements can be discussed (Schulz von Thun et al. 2001). The involvement of team members in decision-making processes increases their identification with the tasks and objectives (Schulz von Thun et al. 2001). The team leader is responsible for the main team processes. These are leading, training, providing feedback and rewarding the team members (Levi 2011). He represents the team and the performance results outwards into the rest of the organisation. In order to achieve the team goals, the team leader can carry out certain activities. This includes the definition of performance results and the agreement of team goals for the work team. Operating figures can support the measurement of performance (Stock-Homburg 2010). As work teams have a mutual interdependency between the team members, the roles in the team have to be defined and transparent for all team members. A particular aspect of team management is the assessment of team performance and individual performance. The identification and the assessment of the performance which the individual reaches in the overall result of the team is the basis for the rewards of the individual team member. The team leader must be qualified for these tasks. Team members feeling unchallenged or exposed to excessively high expectations can result in a decline in performance or demotivation (Stock-Homburg 2010).

In communications, there is a factual level and a relationship level. An efficient team communication is characterized by a high expression of both levels. The team members strive to use the problem-solving techniques together to achieve the desired performance. Through information, consultation and coordination, these aims are achieved. At the relationship level few or no conflicts exist (Stock-Homburg 2010). To achieve this balance between the two levels, regularly conducted employee interviews are necessary. They support the continuous process of performance management. This consists of the following four elements: agree on goals, goal and work review, assess performance and promote and develop employees (see figure 3).

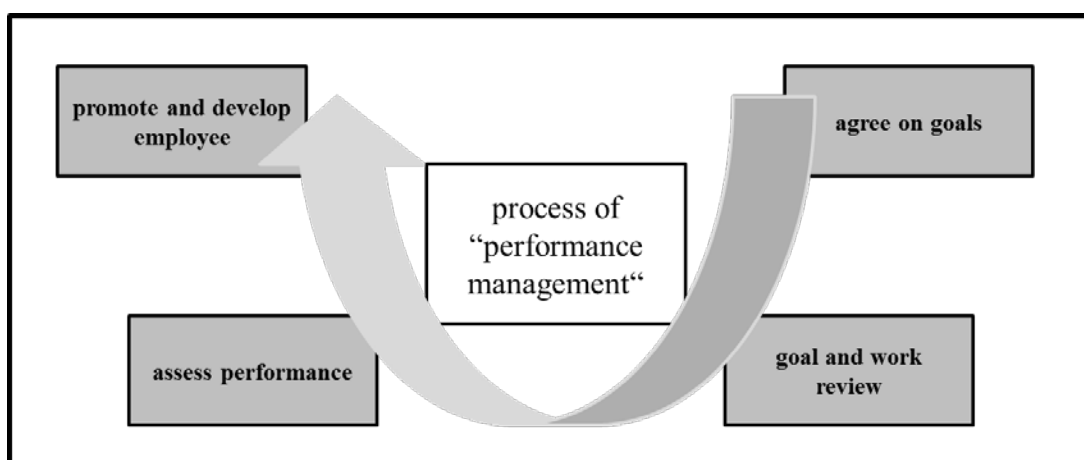


Figure 3: Process of Performance Management (Mentzel et al. 2006)

A systematic approach and a constant communication between the team leader and the team member are essential in the process of performance management. In this process there is the possibility to recognize changes, wishes and expectations on both sides. In particular, performance fluctuations both upwards and downwards can be discussed. The resulting measures or consequences can be realized simultaneously.

Face-to-face communication is more and more replaced by digital communication. The use of digital communication technologies influences the group dynamic processes. The physical distance between the team members causes a reduction in the status differences. The team members are more bold in formulating things than in direct communication. On the other hand, anonymity and deindividuation in the team increases (Levi 2011). Due to the lack of spatial proximity digital communication makes it difficult to discover and solve conflicts, but this is of particular importance for the team development (Müller 2013). There are changed requirements for the team leader as well as for the team members regarding technical affinity

and extended network skills (Müller 2013). Currently, deficits of digital competences are still being seen in the German building trade (Prescher 2017).

In summary: An essential part of group processes is communication. Communication is a factor leading to the success of the team. In addition to the continuous flow of information, participation in decision-making processes and involvement in the further development of team is also important for the performance and motivation of each team member. The team leader is responsible for ensuring communication processes, in particular also under changing conditions of increasing digital communication.

For the developing of a model of pay constant and open communication with the individual team member should be taken into account in order to recognize whether the individual can also realise his/her personal goals in the team. This is a requirement that he/she will perform. Pay can be an individual goal.

2.2 Effects of a higher average age in work teams

To work in teams is a usual and common form in work organisations. The Hawthorne studies, conducted in the 1930s in Chicago, are the beginnings of studies on the behaviour of groups and group members (Staeble 1999; Sundstrom et al. 2000). There are a lot of different definitions of the terms ‘group’ and ‘team’ in the literature (Cohen & Bailey 1997; Gold et al. 2010). Not all researchers define a group as being composed of just two members. Small groups usually consist of three to five members (Staeble 1999). A common goal forms the group into a team. Sundstrom et al. (2000) use “work team” and “work group” interchangeably. A team or group is “an interdependent collection of individuals who share responsibility for specific outcomes for their organizations” (Sundstrom et al. 2000:44). In groups or teams, a feeling of belonging together arises.

In addition, there are a lot of different types of teams. Armstrong (2000) differentiates four categories: work teams, project teams, ad hoc teams and organisational teams. Lawler (1998) however mentions parallel teams, production and service teams, management teams and also project teams. This research only deals with work teams, which are defined as one of the varieties that are characterized by persistent affiliation often in full-time. For these members

team work comprises the main form of their work. Often they have “similar skill sets and work experience” (Taylor 2010). They are responsible for work methods, meaning “how the task is performed”, managing activities and handling individual tasks within the group (Lawler & Cohen 1992).

The ageing workforce results that the age structure of the work teams also changes. The change in the age heterogeneity means an increase of the average age. An increasing average age affects the team performance in different ways. The following selected studies include theories and models that deal with the issue of age and team. Not all work is concerned specifically with increasing average age and work teams. But a link is established. The aim is to achieve an understanding that there is transferability to the specifics of this research topic.

2.2.1 Changing workforce composition

In the coming decades the workforce will be characterized by a reinforced diversity of its composition (Buche et al. 2013; Knopf 2008). Diversity is defined as "any attribute that another person may use to detect individual differences" (Williams & O'Reilly 1998). In particular, demographic diversity consists of characteristics such as gender, age, ethnicity, tenure, educational background and functional background (Knippenberg & Schippers 2007). As the changes of the age structure of the workforce composition impacts the organisations (Seitz & Wagner 2009) this investigation focuses mainly on the characteristic of age. These other characteristics are not taken into account in depth. Thus, in the following the explanations concentrate on the changing workforce composition regarding the characteristic of age.

The labour force projections in the upcoming decades in Germany will be strongly affected by the ageing of the baby-boom generation (Boersch-Supan & Weiss 2016; Park 1994; Veen 2008). The demographic development predicts both a reduction in labour supply and an ageing of the labour force potential (Federal Statistical Office 2015b). This development is based on projections. Firstly, lower birth rates and increased life expectancy mean that the number of people older than 45 years old in the German population will increase (Pack et al. 2000). As the proportion of elderly in the population increases, the proportion of younger people remains constant or decreases (Veen 2008). The number of immigrants from abroad

will not compensate for this development (Federal Statistical Office 2015b; Richenhagen 2007). This trend is reinforced by the match of the lead time to achieve general university entrance qualification to the European conditions which has been reduced by one year (Federal Ministers of Education 2015) and by the legal age of retirement which has been increased to the age of 67. In addition, the baby-boom generation of the 1980s will be the last to work in the 2020s (Geißler 2005; Jackson 1992). It is expected that by the year 2030, the population of the working aged in Germany defined as 20-65 years old by the Federal statistical office of Germany will decrease from 61% (2008) to 54% (Federal statistical office 2012b). The projection to 2060 predicts a reduction of the workforce to 82% of the 2013 level with an age interval of 15 to 66 years (Fuchs et al. 2016). For 2020, it is also expected that the largest age group in Germany will be between 50 to 64 years old, represented by 39%. Today the largest age group is formed by employees in the age range between 35 and 49 years old at 37%. Furthermore, a scarcity of young qualified people is predicted (von Hülsen 2011; Staudinger 2006). All these figures point to the fact that the average age of the workforce will rise (Jackson et al. 1995). In total figures, there will be 10.1 million less employable persons under 45 years old in Germany by 2020 than in 2000. On the other hand 4.7 million employable persons over 45 years old by 2020 in contrast to 2000 will be available on the labour market (Pack et al. 2000).

The organisations will be faced with a different structure of the workforce composition justified by the ageing workforce (Jackson 1992) and a change in age heterogeneity (Backes-Gellner & Veen 2008; Bellmann et al. 2007). The challenge for organisations is to manage a workforce characterized by an increasing average age (Veen 2008). It is assumed that the workforce composition in work teams is also changing following a similar pattern (Jackson et al. 1995), consistent with the total workforce available to organisations.

2.2.2 Age structure in the German building trade

The phenomenon of the ageing workforce also relates to the German building trade. When considering the entire trades groups, the building trade represents the largest share with 50.9 % in 2015 (German Confederation of Skilled Crafts 2016). Within this percentage 511,032 companies existed in 2015 divided into two areas: the main construction trade and the

finishing trade. 83.2 % of the companies have less than 9 employees (Federal Statistical Office 2017b). The census of the Trade industry in 2014 provides the number of more than 5.12 million employees working in the building trade (Federal Statistical Office 2017a). Deriving from the numbers of companies combined with the number of employees it is recognized that the building trade consists of very small businesses. 39.9% of labour worked in organisations with less than 9 employees in 2015 (Federal Statistical Office 2017b).

The building trade still mainly consists of manual, partly hard labour, but also by knowledge based work. In addition, organisational tasks have to be done by the craftsman. The job of tradesman occurs primarily outdoors at building sites in construction work teams. Some occupations also carry out their work indoors (“Berufsinformationen finden” 2016). Often customer orders require the execution by a work team consisting of at least two or more workers. The Institute for Labour Market and Occupational Research for the Federal Employment Agency reports regularly on statistical numbers for the German trade industry: Based on numbers of this institute (2013) the age structure which is relevant for this thesis is shown in table 1. It can be seen that in the last twelve years the proportion of workers, more than 50 years old (Warr 2000), has increased more than the proportion of younger workers.

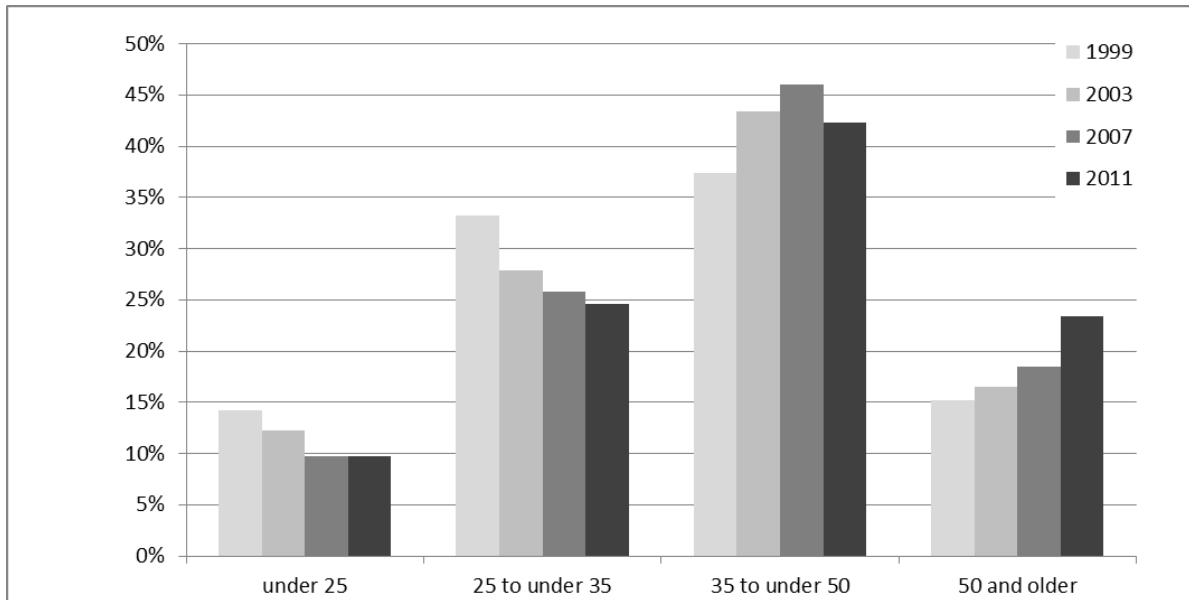


Table 1: Tradesmen of the German building trade - Employee groups by age

In 1999, the age group ‘25 to under 35’ had a share of 33.2%, in 2011 decreased to 24.6%, the share of the age group ‘35 to under 50’ increased from 37.4% (1999) to 42.3% (2011). Additionally, the share of employees at the age of 50 and older increased from 15.2% to 23.4%.

Bonin et al. deal with the employment situation of older roofers. On condition that the age-specific leaving rate of this profession remains quite similar, the number of roofers at the age of 50 and older doubles (Bonin et al. 2012).

Whereas 1995 the probability of remaining in the profession falls sharply below 95% among the under-50s, this rate shifts in 2008 to the age of 56 with a lesser gradient (Bonin et al. 2012). This means that in 2008 more employees over 50 years old remain in their profession. In addition, the younger age groups - absolutely measured - became smaller, so that the average age of roofers has been increased by six years since 1995 (Bonin et al. 2012). Table 2 shows the increasing rates of the share of employees related to three age groups on the basis of 2000.

age group	increasing rate in year (basis: 2000)	
	2013	2020
50-54 years	63%	95%
55-59 years	27%	134%
over 60 years	83%	183%

Table 2: Increasing rates of three age groups in the roofing trade (following Bonin et al. 2012)

This topic is significant in the trade industry: an article in the *Deutsche HandwerksZeitung* (“teamwork” 2013) which refers to the study of ZEW [Centre for European Economic Research] (Goebel and Zwick 2010) shows such a concern. Goebel and Zwick examined mixed-age teams and came to the conclusion that these teams seemed to be more productive. The results of the study are presented in a positive way, suggesting potential benefits. Overall, a higher average age is generally seen critically.

2.2.3 Team performance and productivity

The model of Milliken and Martins (1996) (see in figure 4) confirms age effects on performance in organisational groups. It shows that age diversity has implications on different variables. The researchers considered factors that influence teams and showed the effects of diversity. Diversity in age has both short-term and long-term consequences. The short-term consequences differ generally between affective, cognitive, symbolic and

communication-related issues. Effects to performance are worked out as long-term. But there is no information about the directions of these effects.

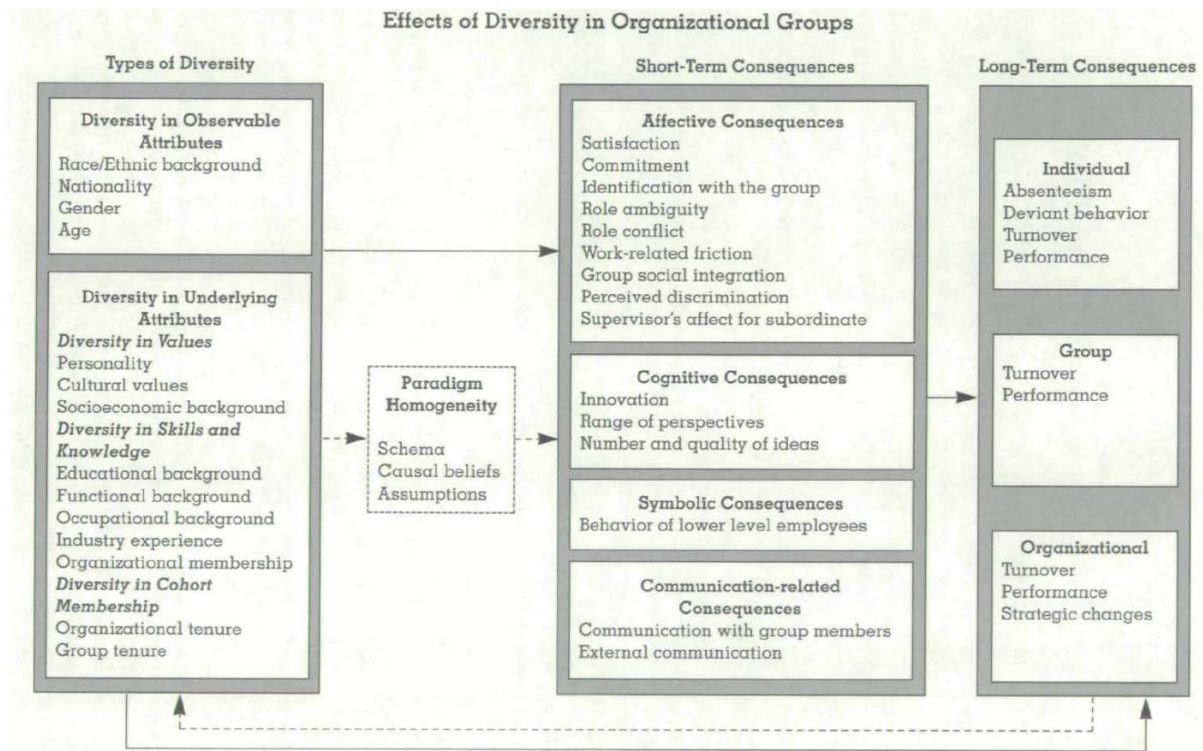


Figure 4: Effects of Diversity in Organizational Groups (Milliken & Martins 1996)

McEvoy and Cascio (1989) conducted an investigation of 96 studies which dealt with the correlation of age and performance. They found a mean correlation between age and performance, but this insight did not apply in general. Waldman & Avolio (1986) determine a positive relationship between age and performance by stating that occupation influences the relationship between age and performance. The relationship varies upon different factors.

In their meta-analytic review Horwitz & Horwitz (2007) examined the effects of team diversity on team outcome. The study includes in total 78 correlations of 35 peer-reviewed articles published between 1985 and 2006 in academic journals. The researchers present the hypothesis that there is a positive relationship between bio-demographic diversity and the quantity of team performance. Bio-demographic characteristics are defined as age, gender and race. This hypothesis is not confirmed by the analysis. However, it is important to note that there are only three numbers of correlations.

Pelled's Intervening Process Theory (1996) indicates different directions of effects between age and performance. The theory explains the interventions between demographic diversity,

conflict and work group outcome. She divides the demographic variables, which include the factor age, into two typologies: ‘visibility’ and ‘job-relatedness’ – each is subdivided into low and high dimensions (see in figure 5). The factor age is grouped into the category high visibility – low job-relatedness.

HIGH VISIBILITY	age gender race	group tenure
		organizational tenure education functional background
LOW VISIBILITY		
	LOW JOB-RELATEDNESS	HIGH JOB-RELATEDNESS

Figure 5: Typology of Demographic Diversity Variables (Pelled 1996)

These two dimensions determine the strength of the relationship between demographic diversity variables and conflicts which are subdivided into substantive and affective conflicts. Conflicts are substantive if they are task-related and affective if they are emotion-based and non-task (Pelled 1996). The different types of conflict affect turnover or cognitive task performance, which then influences the outcome of team work (see in figure 6).

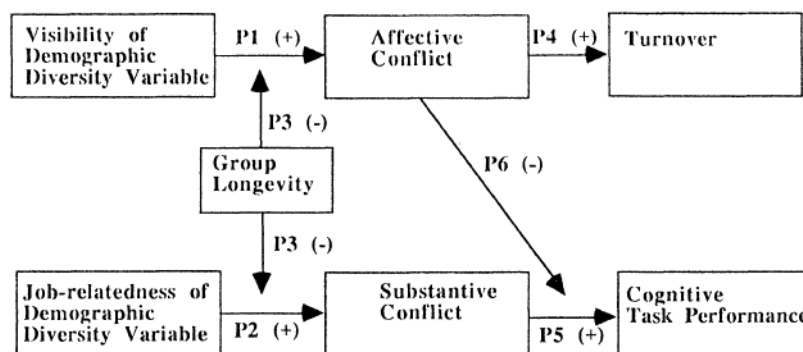


Figure 6: Relationship among work group demographic diversity, conflict, and performance and turnover consequences (Pelled 1996)

Her statements are that an affective conflict increases turnover but an increasing affective conflict weakens the positive relationship between substantive conflict and cognitive task

performance. Thus, age diversity as an element of the demographic diversity has a positive impact on turnover and negative impact on cognitive task performance.

A few studies emphasize a positive relationship between age and performance. Murray (1989) examined the oil industry and stated that diversity in age and tenure is positively related to long-term performance. Also Sterns & McDaniel (1994) determined a weak positive relationship between age and performance. Cleveland and Lim (2009) formulate carefully the statement that older workers fulfil some tasks better than younger workers, but also the other way round: some components of the job are better performed by younger workers. Concerning the way of working in teams Streufert et al. (1990) found that older teams demonstrate both positive and negative aspects in working strategies.

In their empirical exploration with the subject of ageing teams Gellert and Kuipers (2008) use the model of Milliken and Martins (1996). The researchers focus on the relationship between team work and age. They collected data among 150 work teams from an automotive company in Sweden. Justified by more experience, knowledge and responsibility they summarize their research results by suggesting “teams with higher average age seem to produce better quality” (Gellert & Kuipers 2008).

Backes-Gellner and Veen (2008) investigated the impact of aging and age diversity on company performance based on an employer-employee data set for Germany with more than 18,000 companies and more than 2 million employees over a ten year period. They proceed from the assumption that employees with different ages possess different skills and abilities and that individual productivity decreases with increasing age, depending on the type of task (Veen 2008). This process starts at different times and develops at different rates. A similar statement is also made by Kroell and Brinkmann (1999). During an employee’s working life, knowledge and skills can change (Backes-Gellner & Veen 2008) or “devalue” as long as ageing employees do not pursue their competence development (Kroell & Brinkmann 1999). Backes-Gellner and Veen found that in companies with routine work, increasing age heterogeneity has a negative effect on organisational productivity. In contrast, companies with more innovative and creative tasks, increasing age heterogeneity has a positive effect on organisational productivity (2008). They state that an increase of 10% in age heterogeneity affects a reduction in productivity by 3-4.6 % (Veen 2008). Their study provides a new aspect into consideration. It shows that the effect of increasing age on productivity also depends on what kind of tasks have to be done by the team.

In the study of the ZEW the researchers Goebel and Zwick (2010) also examined mixed-age groups. The result of their research is more general when they say that there are more advantages which impact a higher productivity of work teams than disadvantages. In particular the benefits of the different knowledge of younger and older members which is invested into teamwork are identified. Again, the aspect of team composition is addressed in both studies. Increasing average age affects the team composition and thus, impacts on the success of teamwork and on productivity.

Boersch-Supan & Weiss (2016) studied the relationship between workers' age and their productivity in work teams. They examine production process data of a large car manufacturer. Productivity measurement is based upon errors in production assigned to specific workers, whose ages are then reviewed. Their finding is that average age-productivity increased until the age of 65, based on the industry they have considered.

Bell et al. (2011) carried out a meta-analysis on the relationship between demographic diversity variables and team performance. It was found that individuals take age, as well as sex, race, into account when they categorize each other. With this categorizing an influence on team performance may arise (Bell et al. 2011).

In summary, age and team performance are interrelated. A higher average age in teams can influence team performance and team outcome. Also there is no unified statement found in the review of the relationship between age and productivity or quality in teams. In the next chapter the aspects of team effectiveness are investigated.

2.2.4 Team effectiveness and successful teamwork

In their heuristic model of group effectiveness - based on reviewing the research of teams in organisations from 1990 to 1996 - Cohen and Bailey (1997) show variables which influence and lead to effectiveness in teams (work, parallel, project and top management teams). One of these variables is group composition which includes demographics such as age and diversity. They categorize team effectiveness with three major dimensions of (1) performance outcome, "(2) member attitudes, and (3) behavioral outcomes" (Cohen & Bailey

1997:243-244). They indicate two studies with the topic of group composition in work teams and team effectiveness dealing with group size and group diversity. In case of diversity this relates to knowledge and skills. They mentioned the study of Magjuka and Baldwin (1991) who state that greater diversity contributes positively to effectiveness. The other statement of Campion et al. (1993) declares that there is no relationship between diversity and productivity.

Seitz and Wagner (2009) state advantages of mixed-age team work. They regard the mix of current expertise of the younger together with the experience and knowledge of the older as a success factor of mixed-age teams. For large and complex tasks the combination of expertise, process knowledge and know-how is especially significant. This can be achieved if the team members are located in different age groups. Stressing that teamwork is associated with risks they emphasize that teamwork with physically demanding work can be more successful with younger age-homogeneous than heterogeneous-age groups (Seitz & Wagner 2009). The researchers do not mention what kind of teams they consider and how they get to their results. This work contains some interesting aspects, but its credibility is not easily assessed as it lacks methodological detail.

When distributing work to individuals Belbin (2010a) assigns the criteria of age to the pre-industrial era, as well as sex, tribe and class. During the industrial era work is assigned by qualifications. The subsequent post industrial era is characterised by personal orientation and Belbin's approach of team roles. Therefore Belbin (2010b) does not specifically consider the factor age or increasing average age, but his work contains an approach that can be integrated in this research. His subject is teams with different structures, particularly related to the team members' personalities, in order to gain knowledge about features and structures that lead to success and failure in the team. Managing teams successfully means to design teams (Belbin 2010a). The strength of a team is determined by how well the team roles are combined (Belbin 2010b). Belbin defines nine clusters of team role types (2010b) which exist in teams. He calls them: plant, resource investigator, coordinator, shaper, monitor evaluator, team worker, implementer, completer finisher and specialist. If the team is incorrectly assembled, team performance decreases. Belbin's explanations match the two studies above. Team composition is determined by the team roles. In turn, team roles are assigned on the basis of person shape (Belbin 2010a). Assuming that increasing age knowledge and skills may change, so does the person shape which the individual offers to the organisation. Thus, in the course of professional life the individual can change his/her team role. A review of the

assigned team roles is always necessary to ensure a successful team composition which is responsible for the success of teamwork. The success of teams depends on the design of the team which means that they are composed well-balanced in relation to the different team roles (Belbin 2010a).

A different approach to explaining successful teamwork offers the theory of group interactions and team success (Stock-Homburg 2010). At the beginning of the chain of action which leads to team success different characteristics are present. Person-related characteristics such as expertise, social competence or team orientation have a direct effect on team success. On the other hand team-related characteristics affect performance indirectly. They characterize the team as a whole and initiate process-related features. These process-related features are reflected in the behaviour of the individual team members. Cooperation, communication and dealing with conflicts and decisions are actions which are key factors for team success.

Figure 7 shows the chain of action which leads to team success.

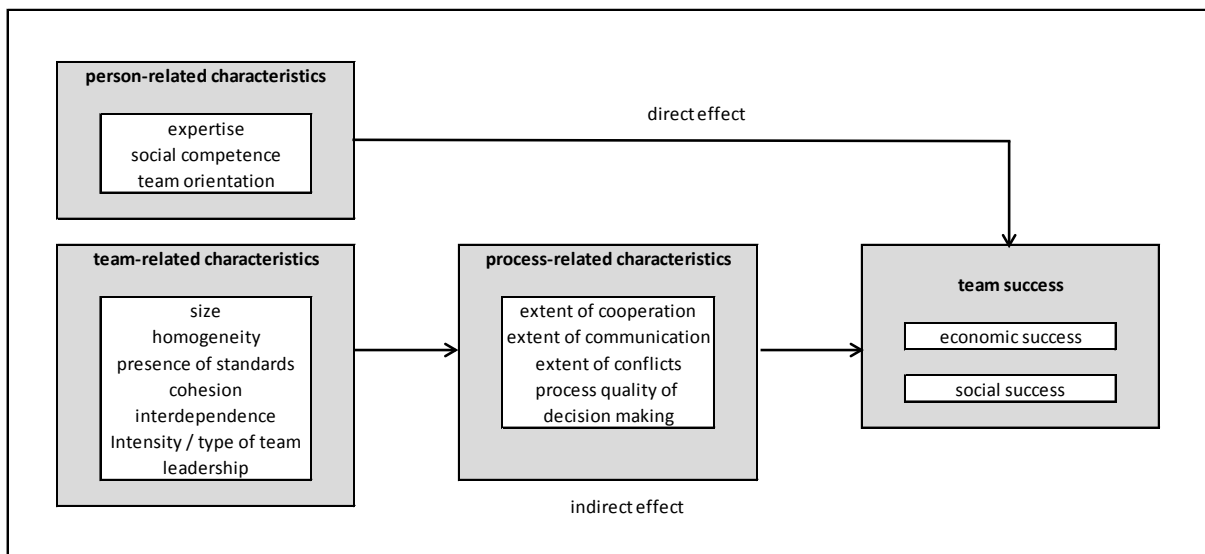


Figure 7: theory of group interactions and team success (Stock-Homburg 2010)

The team performance and therefore the team success is determined by the mixture of person-related and team-related characteristics. The chain of action is made up of direct and indirect effects. Also in this theory the team composition is the influencing factor for the success of the team.

2.2.5 Summary

The effects of increasing average age in work teams are represented by different indicators such as team performance, team productivity, team quality or team effectiveness (see figure 8).

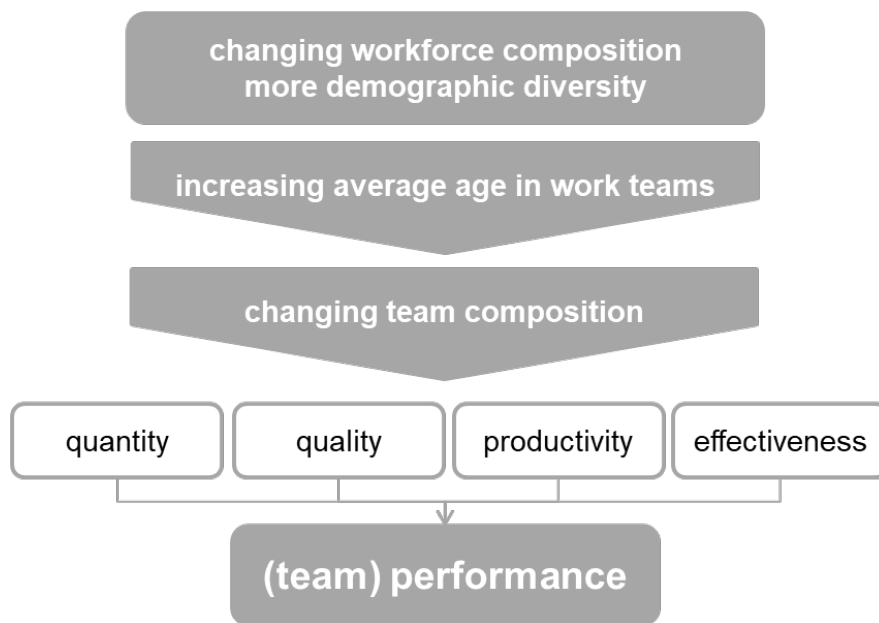


Figure 8: Effects of a higher average age on performance

The factor of age is also involved or included in various unspecified dimensions like mixed-age groups, team composition or team roles. The previous literature review shows that there is no clear consensus regarding the performance effects of the changing work team composition. The results for age are mixed. Most research studies suggest that the characteristic of age in general and a higher average age have effects on team performance, productivity and outcome in general. But the impacts are not uniform. They can be either positive or negative, occasionally also weak. Table 3 gives an overview of the investigations mentioned and their affects on performance.

Author(s):	object of investigation	transition with:	Effects on or change of:
Milliken & Martins (1996)	age diversity in organisational groups		short-term consequences (affective, cognitive, symbolic, communication-related) long-term consequences (turnover, performance)
Pelled (1996)	demographic diversity and work group outcomes	affective and substantive conflict	turnover cognitive task performance (outcomes)
Horwitz & Horwitz (2007)	team diversity and team outcomes	bio-demographic diversity	not on quality and not on quantity of team performance
Bell et al. (2011)	demographic diversity variables and team performance		unrelated to team performance
Gellert & Kuipers (2008)	team work and age		quality
Backes-Gellner & Veen (2008)	effect of aging and age diversity on company performance	skills and abilities type of task	productivity
Goebel & Zwick (2010)	mixed-age teams	knowledge of different age groups	productivity
Boersch-Supan & Weiss (2016)	productivity and age		average age-productivity
Porter et al. (1975)	rewarding teams	job-relevant knowledge and skills	work effectiveness
Cohen & Bailey (1997)	effectiveness of teams in organisations	group composition (diversity of knowledge and skills, age)	group effectiveness turnover (management teams)
Seitz & Wagner (2009)	mixed-age teams	expertise of different age	success of team work
Belbin (2010b)	team structure	behaviour, team roles	success or failure of team work

Table 3: Studies dealing with the factor of age and its effects

Beyond this, some researchers found no relationship between age diversity and innovation or performance (Bantel & Jackson 1989; O'Reilly et al. 1997; Wiersema & Bantel 1992).

There are still too few systematic studies to be able to make a final statement (Staudinger 2006). But it is important to summarize that effects between a higher average age and team performance exist. This chapter provides a contribution to the answer to the first research question which deals with the effects of changing work team demographic composition on team performance. It is important for the development of the model of pay that - similar to the group dynamic processes and communication – the individual - and not the team as a whole - influences the effects of age and performance.

2.3 The interrelation between performance and pay

The previous section shows that most research studies identify that the characteristic of age in general and increasing average age have effects on team performance, productivity and outcome but concerning the direction or intensity there are no uniform statements. Therefore, the next step of the literature review examines a link between team performance, productivity and outcome, and team-based pay or pay in general. A pay system is primarily no motivational instrument. It creates rules for performance and pay. In general, pay follows performance (Weißenrieder 2014). Below, some significant theories and models are analyzed that deal with this topic. At the end of this section there is a summary of the findings.

2.3.1 Performance in anticipation of pay

In his VIE-model Vroom (1964) explains that an employee is motivated to perform to a certain extent if his expectations will be fulfilled. He defines motivation ("the force to perform act") as a process in which the employee may decide to give high or low performance. Valence is the result of the multiplicative combination of expectancy and instrumentality. The valence denotes the strength of the preference with which the employee joins the outcome. It is influenced by individual needs, goals and values. Pay in form of wages could be an outcome received for purposes of performing. High valence increases the motivation of the employee to carry out this act. Vroom understands expectancy among the subjective assessment of the probability with which the employee reaches the result. If the employee estimates it as low, motivation decreases. The third determinant is the instrumentality. It

represents the employee's assessment of the action and its result to achieve the target. This factor is the link between performance and outcome. Vroom considers the factor of pay both in satisfaction with work roles as well as in performance with work roles. He distinguishes individual performance and performance in groups. Employees perform effectively if they work in smaller groups (Vroom 1964). This model shows a relation between performance and pay including work roles. It can be stated that pay is identified as a result of performance if the individual perceives this as desirable.

Thierry (2001), however, highlights self-identity of the individual as the basis of motivation for performance with the aim to obtain pay. It is determined by experience, cognitions, feelings, interests, values and preferences. On this basis in the specific situation, the individual decides for himself his behaviour and future challenges. He also receives work-based information from his work environment, for example from supervisors, colleagues, informal social relationships. Payment becomes valuable and significant if the individual refers with others in the field. He reflects his pay based on his self-identity. Thierry points out four categories of meaning that pay may have. First, these are the motivational properties. If pay is instrumental to effect individual motives and personal goals it is important for the individual. Pay is a source of opportunities. The second category is the relative position that is often laid down in an employment contract that contributes to the mutual conditions. Third, there is control expressed in hierarchy, role set, autonomy and self-regulation. In this context, pay is the “rate of dependence” (Thierry 2001). The fourth category is spending. This means achieving motives and goals of the first category with pay. If the four categories for pay are significant, motivation, performance and satisfaction are the results. The model is extended to a multi-level nature as tasks, group and work unit as well as the organisation and the environment are included. These variables must be involved in the analysis because they also affect the self-identity. This model also shows the relationship between a pay system, work behaviour and performance.

Another model demonstrates the link between performance and pay based on the motivation of the individual. Of interest here is that it focuses additionally on the connection between individual and team performance with regard to the group outcome. The Collective Effort Model of Karau and Williams (1993) (see in figure 9) is based on Vroom's expectancy-value model and expands on this. In the investigation of the relationship between individual effort and motivation the researchers include collective tasks. Their conclusion is that individual effort and individual performance are differently influenced by the collective context rather

than in considering only the individual outcome. They specify the motivation determinant of instrumentality into three factors: First, the perceived relationship between individual performance and group performance, second, the perceived relationship between group performance and group outcome, third, the perceived relationship between group outcome and individual outcome (Karau & Williams 1993).

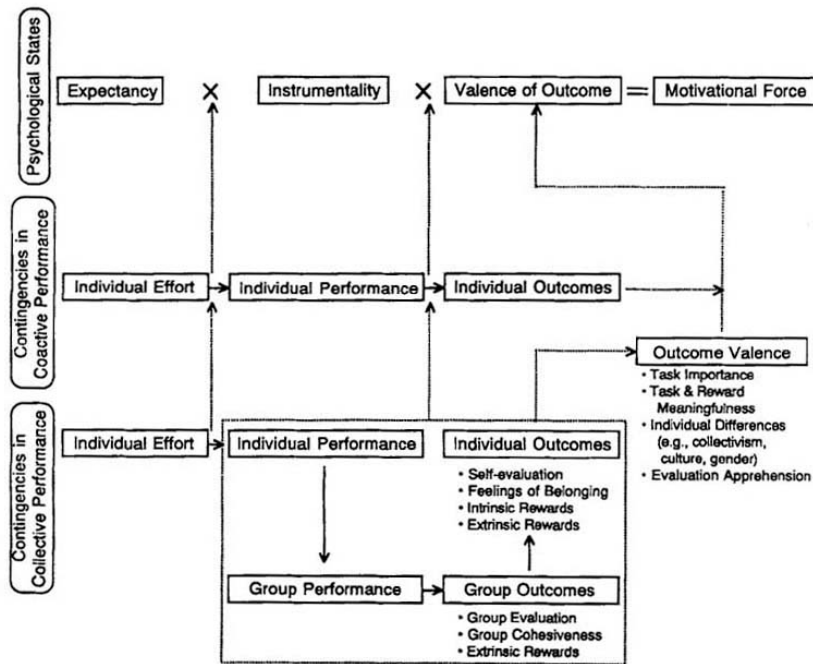


Figure 9: The Collective Effort Model (Karau & Williams 1993)

Regarding extrinsic rewards in the model (see in figure 9) the process shows them first in connection with group outcome and last with individual outcome. Karau and Williams deal with the phenomenon of social loafing in groups which means that motivation and effort decrease in collective work as compared to individual or coactive work. Social loafing arises when the individual performance in individual work is rated higher than the individual performance within the team. Group cohesiveness can reduce social loafing (Karau & Williams 1997). Another listed aspect of instrumentality of interest for the topic which is to be investigated: team members should perceive the importance and uniqueness of their contribution to group performance and to group outcome. Additionally, social loafing is reduced by the individual if they believe that outcome can be evaluated. This model shows that pay as extrinsic reward influences individual and group performance and thus, outcome.

The work of Cohen and Bailey (1997) also can be used for demonstrating the relationship between rewards and group effectiveness. The researchers summarized and reviewed

research on teams published from January 1990 to April 1996. Their work includes consideration of work teams. They create a heuristic model of group effectiveness (see in figure 10). The model shows different factors which influence the effectiveness of team work. The category ‘organizational context’ comprises rewards which include pay in general. The statement that there is a relationship between rewards and group effectiveness is based on two studies that demonstrate a positive relationship.

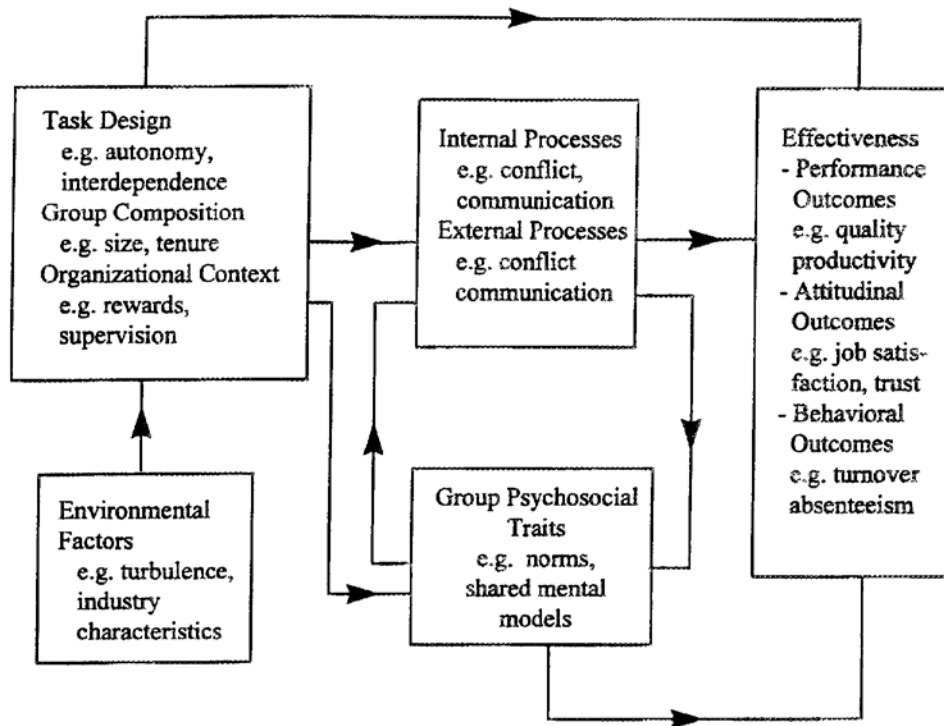


Figure 10: A Heuristic Model of Group Effectiveness (Cohen & Bailey 1997:244)

Similar to the phenomenon of social loafing by Karau and Williams (1993) rewards influence social internal and external processes in groups. Furthermore these processes affect the effectiveness of the group. In addition to the direct impact and the effect by group processes psychosocial traits are also factors which influence the effectiveness of groups. Cohen and Bailey recommend collective rewards if the team tasks are interdependent. If the team structure has more individual responsibilities rewards should be paid on an individual level.

Mahlberg et al. (2013) studied the relationship between ageing, productivity and wages. The result of their study is that the productivity of the organisation is not negatively related to the share of its older employees. Moreover, no over payment was found for older workers. Dostie (2011) obtains a similar result with a special significance: For the working group consisting of men with an undergraduate degree, he found out that younger men of this group (under the

age of 35) earn less than their productivity equals. Older workers (aged 55 and more) are rewarded more than their productivity equals. He points out that the data on which the study is based is not very accurate.

2.3.2 Effects of perceived unjust pay to performance

Theoretical equality models of motivation, which also include the equity theory of Adams, are based on the assumption that individuals strive for harmony and therefore they are motivated to reduce dissonance. The strength of motivation is determined by the size of the discrepancy between subjective ideal balance or imbalance in the situation (Stahle 1999). Individuals as employees in organisations give "inputs" in form of experience and work performance and get "outcomes" as a reward, for example in the form of pay or recognition (Adams 1963). They constantly compare their inputs with their outcome and also provide comparisons of input-outcome relationship to those of their colleagues or other comparable groups, to assess whether the relationship between these two variables is in balance. If an imbalance is detected, this will result in feelings of injustice (Adams 1963). In the case of imbalance the employee is motivated to achieve a just state. The equity theory demonstrates that rewards, if they are perceived as unfair, have an impact on motivation and may also affect performance. For example, if pay is not felt to be fair, this may hinder or reduce performance. Following on from this theory, a relationship is shown between performance and pay (von Rosenstiel 2003). Similar as in the VIE-model this theory is based on the recognition that pay or rewards are generally assessed subjectively by the employee. The degree of performance is the result of evaluating the equity by comparing with others. Individuals want to feel they are being treated fairly in relation to pay. Beside offering an attractive reward from the perspective of the individual, this is also a basis for high motivation (Porter et al. 1975). It must also be taken into account that individuals tend to feel underpaid. The feeling of overpayment or fair pay is less noticeable (von Rosenstiel 2003). In this respect, pay equity refers in particular to the comparison inside the organisation with other colleagues, and less in comparison to the outside working people. Another recommendation is to be found in the literature: Pay your employees well and fair and then do everything to make them forget the money (Sprenger 2002). The background of this recommendation is to prevent the discussion about pay so that the employees concentrate on

their work and the related performance expectation. Levi (2011) recommends also that team members' pay should be fair and equitable.

For designing a model of pay flexibility it is important that these relationships are considered because pay influences performance in different situations.

2.3.3 Motivation in connection with pay and performance

An individual needs a motive to provide performance. A motive is an effect feature which leads to an action of the individual (Kleinbeck 2006). These personal traits are activated in certain situations by incentives and lead to motivation (von Rosenstiel 2003). Motivation to performance exists when the drive to act proceeds from the individual themselves (Heckhausen & Heckhausen 2006). Motivation of an individual is the driving force and the willingness to a certain behaviour. The probability of its occurrence is also included (Wunderer & Kuepers 2003). The individual strives to achieve a certain goal with his or her behaviour. The motivation process is characterized by person-related and situation-related influences (Heckhausen & Heckhausen 2006). Vroom (1964) connected motivation (M) with performance (P) and skills (S) (education and work experience) in the function:

$$P = f(S \times M).$$

Rüttinger et al. (1974) stated this as well: performance is defined as a function of willingness and ability. Willingness can be understood as the force that drives individuals to act or push toward goals, summarized also as motivation (von Rosenstiel 2006). The multiplicative combination constitutes that both motivation and skills must be present in order for performance to occur. In this equation, performance is only applied to the psychological determinants of skills and motivation. Von Rosenstiel (1975) also took account of the organisational conditions (O) which are necessary for creating performance. He incorporates this determinant into the multiplicative combination:

$$P = f(S \times M \times O).$$

These explanations show that motivation and performance are interrelated. The following section discusses how pay is integrated into this combination.

In 1959, Herzberg et al. (1993) conducted a semi-structured survey with 203 accountants and engineers in an empirical study. The aim was to capture systematically the incentives which actively influence motivation in the workplace. The participants stated work situations in which they felt exceptionally good or bad. The result of the study (the two-factor theory) was that Herzberg et al. (1959/1993) identified two kinds of factors. They distinguish "motivators" who can create satisfaction, and "factors of hygiene" which prevent dissatisfaction. Motivators usually perform intrinsically, through the work itself, satisfaction. Motivators are called success, recognition, work content, responsibility and promotion. If the motivators disappear, this leads to non-satisfaction. Factors of hygiene are mainly context factors that can motivate extrinsically. These include company policy and organisation, formal leadership, interpersonal relations, working conditions (Weibler 2004). In both situations (good / bad), salary as an incentive factor received nearly the same number of responses and is therefore an influencing factor for motivators as well as for factors of hygiene (Drumm 1995). Salary as a factor of hygiene is more a "job dissatisfier" than a job satisfier (Herzberg 1959/1993). There is no compensatory effect between motivators and hygiene factors. An increase of motivators does not lead to a reduction of dissatisfaction and vice versa. While motives motivate motivators to perform and increase performance, hygiene factors ensure that employees remain in the company (Drumm 1995). In summary, according to this theory, it is necessary to promote motivators, like intrinsically motivating work, in order to maintain performance. The salary can be a motivator, but is rather a determining factor of dissatisfaction (Drumm 1995; Staehle 1999; Wunderer & Kuepers 2003). The two-factor theory has been criticized methodically and in terms of content (House & Wigdor 1967; Kam & Meyer 2015). Subsequent studies have shown that, in particular, the assignment of the results to motivators or to factors of hygiene is not clear. The insight that payment is linked to work motivation has also been stated by Rüttinger et al. (1974). They showed that the need for money is an extrinsic work motive. The Hay Group conducted a survey in 2012. 56% of the 18.549 participants said that an appropriate salary leads to motivating performance. This statement took third place after motivators such as a collegial environment and a fulfilled job. Von Rosenstiel (2006) said that financial incentives may be performance-enhancing. He restricts his statement by saying that this statement does not apply in every situation or for every task or for every individual. Cameron et al. (2001) got a similar result: rewards are not harmful to the intrinsic motivation in all situations.

Pink (2009) defines similarly the interrelation between motivation and pay to Herzberg et al. On the new level of “motivation 3.0” (Pink 2009:97) which has arisen in the last 15 years he recommends clarifying the question of the salary so that on no account it leads to discussions with the employee. Jobs of the 21st century consist more of heuristic tasks and less of routine tasks when related to the United States of America. Routine tasks have been automated. Pink’s advice is that the employer may pay more than the average in order to reduce fluctuation and increase productivity and morale (Pink 2009). Employees belonging to the “motivation 3.0” cannot be motivated by rewards and punishment anymore. The higher the importance of the salary, the more it can inhibit creativity and performance. But if tasks are “simple, straightforward, rule-based”, carrot and stick motivators like rewards and punishment can still be used (Pink 2010). As tasks have been more “algorithmic” under “motivation 2.0” rewards and punishment could have been used and were successful. Transferred to the German building trade which includes both algorithmic and heuristic tasks it means that pay may have to be adapted to the specific task.

On the other hand, in their self-determination theory Deci and Ryan (2000) pointed out that intrinsic motivation is an important basis for performance. A reward which is an external means to promote extrinsic motivation can reduce intrinsic motivation. Frey and Bohnet (1994) called this effect “crowding out”. Pay can displace or destroy intrinsic motivation. Intrinsic motivation is a better indicator of job performance than extrinsic motivation (Chamorro-Premuzic 2013). Rewards as extrinsic motivators do not improve performance, they even have a counterproductive effect in relation to performance. In general, pay does not match with performance (Kohn 1999). Sprenger (2002) also stated that hardly anyone sells his working time only for money. He says that money does not motivate sustainably to higher performance. Frey and Osterloh (2000) advocate pay-for-performance with simple activities and for individuals who are mostly motivated by financial rewards. They recommend a combination of a pay system and leadership instruments. An inadequate salary has a demotivating effect, as well as a non-transparent and arbitrary system of pay (Weißenrieder 2014). Thönneßen (2013) even goes as far as to keep motivation and pay apart. He says that in the context of an employment relationship, performance and money should only be spoken as pay, because this is based on an employment contract.

The basis for employment is the employment contract, which defines the outputs of both parties. Ideally, the individual performs activities in their jobs to which they are intrinsically motivated. But not every individual can do the work to which he is intrinsically motivated.

Often, in professional life, tasks have to be done which are only based on the fulfilment of the employment contract. But a certain basic motivation for the provision of performance must be provided by the employee as a contract partner in order to receive his/her wages or salary by the employer. As each individual is stimulated by different motives, the basis for motivation is not the same for every individual. Some individuals act in a performance-related way because of their intrinsic motivation. Others, however, are stimulated by external means to promote extrinsic motivation, which includes pay and rewards. In her studies on performance-based pay Sprenger (2014) states that the factors of fairness, transparency, flexibility and an open corporate culture represent a positive framework for motivation and pay. Thus, every employee has to be treated individually. For a pay system this means that it should be designed in such a way that elements are contained which can be adapted to individual needs. In every case it must not be demotivating.

2.3.4 Summary

This part of literature research shows interrelations between (team) performance or work effectiveness and pay. The work of Vroom (1964) is especially important for this research because it shows a connection between pay and performance by the factor of motivation. In addition, Adams' theory of equity (1963) brings the factor of equity in the consideration of pay. As equity and fairness also influence motivation and performance in terms of pay, factors such as motivation, equity and fairness have to be integrated in a model of pay. They establish the link between performance and pay. Whether the interrelations are positive or negative cannot be determined accurately because there is research supporting both. However, from the perspective of the individual attractive pay – for the purpose of motivating – it has a positive impact on team performance and work effectiveness. In contrast, unfair pay can lead to demotivation and thus to reduced performance. There are various interactions between these factors that can be strengthened or weakened by working conditions. The personal attitudes or expectations of the individual team member affect his/her actions in the team. Figure 8 (page 44) which represents the effects of the increasing average age in work teams is supplemented in figure 11 by the findings of this section. Pay impacts on the team performance by the motivation of the individual.

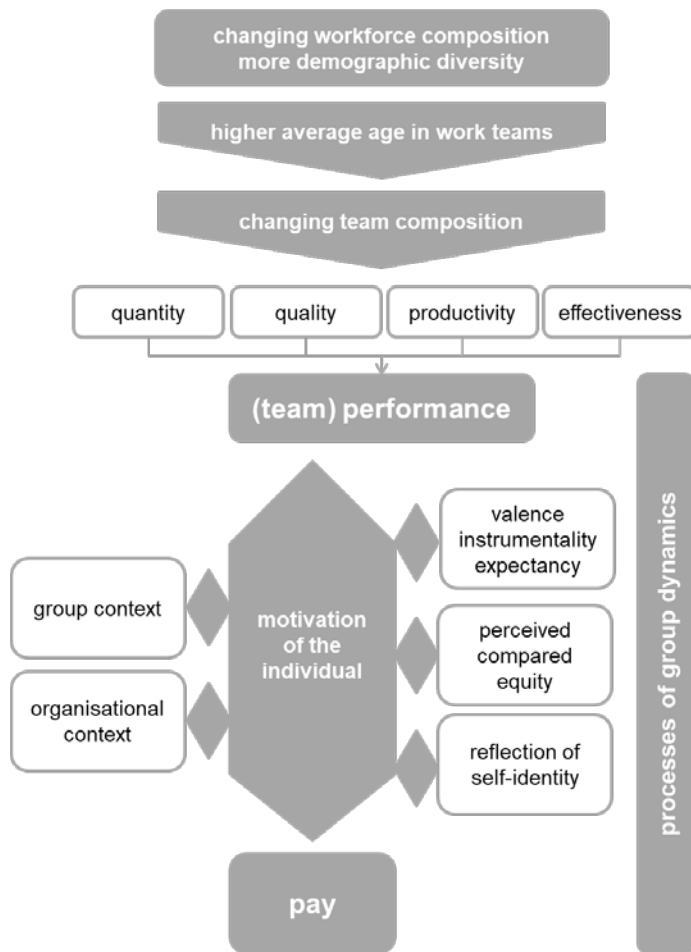


Figure 11: The interrelation between performance and pay

Through the (team) performance the link between the changing conditions in the workforce and pay is established. In addition, the performance of the individual in the team is influenced indirectly by different factors, such as group context, the organisational context, the fulfilment of individual expectations (valence/instrumentality/expectancy), a perceived compared equity and the reflection of self-identity influence motivation and therefore also pay and performance. Some of them are hidden and unrecognizable to the team leader and to other team members. These factors are shown in figure 11 to the right and left of the rhombus in which ‘motivation of the individual’ is presented. Complex processes that affect the relationship between performance and pay occur without changes in the actual contractual relationship of the employment contract. In a model of pay it is therefore necessary to consider these additional influences. However, only limited effective impacts can be exerted on hidden individual or social processes. Communication is a means to recognize expectations. Again in this section, the individual is at the centre of investigation. The entire team has a downstream influence in this topic. In the next step of the literature review the basis of team pay is analysed in the following section.

2.4 Rewarding teams

To answer the research question – to what extent do the effects of changing workforce composition impact pay flexibility? – first, an overview of the current possibilities of pay will be made. In the literature there is a controversy about rewarding individual or team outcomes. In their study accomplished in Portugal 2010 Cardoso et al. note that the development of wages and provided productivity to the organisation disintegrates into different directions (Cardoso et al. 2010). Organisations are struggling with the use of pay systems for teams because they fear that the offer of a pay system displaces the intrinsic motivation (Lawler 1998). It also depends on the importance of money for the individual. For some individuals money is most important but for others job environment or job content are more important than money (Hoffmann-Remy 2016; Lawler 1998; Porter et al. 1975). As the team's success depends on several factors and on individual performance of team members, this often makes it difficult to separate the contributions and performance of individual workers (deMatteo et al. 1998). The aim of a pay system is to create a framework where individuals are energized to do their best within the group (Sodenkamp et al. 2005). This does not mean that every team member gets equal pay. Team-based pay is intended to increase the success of the team and not only be a simple pay-off (Armstrong 2000). Before considering the possibilities of team-based pay this section starts by presenting and connecting influencing factors on the effectiveness of team-based rewards to other parts of this review. When considering the possibilities only the basic forms of pay options for teams are identified and reviewed, also in terms of performance because the research question contains the restriction of maintaining the performance. It also addresses respectively how the forms of pay are created in the German building trade.

2.4.1 Pay based on the job or on skills

It is possible within work teams to reward the team members individually. This can be done on the basis of job descriptions. The employee occupies a position which has a specific job description (Lawler 1998). The pay is tied to the described tasks. Employees who perform the same job receive thus the same pay, regardless of whether they actually achieve the same

performance. To connect the payment with the job positions in and beyond the organisation are comparable. This kind of pay is independent of individual or team performance. In many cases, job-based pay is negotiated resulting in collective agreements in Germany. In some collective agreements such as in the roofing trade, for example, there are negotiated hourly wage rates for four main jobs, which are defined for this business. These are the auxiliary worker, the more skilled auxiliary worker, the trained roofer and the sub-foreman in the roofing trade. One condition of payment is the predominant work activity in one of these jobs. A similar pay structure as described before is also found in many other collective agreements in the German building trade.

Another way of paying team members is using skill-based pay or competency-based pay. This means that the employee is paid for his/her existing knowledge and skills, for example for what he/she can do (Lawler 1998). Existing skills are rewarded, regardless of whether they are also used in the current job. By skill-based pay, employees are encouraged to learn new skills (Levi 2011). If the employee develops their skills, his/her pay increases. This type of payment secures determined competencies to the organisation. It promotes the preservation and development of knowledge and skills but there is no direct connection to performance. This type of pay relates indirectly with performance. In the collective wage agreement of the roofing trade, for example, this form of payment has a central meaning. Next to the described task catalogue, it is important to determine whether an employee in the roofing trade has professional training supported through certification. This training is mandated by law and is conducted in three and a half years. By definition, auxiliary workers do not pass through professional training. Payment of the four main job categories becomes more differentiated within each job category itself by age, seniority and length of professional experience. A distinction of three categories, for example, is made for the professional skilled roofer. Crucial to the amount of the hourly wage rate is the number of worked years in this profession. This pay structure also exists in a similar way in the other collective bargaining agreements of the German building trades.

2.4.2 Seniority-based pay

As with skill-based pay seniority-based pay is another pay system which is related to a individual. Skills or qualifications are not indicators for seniority-based pay. The employee's

tenure and herewith an assumed higher professional experience are the basis for pay and pay increases. In their discussion paper Bayo-Moriones et al. (2004) define seniority-based pay as a type of implicit incentive. At the beginning of the employment the worker earns a wage that is below their work value. The wage increases during the course of the employment. Only at the end of his/her professional life they have received the income which they have been entitled to and which corresponds to his/her overall performance (Malcomson 1984). Companies use this as a motivation device. Lazear (1981) advocated age-earnings profiles such as seniority-based pay because higher wages paid to older workers motivate the young worker to “perform at the optimal level of effort in hopes of growing old in that firm” (Lazear 1981). Even if the wages increase more with work experience than the productivity, it is nevertheless efficient to apply this pay scheme. Benefits arise from terms of loyalty, retention, and stability (Shaw et al. 2001) but not from performance. Prinz (2004) explains this form of pay by the human capital theory (Becker 1962). While with increasing tenure and thus with the age of the individual the development of the income increases the performance does not keep up with the development of income. As the individual starts with an income under the productivity this difference represents a ‘deferred compensation’. A planned extended seniority in the organisation is the requirement for this approach. So, the income of an employee who enters an organisation with seniority is not comparable to the income of a many years’ standing employee (Gelderblom 2006). The organisation fixes it on a lower level because delayed payments are not expected (Stettes 2010), different from the delayed compensation model of Lazear (1981). In this context, it is also referred to as the seniority principle. The seniority principle of pay means an automatic age-related pay increase (Richenhagen 2007). The principle is applied both in the collective agreements as well as in payment over and above standard salary. Approximately one third of the organisations in the German industry pays seniority-based, with an increasing tendency (Stettes 2010). A 50-year-old employee earns on average 150% more than an employee aged 25-29 years old (Zwick 2009). The following graph (figure 12) shows age-earnings profile. It is taken from Franz (2013).

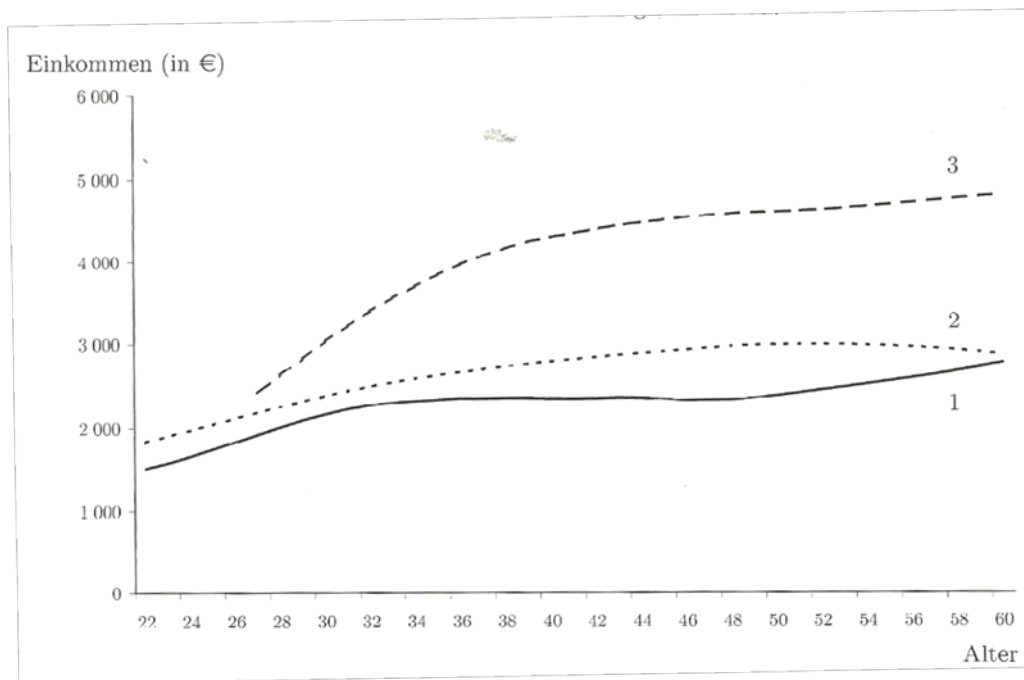


Figure 12: Age-earning-profiles by education level (income in Euro and age)

Profile 1 shows the development without any professional education, profile 2 with a professional education and profile 3 with an academic degree. At the beginning of the professional career the increases of the income are higher than in the later professional life. This is justified by the fact that income is based on the law of diminishing marginal returns and on a decrease of investments in education with increasing age (Franz 2013). The law of diminishing marginal returns states if the labour input is continuously increased the returns first increase rapidly, then slower, and finally they even decrease (Turgot 1774/2017). Gossen (1854/2015) chose a similar approach with the theory of marginal utility. The amount of wage is determined by the marginal utility. The worker maximizes his profit as long as he expects an increase from the difference between the loss of leisure and the additional income. The higher the market price of labour, the larger is his labour supply and thus his profit. But this neoclassical approach is subject to criticism, because the assumption of a perfect competition on the labour market is not realistic (Bontrup 2000).

2.4.3 Performance-based pay

The question of whether the individual in the team or the whole team should be rewarded cannot be answered simply. Performance can be measured at different levels, individual,

group or organisational. For all directions, there are certain conditions with different factors. Often, there is the difficulty that the performance of the individual in the team is hard to determine. It is understandable that employees with high performance mostly favour individual measurement and payment (Lawler 1998). But on the other hand, cooperation and teamwork are weakened (Levi 2011). Also, there are team processes in organisations which do not arise when the focus is only on the motivation of the individual. Cooperation and mutual motivation (Latham 2007) promote skills that contribute to the success of the organisation. Lawler and Cohen (1992) also work on team work and performance-based pay. In their research they distinguish three forms in context of payment for teams: rewards for performance, base pay, as well as participation and communication. For the first form they identify three ways of providing rewards. The first proposal is based on team performance appraisals, the second are gain-sharing plans and the third is to reward outstanding performance. Lawler and Cohen point out that designing a pay system means a mix of team-level and organisational-level pay of performance (1992). There are jobs which have difficulties in defining performance and to evaluate the performance they receive. However, it is important to decide on strategically important key performance objectives, because the performance of employees is controlled by a reward system (Lawler 1998). Based on the Goal-Setting Theory by Locke & Latham (1990), Hollensbe & Guthrie (2000) developed a group-based pay-of-performance plan, which they call "open goal". Instead of defining a performance goal this plan works with thresholds as the minimum performance. If the defined threshold is reached the employee starts to get a reward. The idea of determining a minimum level from which a bonus is paid, represents a different approach.

Some general agreements on conditions of employment for the building trade in Germany regulate the performance. If the individual is employed in performance-based pay at least the agreed minimum wage per hour is guaranteed to the employee. This means that additional performance could only be paid in over-tariff allowances. An alternative division of the hourly rate is often not provided. In 2004, only about 10 percent of the organisations in the German building trade applied performance-based pay, although positive aspects of the users were seen (Pollack 2013).

2.4.4 Team-based pay

Team-based pay is defined as a “form of remuneration in which the level of remuneration of individual team members depends to a certain extent on the performance of the whole team“ (Balkin & Montemayor 2000:250). Team-based pay is one of the central elements of a successful team leadership (Bolch 2007). There are two extremes: on the one hand, all team members receive the same pay regardless of their team contribution and their individual performance and commitment. The other extreme is the completely individual pay of each team member (Gross 1995). Often the team-based pay is divided into two or several elements. One part is fixed and the others are variable. The variable parts are based on the individual performance of each team member and on the team performance. The performance is measured on the team results. In turn, the pay is determined by the team results. The distribution of the team-based pay can be made in two variants: absolutely equal or relatively equal (Stock-Homburg 2010). Kirkman et al. (2016) showed that the team performance is supported when the top performers are rewarded in a team. Rewarding the team as a whole has proven to be inefficient or less effective (Levi 2011). Compensation for the entire team can cause the team members to enter into strong competition. Team work will not be promoted. Also Brewer (1994) points out that above-average performing team members are demotivated if their individual performance is not rewarded by team-based pay. If team tasks are highly interdependent or the target is to encourage teamwork team-based or organisational-based pay is more successful (Cohen & Bailey 1997).

When evaluating the different pay schemes of job-based, skill-based, seniority-based and performance-based in connection with the team-based pay, various aspects are discussed in the following. Here also the increasing age of the employees will be integrated and accessed from both employee’s and employer’s view.

A pay scheme based on the job is connected to the individual. This form of pay does not include a link to the performance nor the age. Increasing performance or increasing age do not affect the pay directly. If the requirement is given that the team must be composed differently due to the changing age structures, a different job could be assigned to the individual. If that related pay scheme of job-based pay is actually flexible, the change of the job leads to a change in payment. Herewith this pay scheme follows the team role model which Belbin (2010b) defines for jobs in teams. This dynamism between a changed job and a

change in pay is a significant advantage for the decision-maker in the organisation if he has the flexibility to assign jobs according to the individual's performance in the team composition. As long as the adjustment of a new job results in a pay increase, the individual as an employee will agree to this adjustment. In particular, a job change due to age-related performance reduction, which entails a reduction of his/her payment, he/she will be critically more opposed than agreeable.

A pay based on skills, as well as the job-based pay, is bound to the individual. Starting from an increase of skills during the course of a working life, this also leads to an increase in the pay of the individual. For that, the precondition is that the skills are still relevant to the tasks for which the individual is employed. Skills, which become obsolete during the course of professional life, no longer have any significance when it comes to payment. Thus, the increasing age is indirectly included in the pay scheme. From the perspective of the decision-maker, a skilled-based pay is considered positively when the decision-maker actually has to pay only to access these skills which he retrieves from the individual for team work. He can employ the individual according to his skills in the team and receive the appropriate performance. If the pay contains skills that are no longer needed, the pay scheme becomes increasingly uninteresting for the decision-maker with regard to the consideration of the performance. The individual, on the other hand, will demand a higher pay with increasing skills. If he/she constantly updates his/her skills during his/her professional life, they can assume that their payment will keep up with or even increase with age. Consequently, a reduction in skills leads to a reduction in pay. However, measuring a decrease in skills is difficult. It is also problematic to get an approval from the employee. In addition, it is also necessary that the team composition allows an assignment of the individual according to his/her skills and abilities.

Seniority-based pay, which is also connected to the individual, links pay to age. Performance is not a basis of pay in the pay scheme. An adapted team composition based on the changing age structures increases the cost of the team, because increasing average age increases the individual pay as well, irrespective of the development of the individual's performance. If increasing average age increases team performance, the decision-maker supports the seniority-based pay in principle. In the case of decreasing team performance accompanied by an increasing average age, the seniority-based pay becomes disadvantageous for the decision-maker. The employee, on the other hand, supports in general this form of pay, since he/she does not have to worry about any loss of pay during his/her working life. If the employee is a

high performer, he/she is critically opposed to this pay scheme as long as his/she increased performance is not paid.

Performance-based pay can be agreed for both the individual's performance and for the entire team performance. From the viewpoint of the decision-maker, this form of pay is more advantageous because performance and pay are connected. If the performance increases as a result of the higher average age in the team, the pay is consequently also increased. In case of declining performance, the pay is also reduced. From the viewpoint of the employee, this pay scheme is positively assessed if he can provide the desired performance. If he earns less due to an age-related performance reduction, he opposes this pay scheme and perceives it rather negatively. Also, a difficulty is often the performance measurement. In particular, if the work results are not directly measurable and comprehensible, the link to pay cannot be represented transparently. This pay scheme can be considered for tasks that can be measured by the individual or the team themselves. Measurability is essential in order for the team members to classify the pay scheme as fair and equitable.

In summary, from the organisation's point of view, a pay scheme which takes into account the performance changes that arise from the changing age structures within the team is advantageous. If the decision-maker can take into consideration the specific assigned job, the individual skills and the performance when composing the team, this would be ideal for them. Thus, he/she can act flexibly and economically to the changed team composition. The employee, on the other hand, wants security and justice. It can be assumed that the employee does not voluntarily agree to a reduction in pay due to a performance decrease which results from his/her increasing age. He/she will positively oppose both a skilled-based and a seniority-based pay scheme. Performance-based pay is only positive for him/her, if he/she can continue to offer the desired performance with his increasing age. The two contracting parties - both employer and employee - have different approaches with regard to pay because they have to present different points of view from the business perspective. A pay scheme, which covers the question of changing team composition combined with the increasing average age in the work teams, cannot be directly shown in the literature review. This is also due to the fact that the positions of the two contracting parties are different in regards to pay.

2.4.5 Collective bargaining agreements in the German building trade

Autonomous collective bargaining is laid down in article 9.3 of the Basic Constitutional Law of the Federal Republic of Germany (Richardi 2016). The Law of Collective Bargaining (Tarifvertragsgesetz) comprises more detailed legal requirements for the social partners, meaning employers' associations and trade unions. The social partners are allowed to negotiate remuneration, working hours and other working conditions without any influence of the state. The results after negotiations are specified in collective bargaining agreements. These agreements contain the rights and obligations of employees and employers (German Trade Union Confederation 2007). They provide a framework of working conditions for a peaceful relationship between both partners in organisations. In 2016, approximately 72.000 collective agreements consisted in Germany (Confederation of German Employers' Associations (BDA) 2017a). 490 of them were generally binding according to law (Verzeichnis der für allgemein erklärten Tarifverträge [Directory of the generally binding declared collective agreements]). Generally binding means the organisation must to adhere to the agreement to which it is associated. An application is no longer voluntary. Besides generally binding the working conditions of the related collective agreement, it must also be applied if the employer is member of the employers' association and the employee is a member of the trade union. If there are no memberships in associations or unions or if there is no need to use a collective bargaining agreement, often the working conditions are voluntarily applied because it is common in the labour market. The legal requirements are only valid. This means that wages can be negotiated freely. The minimum wage must be strictly adhered to. In principle, each trade in the German building trade must – if generally binding - or can - apply a collective bargaining agreement which deals with working conditions and wages.

In each business, industry or trade, agreements about wages have been concluded. These collective agreements which deal with the labour rates are divided into wage groups. The differentiation of the wage groups is based on the job carried out, the professional education or further training, the duration of working experience, the job tenure or the responsibility in the job. The federal basic collective agreement for the German building industry, for example, which is the basis for the majority of trades in Germany, differs into five wage groups:

- wage group 1: worker or machine operator without qualification who performs simple construction and assembly work according to instructions
- wage group 2: skilled worker or engineer or motorist who performs technically limited work according to instructions
- wage group 3: skilled worker or construction equipment guide or professional driver who performs specialized work of his profession
- wage group 4: specialized worker, construction engineer, excavator operator, tiler or plasterer who performs independently the professional work of his respective profession
- wage group 5: foreman who guides a small group of workers, including his own cooperation or who performs independently particularly harder work
- wage group 6: general foreman who leads and manages a group of workers in subareas of the construction work, also under own cooperation

Another example of a collective bargaining agreement including the duration of work experience and age is the basic agreement for the commercial workers in the roofing trade. It is divided into six wage groups. In the following, special consideration is given to the wage groups II and IV. Wage group II deals generally with skilled workers. It is distinguished between three different wage levels within the group of skilled workers:

- IIa: Roofing specialist (Dachdeckerfachgeselle) who passed the vocational training in the German dual education system as a roofer and who has minimum three years of work experience
- IIb: Roofer (Dachdeckergereselle) who passed the vocational training in the German dual education system as a roofer and who has minimum 24 months of work experience
- IIc: This wage group is subdivided into two more groups. First, there is the wage group for the roofer (Dachdeckerjunggeselle) who passed the vocational training in the German dual education system as a roofer and starts working as a skilled worker. This wage group is applied up to 12 months of work experience. Second, the less experienced roofer with a work experience of 13 to 24 months.

The agreement determines exactly which wage group has to be applied when a certain duration of work experience has been passed. It is assumed that the value of work has been increased during the first three years after passing the vocational training. A review is not

intended. On the assumption that young people start their working life in the German building trade at the age of 17 they pass their vocational training at the age of 20 or 21. After three years working as a skilled worker they are 23 or 24 years old and – based on this collective agreement - reach the highest wage group of IIa. If they do not change to the more responsible job as a foreman or master they remain in this group until the end of their working life. Work experience which is gained later on is no longer considered in this system of wage groups. Thus, the wage group IIb represents the minimum wage for the experienced skilled roofer. Increasing performance is not covered.

When considering the wage group IV for the auxiliary workers in the German roofing trade the following subdivision has to be applied:

- after the age of 20 and after six months of professional affiliation
- after the age of 20 and a professional affiliation of 3-6 months
- after the age of 18 and up to 3 months of professional affiliation
- before the age of 20 and after six months of professional affiliation
- before the age of 20 and up to six months of professional affiliation

The wage group IV of the roofing trade in Germany contains also seniority-based components. There are age differences for the payment of the auxiliary worker. A distinction is applied as to whether the worker is under 18 years or older than 20 years, combined with the duration of professional affiliation. Performance and work experience are not taken into account.

The other collective bargaining agreements, which are relevant for this research, also contain job tenure-dependent components. In the master agreement for employees of electrotechnical trades uses the indefinite term of "several years of professional practice". The others trades deal with this differently. The work experience or the job tenure is specified between one to five years.

In the following table 4 the collective bargaining agreements related to this research are listed with details about the exact name, generally binding clause, the structure concerning wage groups, age and job tenure as well as the current basic hourly wage in Euro. This basic rate of pay refers to an experienced skilled worker of the specific trade. The amount in Euro is indicated in order to recognize that there are differences in wages between the trades justified on the autonomy in wage bargaining.

name of the collective bargaining agreement	generally binding according to law	related trade	structure			current hourly wage of a skilled worker (2016/17) in EURO
			number of wage groups	age-dependent elements	job tenure-dependent elements	
Bundesrahmentarifvertrag für das Baugewerbe [Federal basic collective agreement for the building industry]	x	bricklaying scaffolding tiling	6		x	17,87
Rahmentarifvertrag für die gewerblichen Arbeitnehmer im Dachdeckerhandwerk [basic agreement for the commercial workers in the roofing trade]	x	roofing	6	x	x	17,64
Manteltarifvertrag für das Installateur- und Heizungsbauer-, Klempner-, Behälter- und Apparatebauer-Handwerk [master agreement of the trade for the plumbing, heating builder, pipe layer, container and apparatus builder]		plumbing heating engineering	7		x	16,78
Manteltarifvertrag für die Arbeitnehmer und Arbeitnehmerinnen der elektrotechnischen Handwerke [master agreement for employees of electrotechnical trades]		electrical engineering	12		x	15,72
Bundes-Rahmentarifvertrag für gewerbliche Arbeitnehmer im Garten-, Landschafts- und Sportplatzbau [Federal basic collective agreement for commercial workers in the horticulture, landscape and sports arenas building]	x	horticulture	26		x	15,09
Rahmentarifvertrag für die gewerblichen Arbeitnehmer im Maler- und Lackiererhandwerk [Basic collective agreement for commercial workers in the paint and varnishing trade]	x	house- painting and decoration	9		x	16,18
Manteltarifvertrag für gewerbliche Arbeitnehmer, Angestellte und Auszubildende des holz- und kunststoffverarbeitenden Handwerks [master agreement for commercial workers, employees and trainees of the wood and plastic processing trade]		carpentry glazieri cabinet making	10		x	15,97

Table 4: Overview of the collective bargaining agreements related to the research

Various features such as the job carried out, the professional education or further training, the duration of working experience, job tenure or the responsibility in the job are the basis for the subdivision of the wage groups. The wage groups of the different trades do not contain any component related to performance. But all agreements examined allow to use performance-based pay. Mostly, a certain article determines how to proceed. § 6 of the Federal basic collective agreement for the building industry deals with the pay of performance. A detailed description gives information about the guidelines and its administration. In case of low performance it is possible to pay only 90% but it is not allowed to go below the minimum

wage. The wood and plastic processing trade pays 80% of the wage agreed in case of decreasing performance. The others do not allow paying under the wage which is agreed which means no wage deduction for underperformance. The following table 5 shows an overview of the legal foundation for performance-based pay in the collective bargaining agreements of the related trades.

name of the collective bargaining agreement	legal foundation of performance-based pay in the agreement
Bundesrahmentarifvertrag für das Baugewerbe [Federal basic collective agreement for the construction industry]	§ 6
Rahmentarifvertrag für die gewerblichen Arbeitnehmer im Dachdeckerhandwerk [basic agreement for the commercial workers in the roofing trade]	§ 30
Manteltarifvertrag für das Installateur- und Heizungsbauer-, Klempner-, Behälter- und Apparatebauer-Handwerk [master agreement of the trade for the plumbing, heating builder, pipe layer, container and apparatus builder]	-
Manteltarifvertrag für die Arbeitnehmer und Arbeitnehmerinnen der elektrotechnischen Handwerke [master agreement for employees of electrotechnical trades]	-
Bundes-Rahmentarifvertrag für gewerbliche Arbeitnehmer im Garten-, Landschafts- und Sportplatzbau [Federal basic collective agreement for commercial workers in the horticulture, landscape and sports arenas building]	§ 11
Rahmentarifvertrag für die gewerblichen Arbeitnehmer im Maler- und Lackiererhandwerk [Basic collective agreement for commercial workers in the paint and varnishing trade]	§ 32
Manteltarifvertrag für gewerbliche Arbeitnehmer, Angestellte und Auszubildende des Holz- und Kunststoffverarbeitenden Handwerks [master agreement for commercial workers, employees and trainees of the wood and plastic processing trade]	§ 5

Table 5: Overview of the legal foundation for performance-based pay in the collective bargaining agreements of the related trades

Two collective bargaining agreements have an additional article about paying lower wages combined with lower capacity. The Federal basic collective agreement for commercial workers in the horticulture, landscape and sports arenas building states in § 9 (see annex I):

- “1. The wages agreed in the collective wage agreement apply to fully capable workers.
- 2. A reduced wage can be agreed for employees who are disadvantaged by physical or mental handicaps in agreement with the workers’ council.

- 3. The agreement requires the written form and the consent of the regional collective bargaining parties.”

The agreement does neither define a “fully capable worker” nor specify the conditions for a wage reduction. In addition, the social partners have to be asked. Therefore, the procedure is very extensive, but possible.

In none of the collective bargaining agreements was a scheme for team-based pay explicitly found.

2.4.6 Effectiveness of team-based-pay

DeMatteo et al. (1998) deal with the effectiveness of team-based rewards. They create an overview of factors influencing the effectiveness of team-based rewards and categorize four subgroups (see figure 13). These are team, reward and organisational characteristics and individual differences.

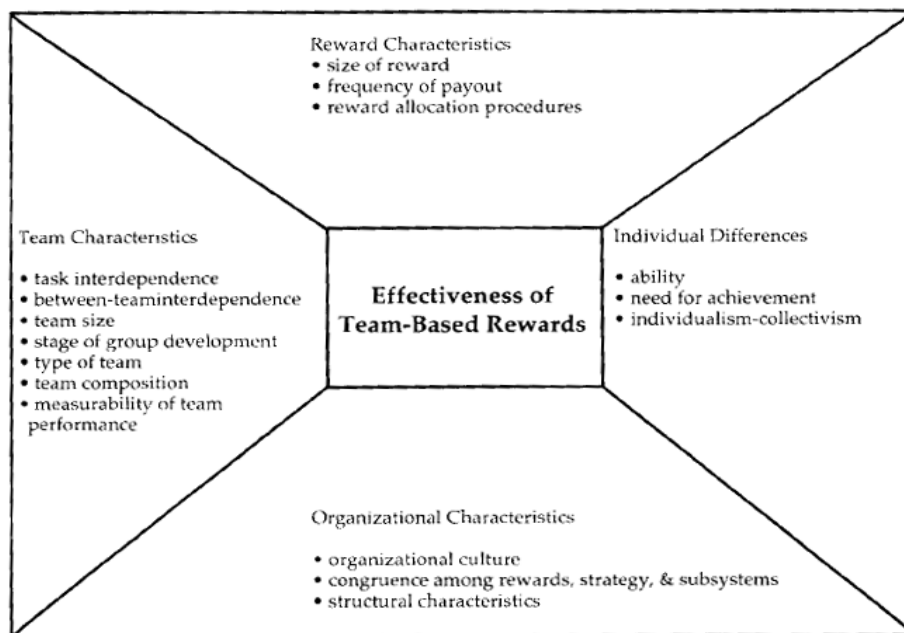


Figure 13: Factors influencing the effectiveness of team-based rewards (DeMatteo et al. 1998:153)

Team characteristics contain among others the type of team and team composition. These factors are key features when analysing the effects of increasing average age at the beginning

of this work. Particularly, they are Belbin's topics (Belbin 2010a, Belbin 2010b). The individual differences include the item of ability. Again, a connection to knowledge and skills is possible, which are mentioned with performance. The need of achievement is of importance in the Collective Effort Model of Karau and Williams (1993) when the individual sets his individual effort. For the later development of the model for team-based pay this overview provides the possibility of revision in terms of effectiveness.

2.4.7 Pay flexibility and more dynamism in pay

In order to comply with demands for flexibility and to define the characteristics of a flexible pay system, it is necessary to investigate the motives of action of both contracting parties – employer and employee.

An adaptation and thus a flexibility of the price of labour has already been given by Adam Smith in one of the first modern works of economics. The employee supplies labour on the labour market. The employer as the other player on the labour market asks for labour. He/she is on the side of labour demand. Both parties represent different interests. While the employee would like to receive a wage as high as possible, the employer would pay as little as possible (Smith 1776/2012). So both parties try to get the best price possible from the other on the labour market. The market price for labour is formed by the relationship between supply and demand. If supply and demand on the labour market match to the same amount the market price is more or less equal to its natural price (Smith 1776/2012). If the labour market is characterized by a higher quantity of demand than the offered amount of labour the market price arises from the relationship of the “greatness of deficiency” (Smith 1776/2012:60). A lack of a supply occurs, for example, in case of too little qualified workers. His statements are valid in a market under perfect competition and with market transparency. As the processes of matching are more extensive, wage settings do not find their justifications only in the formation of the market price of labour. Aspects of information asymmetry which are treated in the principle-agent-theory influence the pricing of labour. The principle - synonymous with the employer - is restricted because he does not know everything about the motivation and qualifications of the employee (agent) (Jensen & Meckling 1976; Stiglitz 1991). On the other hand the employee has an advantage in knowledge which he/she can use

for his/her advantage during the contractual relationship. This is called the moral hazard. Both parties want to obtain the most benefits for themselves and for that, they behave opportunistically. To avoid the shirking problem the employer (principle) can pay the employee based on performance (Frey 1997; Sappington 1991). But this wage is often higher than the market price for labour (Shapiro & Stiglitz 1984). The consequence is connected to a higher wage that more organisations also have to pay more to their employees in order not to lose them to the employer who pays more. But, as labour becomes more expensive the demand decreases. The principle-agent-theory in combination with the shirking problem shows other aspects of pay flexibility which take place in the background of employment.

In the approach of the insider-outsider theory (Lindbeck & Snower 1988; Lindbeck & Snower 2001; Solow 1985) the wage setting process is the focus in the phase of labour demand in an organisation. When the employer looks for new employees (outsiders) to cover his labour needs, the incumbent employees, the insiders, use their power and demand higher wages. Due to the pressure of the insiders the employer is forced to increase the wages. But he realizes the increase as long as his profit is higher than the marginal costs of labour turnover which the employer has to pay for new employees (Franz 2013). Labour turnover costs are costs for hiring, firing and training (Lindbeck & Snower 2001). The adaptation of the wages does not occur on the basis of more performance but exclusively by the action of the insiders who take advantage of the demand situation of the employer and to secure their employment in this context.

Another reason why pay is adapted represents the efficiency wage hypothesis (Goerke & Holler 1997). The employer expects a profit maximisation by increasing the employees' wages. This increase constitutes an incentive to obtain a certain action by the employee. The output intensity will rise, the labour turnover will decrease or an improved review of new employees will be implemented (Franz 2013). Salop (1979) highlights in his model of the natural rate of unemployment that unemployment arises if the employer pays the same rate to new as to long-term employees. The employer does not strive to pay the market price of labour in order to attain his employee becoming worried about being unemployed. Also, a profit increase by wage reductions can be substituted if the employees act less productively. Lower productivity can also be triggered by paying an unfair perceived wage in comparison to other labour market members (Akerlof & Yellen 1990). Leaving the organisation after a wage reduction leads to additional costs for the employer.

The previous explanations show that the changes in the team composition influence the team performance. If changes in performance and thus in the results of teamwork exist, an adaptation of the pay system to the changed performance is required (Stettes 2010). Each individual and each organisation can counteract a reduction in performance by promoting life-long learning (Vogel 2016). Globalisation, technical progress and the continuous pressure to provide innovations intensify the need for continuous development both of the individual and of the organization (Rossnagel 2008). Due to constant change life-long learning suggests that qualifications and skills do not become obsolete (Staudinger 2006). Today's standard pay systems for teams consider little the demographic diversity and the associated performance modifications (Veen 2008). In particular, job-based, skill-based and seniority-based pay possess no possibilities of a flexible adaptation for the changes in the workforce composition. In addition, the vested rights prevent adjustment. Performance-based pay basically offers better options of adaptation. As the direction of the effects of the changing team composition cannot be determined with certainty, pay flexibility is needed to achieve work efficiency also in the future (von Hülsen 2011). The pay system must be solid for the demographic change (von Hülsen & Volkwein 2010). Flexibility also includes a certain variability of income components, as it is also provided in performance-based pay (von Hülsen 2011). The organisations have to set up their system in a way that they can also control the performance and behaviour in teams by pay because willingness to perform and the motivation to performance proportionally arise from a pay system which is performance-based and perceived as fair (see section 2.3). An age-neutral pay system is created and therefore detached from age. Von Hülsen (2011) demands pay components which motivate the individual to maintain performance and to a further expansion of knowledge. It must be possible to bring the job profile in line with the pay system, without taking into consideration a protection of previous properties. This means in particular the cancellation of seniority-based pay (Stettes 2010). Performance-based pay combined with flexibility includes not just a bonus, but also a bonus-malus-system with the risk that the employee must accept deductions in payment at decreased output (Schroeer et al. 2006), which do not fall below the minimum wage (Schroeer et al. 2006). The consequence is not necessarily a reduction of income as part of ageing. The pay elements must motivate both younger and older people depending on their performance and their contribution to team performance. Downgrading must be possible for the employer. Employers often need to keep their low performers because their possibilities to make them redundant are limited and complex. Kienbaum Consulting (von Hülsen 2011) also calls for the possibility for “shifting down a gear” by the

employee, which means an abandonment of income while simultaneously reducing responsibility and performance. Even the BDA [Confederation of the German Employers' Associations] (2003) argues that variable pay systems based on company results or group success provide more flexibility and can motivate more. They can also help to ensure the success of the company when older and younger employees work together. In its thesis paper of pay in times of demographic change, the DGFP (German Association for People Management) (Femppel 2012) demanded for a flexible payment system to be converted to alternative assessment criteria for pay. These must be applied rigorously because today's predominantly competency-oriented compensation does not "breathe" with the reduction of occupational skills at the end of the working life. Lesch et al. of the Cologne Institute for Economic Research (2014) call for regulations with more dynamism in pay in the collective agreements or opening clauses in the collective agreements, so that the organisations themselves can form their pay flexibility. The need is derived from the assumption that productivity changes in the course of a working life. However, current collective wage agreements do not allow an adjustment of wages to a changed productivity. The requirement is addressed to the social partners. Also Hoffmann-Remy (2016) suggests a foresighted design of pay with possibilities to reduce pay in case of low performance.

2.5 Theoretical concept and conclusions

The above literature review shows that there is no study found which deals with a higher average age and pay. Also, regarding work teams in the German building trade connected with effects of a higher average age no studies have been identified in the literature. Moreover there are very few studies that deal directly with effects of a higher average age in work teams (Backes-Gellner & Veen 2008; Boersch-Supan & Weiss 2016; Gellert & Kuipers 2008). Rather, there are studies with theories and models, based on age in general or relating to age diversity. In some cases, a derivation of the age can be done with the variables knowledge and skills of team members.

An approximation of the topic is succeeded by analysing several studies outside the German building trade which deal with age in teams. Adjoining subjects like age diversity and mixed-age teams facilitate a wide range of consideration. Critical points are that the statements are general or based on the research of different industries or teams. In summary, it is found that

the increasing average age of the population and thus also in organisations and teams generates effects on the labour of the individual in the team and the work teams by affecting performance, team effectiveness and outcome. There is no uniform statement about the direction of effects of a higher average age. The range varies from weak to strong depending also on the type of tasks, team composition, team roles or individual abilities. The effects can be either positive (Backes-Gellner & Veen 2008; Boersch-Supan & Weiss 2016; Gellert & Kuipers 2008) or negative (Backes-Gellner & Veen 2008). For the further consideration, the effects have been summarized to the term ‘performance’, independently of the direction of change. The literature review reveals that performance is linked to pay. In principle, rewards and payments can motivate higher performance if they are attractive for the individual (Adams 1963; Karau & Williams 1993; Thierry 2001; Vroom 1964). The individual decides whether a reward or payment is attractive. As a result, this means that the effects of a higher average age can be influenced by pay. This requires that (team) performance is located between increasing average age and pay. In the analysis of current various forms of pay (job-based, skill-based, seniority-based, performance-based) age and performance are either directly or indirectly established, or not included. The figure 14 shows a graphical summary of the evaluation of the different pay schemes discussed above.

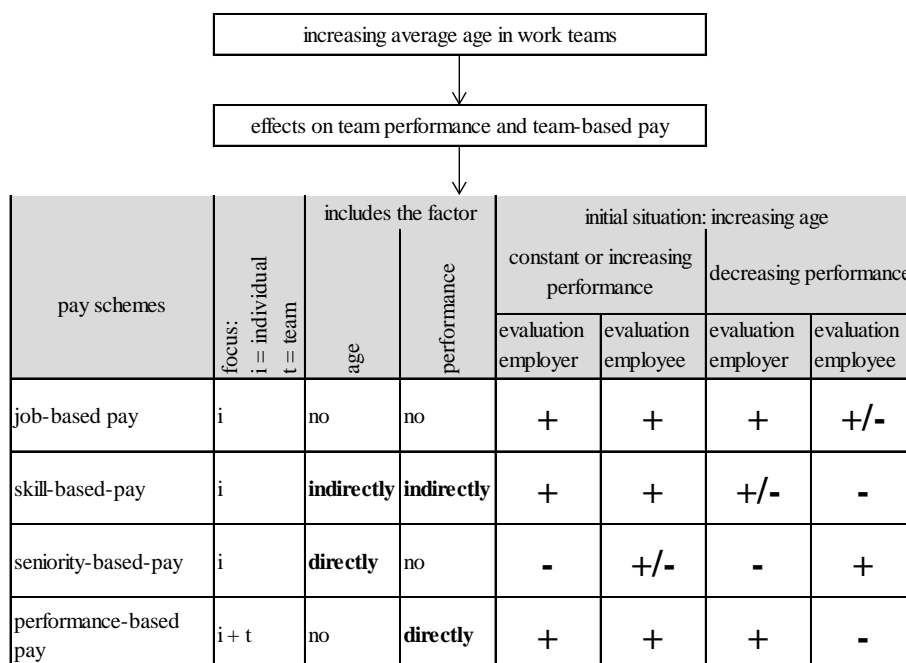


Figure 14: Evaluation of the pay schemes in terms of age and performance

As skill-based pay, seniority-based pay and performance-based pay include the factors of age or performance, approaches for the adaptation of team-based pay are possible in these fields.

Though, the seniority-based approach is critical, because there is no correspondence to the influencing factors of effectiveness (DeMatteo et al. 1998). All forms of pay will reward the individual and not the team. Performance-based pay also includes the team.

The literature review has shown that a higher average age has effects on team and individual performance (Boersch-Supan & Weiss 2016; Gellert & Kuipers 2008; Goebel & Zwick 2010; Milliken & Martins 1996; Pelled 1996).

The result depends on the initial position whether there are positive or negative performance effects of a higher average age. Team performance is reflected in the team result (Becker 2002) and is defined as productivity per man-hour worked (Jung 2006). There is also a clear interrelation between the team performance and the pay of teams (Cohen & Bailey 1997; Karau & Williams 1993; Thierry 2001; Vroom 1964).

It is demonstrated that there is an indirect interrelation between increasing average age and pay via the summarizing term of the factor ‘performance’ (summarized from performance, productivity, effectiveness, outcomes, quality). A higher average age has effects on performance. But the direction of these effects is not uniform. It is necessary to determine whether and when the effects of the increasing average age on team performance are negative. In this case action is needed. There is a gap to close in the literature regarding the direction.

There is another gap in the literature presenting a model of pay flexibility due to the change in the age structure.

The pay system in the German building trade is characterized by collective agreements that enable only some design options for payment. The current regulations mainly provide a payment system on an hourly wage level. Elements of pay are related to the job combined with individual skills. Performance-related elements may be paid above the collectively agreed rate. Regulations for team work or team-based pay are not included in the collective agreements investigated. To decide which kind of pay best fits the changing age structures in work teams could also mean adapting regulations in the collective bargaining agreements. Current agreements are limited for designing new forms of pay due to changing structures. The practicability is restricted if the collective agreements do not admit any changes in the pay system. To integrate Belbin’s (2010a; 2010b) pattern of team roles into pay systems, for example, means turning away from traditional forms of pay. Also, team structures in the

German building trade have to be analyzed for defining certain team performance. Team performance of work teams with different average ages has to be compared. However, a method should be used that differentiates the change on team performance due to the different average ages to other influence factors on team performance. Other relevant elements of pay are worked out but the connection and interrelations between them cannot be defined thus far. Further research is necessary. As the age of an employee also corresponds possibly with his/her individual skills, knowledge and abilities it could be necessary to consider not only age but also take into account the experience that is brought into the work team. This extension of the approach is based on the assumption that increasing age means increasing experience. A study of work teams in the German building trade could be advantageous because the types of tasks are similar among themselves. Thus, there is a relationship between a higher average age and pay. The idea is to deal with the effects of a higher average age in work teams by adapting their pay in order at least to maintain or even to increase the team performance. The aim of the research is to develop a model of pay for work teams in the German building trade taking into account a higher average age.

The model of pay flexibility (see section 5.3) as the aim of this research is developed by the researcher based on the findings of her literature review and her empirical work in the German building trade. Her empirical work is shown in detail in the chapter 4. This model could offer improvements to other industries or trades which have similar team and age structures. In addition, the personal philosophy of the researcher and her world view form the model. She designs the model according to her subjective perception of the aspects that she considers crucial. In order for the findings to be as clear as possible, the researcher describes carefully her principles and assumptions. If further research is available, the model should be adapted. In this respect, the model is tentative and may be subject to subsequent changes. The transferability is possible but limited. If the model should be implemented, organisations can flexibly handle their changing age structure in the work teams.

In the following, the theoretical concept, which draws on findings of the literature review, is listed and explained. It is based on the data obtained from the literature review and shows the contexts and interrelationships between performance and pay. It serves to understand these complex mechanisms and dependencies.

It provides the theoretical basis for the development of the model of pay flexibility and for the analysis of findings. Figure 15 shows the graphic depiction of the relationships and

interrelations between the different factors which are involved in the process of the changing workforce composition and related pay.

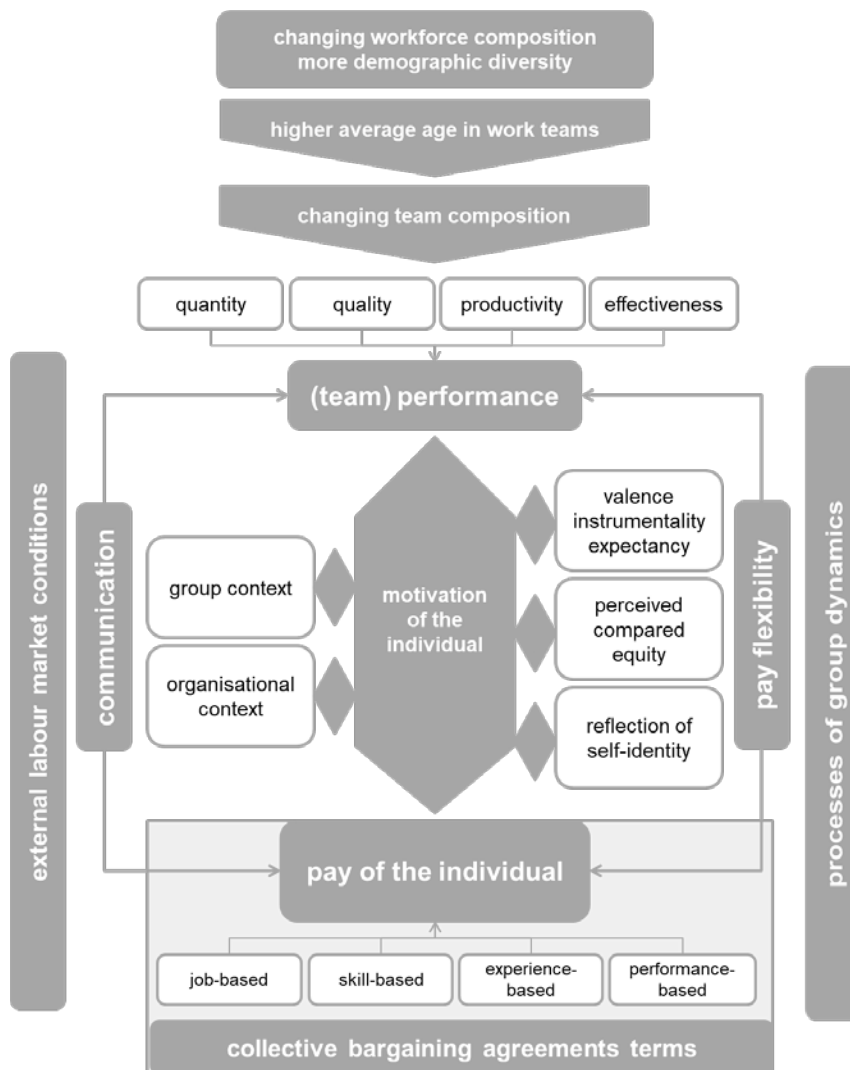


Figure 15: Theoretical concept of the research

The theoretical concept includes the effects shown in figure 8 (page 44) and figure 11 (page 55). Based on the changing workforce composition, which is connected with more demographic diversity, the German building trade is faced with a higher average age in their work teams. A higher average age has no direct effects on the related pay. But a higher average age means a changing of the team composition and with it a changed performance of the individual and/or the team, mainly derived from the model of Milliken and Martins (1996). Performance is visible in quantity and quality of work, in the productivity or in the effectiveness. The theoretical concept shows the relationship that exists between performance and pay. In the centre of the relationship is the motivation of the individual supplemented by different aspects which the researcher selected as relevant. The essential basis for this

relationship is the work of Vroom (1964) which shows a connection between pay and performance by the factor of motivation. Influencing factors of his VIE-model (1964) are valence, instrumentality and expectancy. In addition, Adams' theory of equity (1963) brings the factor of equity in the consideration of motivation and pay. The individual perceives equity compared to others in terms of performance and pay. The reflection of self-identity (Thierry 2001) is another aspect which influences the motivation of the individual. Also, the context of the group and organisation is important in the relationship of performance, motivation and pay. Communication with the individual and in the team occurs in the closer periphery of the relationship between performance and pay flexibility. Open and trustful communication with each team member is necessary to achieve the goals. Pay itself is determined in different ways by the terms of the collective bargaining agreements. Different forms are possible: job-based, skill-based, experience-based or performance-based. The studies of Levi (2011) form the essential basis for the selection. The relationship of performance and pay is framed by the group dynamics processes and the external market conditions. Processes of group dynamics (Levi 2011) consist of the interactions and conflicts between the team members, the realisation of individual knowledge in the team and communication between the team members. Team performance is determined by the contribution of the individual to the team. The team composition with its processes of group dynamics dictates the team success and therefore the competitiveness. The current external market conditions are characterized by a lack of skilled workers along with a good order situation of the organisations. Both contract partners want to maximize their profit: the employer wants to pay as little as possible but the employee wants to receive a high wage.

Derived from this theoretical concept the following requirements are defined for the model of pay flexibility. They answer to the third research question. Each requirement is initiated with the abbreviation LR. LR is the abbreviation for 'literature review'. Subsequently, a number combination is specified. The number before the point is the reference to the third research question. The number after the point is a consecutive numbering. The term 'LR 3.2' means the second data part from the literature review, referring to the third research question.

- LR 3.1: Developing a model that is to be used in the German building trade first means analysing the specific changes of team structures caused by a higher average age in order to achieve information about changes in performance and team composition. A means to achieve this information is regular communication with the team members.

- LR 3.2: The motivation of the individual is taken into account, because it is of central importance for the model of pay flexibility.
- LR 3.3: As equity and fairness also influence motivation and performance in terms of pay, factors such as motivation, equity and fairness have to be integrated in the development of a model of pay.
- LR 3.4: The literature review carried out that – in terms of pay - the individual is at the centre of investigation. The crucial factors related to age, performance and pay refer to the individual. The team is relevant to team composition but has subordinate meaning in the relationship of performance and pay. Thus, a team-based pay should not be included in the model of pay flexibility. The model has the focus on the individual.
- LR 3.5: The demands on the terms of collective agreements for pay flexibility have to be integrated into the model of pay flexibility because they form the contractual basis of the employment relationship in addition to the employment contract.
- LR 3.6: The external market conditions lead to specific behaviour of the employer and the employee. Negotiations about pay are influenced by the supply and demand of labour. This also determines the price of work.
- LR 3.7: Life-long learning is a means of avoiding pay reductions or adaptations which are caused by decreasing performance with increasing age.

Together with the insights of the empirical work (see chapter 4) these requirements which results from the findings of the literature review constitute the basics of the model of pay flexibility (see in chapter 5).

3 Research Methodology

Methodology is defined as the procedure for scientific research to reach the research aims or to answer research questions (Schnell et al. 2011). The philosophical framework provides the basis for the research methodology (Easterby-Smith et al. 2008). So, before discussing the methodology my own philosophical assumptions are introduced.

This section outlines the methodological approach, the research setting and the methods of data collection and analysis used. The goal of this section is to provide a clear and complete

overview of the specific steps which are followed to answer the research questions. Conceptual organisation is necessary to express findings and interpretations to others in a structured form (Stake 1995).

3.1 Structured organisational plan

The intent of this section is to provide insight into the methodology of this research regarding the details of the research approach and the data collection methods. In order to answer the research questions, the research was conducted from a relativist perspective adopting an inductive approach and using qualitative research design methods. The perspective of relativism is characterized by variations of the value of interpretations because there is no absolute truth (Stake 1995).

The methodological rationale is then to be explored, including the philosophical and epistemological assumptions that form the foundation of the research enquiry. Then, there is an exposition of the research design, which includes a detailed account of the operation of each phase of the research process with presenting sampling methods, participants, materials and procedures. It is explicitly indicated that all phases of this research were conducted in accordance with the research ethics of the University of Gloucestershire which are manifested in the 'Handbook of Principles and Procedures', approved by University Research Degrees Committee (2008).

Based on the ontological and epistemological assumptions the research methodology of the case study approach is chosen to achieve the research aim. Derived from this decision triangulation is applied to consider different perspectives. Finally, the research methods of expert interviews and focus groups are presented and discussed for data collection, analysing and interpretation.

A preliminary work is to define a well-structured organisation plan before carrying out the study itself. This ensures that the study is performed systematically. The following structured organisation plan in table 6 summarizes all important steps to achieve the aim of this research. It offers an overview of the research design.

Ontology:	Relativism
Epistemology:	Relativism
↓	
Research aim:	Develop a model of pay flexibility for work teams in the German building trade related to the changing work team demographic composition
1. Research question:	What are the effects of changing work team demographic composition on team performance?
Research objectives to 1. question:	Effects on team performance of the changing work team demographic composition have to be identified. The next step is to explore the interrelations between the effects of work team demographic composition on team performance.
2. Research question:	What are the interrelations between the effects of team performance on related pay?
Research objectives to 2. question:	The question can be answered by exploring the interrelations between the effects of team performance on related pay.
3. Research question:	How could a flexible payment system be established in order to realise pay adjustments for the team members?
Research objectives to 3. question:	The question can be answered by examining the options available to introduce a flexible payment system which considers changing work team demographic composition in combination with team performance. After that the practical implications and potential of a flexible payment system as proposed have to be examined.
↓	
Research purpose:	Exploratory
Research approach:	Inductive - basis for building a theory
Research strategy:	Qualitative research
Methodology:	Case study design / multiple case
Type of case study:	configurative-idiographic
Research Method:	Triangulation
Method of data collecting:	In-depth expert interviews and focus groups to achieve research objectives; up to 10 case organisations in the German building trade
Method of analyzing and interpreting:	Method of Yin (2011): (1) compiling, (2) disassembling, (3) reassembling and arraying, (4) interpreting and (5) concluding.
↓	
Initial idea of an outcome:	Model of a flexible payment system for the German building trade

Table 6: Structured organisation plan

3.2 Methodological foundations

The following sections deal with the fundamentals of the methodological approach of this study. First, the embodied philosophy of the researcher is considered. Subsequently, the research approach and the research design are explained in detail. Thereby, the case study approach is analysed intensively with the aim to show that this methodological approach leads to answers to the research questions.

3.2.1 Embodied philosophy and researcher's values

Each researcher has a certain ontological and epistemological stance by which he or she is characterized. This stance also influences the design and the methodology of the research (O’Gorman et al. 2014). Therefore, it is important to state which philosophical position the researcher occupies. The methodology which is used in the research must be based on the ontological and epistemological groundings of the researcher (Bryman & Bell 2007; Easterby-Smith et al. 2008). In the following, I discuss my philosophical position - both ontological and epistemological. Ontology is defined as “the study of being and existence in the world” (Burr 2003) or “about the nature of reality” (Easterby-Smith et al. 2008). Here the question as to whether the social world is external or internal to social actors is answered (Bryman & Bell 2007). In the literature some ontologies are distinguished. Easterby-Smith et al. (2008) offer three main ontological positions: representationalism, relativism and nominalism. Representationalism is defined as that the world being concrete and external (Easterby-Smith et al. 2002). Research results are verified. In the nominalism facts are created by human beings and words are only terms of language (Devalle 2003). Relativism can be positioned between both representationalism and nominalism (Easterby-Smith et al. 2008). In relativism the truth can vary (Collins 1983; Irlenborn 2016). There is no single universal standard for determining of what is true (Wetherell & Still 2003). It depends on the viewpoint of the researcher, cultures and theories (Potter 1998). Reality is subjective (Creswell 1994). If reality is seen as socially constructed, the ontology is nominalism. Socially constructed means that people give meaning to their reality. They construct their world with their understandings from their own experience. Moreover, reality develops by

additional gained knowledge. In my own world-view, experiences and events influence my viewpoint of reality. Out there in the world, there are multiple realities. Several ways can offer access to them. Other researchers are influenced by their culture and experiences. Therefore, there is no absolute truth. Reality is subjective and attains meaning by different situations. Each perspective can add new or more input to the social sciences (Little 2016). I classify myself into Stake's 'reality #2' (1995), in the world of human construction in which researchers can "construct a clearer reality" (1995:101). As I think that facts are not created exclusively by human beings but also depend on the viewpoint of the observer, I assign my ontological position to the relativism.

Ontology is associated with epistemology (O'Gorman et al. 2014). Burr (2003) defines epistemology as a "study of the nature of knowledge and how we come to know the world of things". While ontology epitomizes the understanding of 'what is', epistemology tries to make it understandable 'what it means to know' (Gray 2014). Various notions of epistemology exist. Following the ontology division of Easterby-Smith et al. (2008), the ontology of representationalism corresponds with the epistemology of positivism. In the positivist position, knowledge is confirmed by the senses. Science must be objective and value free. Positivism is characterized by independence of the researcher (Easterby-Smith et al. 2008). On the other hand, there is the epistemology of social constructionism (Burr 2003; Easterby-Smith et al. 2008) which is based on the socially constructed world-view and fits to the ontology of realism and relativism (Crotty 1998). Guba (1990) connected the epistemology of Subjectivism with relativism under the paradigm of constructivism. Constructivists take the position that as the world is seen differently by each individual the individual creates his or her own understanding from the social phenomenon (Burr 2003). Knowledge is created by interpretation of social actions. Knowledge of the world is constructed by the daily interactions between people (Burr 2003) and thus, socially constructed (Berger & Luckmann 1980). Following Easterby-Smith et al. (2008), the ontology of relativism corresponds with the epistemology with the same name of relativism, placed philosophically between the other two positions. The truth results from the accordance of different points of view. The researcher's epistemological stance influences the structure of the research by his/her data gathering and interpreting which is based on his/her natural tendency (O'Gorman et al. 2014).

One of my roles in the research is to interpret data of social phenomena and to draw my own conclusions. These conclusions are constructed by me as a human being. I know that other

researchers can have different explanations or interpretations because there is no absolute truth and reality is subjective and multiple. Truth depends on culture, life experiences, religion, background of origin, opinion and beliefs. It is important to recognize the differences. I accept and take differences seriously, if they meet the ethical and moral principles of the civilized world. These are, in particular, the values that are manifested in human rights. Although I know that other cultures may have different moral standards, I strongly oppose immoral views and actions against human rights.

In summary, based on my ontological and epistemological position under the paradigm of constructivism I am orientated to relativism which I associate with the terms pluralism, tolerance and skeptical thinking (Irlenborn 2016). The research is designed and based on this. This is justified by several aspects in the methodology. Starting from the relativistic foundation, there will be different views of the research topic 'aging and pay' by different individuals. Some individuals will assess pay flexibility positively and be open to pay-cuts. Other individuals, however, will reject this topic as immoral and unethical. In order to be able to include the expected different viewpoints in the study, I chose qualitative research. Qualitative research offers the possibility to work with data about possibly different attitudes and opinions from different individuals and multiple realities (Berg 2007; Creswell 1994; Potter 1998). In relativism this is desirable (Crotty 1998; Stake 1995) Based on the philosophical assumption that there are specific practices acting upon aging and pay in the organisations, I, as a researcher, strive to uncover and collate them in order to develop my contribution to research of them. The multiple case study design used in this research provides the researcher with this ability to capture such data (Stake 1995). In addition to qualitative research and multiple case study design, the researcher uses the method of triangulation, which also aligns with the principles of relativism (Easterby-Smith et al. 2002; Guba & Lincoln 1998). This ensures that different perspectives are focussed within the topic. By using the two data collection methods of expert interviews and focus groups two different sources of data collection are available. These methods are suitable to support the relativistic approach, because the statements and answers of the participants may vary and are multiple and subjective according to the principle of relativism (Creswell 1994). Although the sample size of this research is small, it still provides a sufficient basis for the development of the model which is shown in section 5.3.

My interpretation of the data is my understanding derived from my knowledge and my cultural context. It represents my conviction, which relates to the particular findings.

According to the concept of relativism, it is not true or false, because the interpretation must be seen in the context of the researcher. In another context, the data may be interpreted differently (Irlenborn 2016). The detailed presentation of the participants' statements should provide a comprehensive picture of the topic. The reader has an overview and can form his or her own opinion. The aim is also to develop the model (see section 5.3) in a comprehensive way that it reflects as many perspectives and viewpoints as possible. I am aware that the results and the model I present under section 5.3 can be seen as approving or controversial by other individuals (Irlenborn 2016). This provides the starting point for further discussion from which further ideas or research can be derived.

3.2.2 Adopting an inductive approach

Before designing the research it is necessary to determine the approach of the research. The starting point of any research is the idea of investigation. There are two possible approaches: The theory-before-research or the research-before-theory model (Berg 2007). There is also a distinction between deductive and inductive theory (Blaikie 1993; Bryman & Bell 2007; Toepfer 2010). Both theories describe the relationship between theory and research.

The deductive approach is based on scientific principles. The main feature is theory testing. The approach is to start with a theory. Then hypotheses are set, derived from the theory. Data collection follows to confirm or reject the hypotheses. The aim of the inductive approach is to build a theory. The starting point is the investigation of the relationship between human beings. After data collection a theory can be constructed. At this point the two theories can be connected. If a theory is available, the deductive approach can be used. This relationship is shown in figure 16.

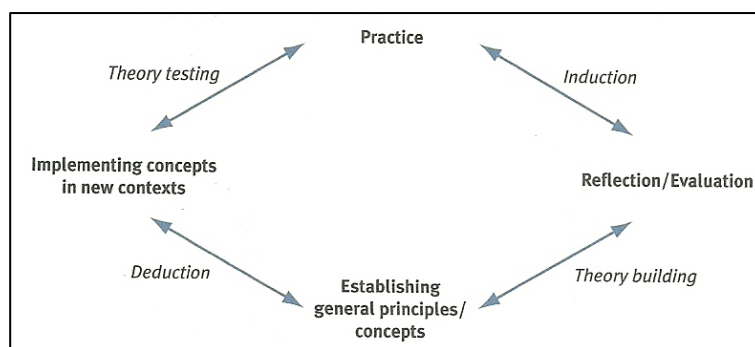


Figure 16: Inductive and deductive reasoning (Anderson 2009:145)

This study follows the inductive approach because the researcher aims to build a theory on the basis of the research findings. The starting point is the social phenomenon of the changing workforce composition concerning the increasing average age in work teams. The social world and its meanings are examined and explained by creating a model of pay flexibility which takes into account the changing age structure of the workforce. Then theory can follow further research. In general, the research approach chosen is related to the philosophical assumptions of the researcher. The philosophical stance of relativism is compatible with the inductive approach which is used for this research. The research methodology presented in the next section is derived from this research approach.

3.2.3 Qualitative research

The previous section stated that research methodology is based on the research approach which is inductive. The questions of this research, which have an exploratory nature, can be answered by different methodologies. Methodology is defined as the procedure for scientific research to reach the research aim or to answer research questions (Schnell et al. 2011). The following strategy can have there to two main different forms: quantitative or qualitative.

Quantitative research favours a deductive approach. The focus of research methods is on testing theories by collecting and analysing quantitative data. It refers “to counts and measures” (Berg 2007:3). By contrast, qualitative research is based generally on an inductive approach and uses words to interpret the social world (Bryman & Bell 2007). It refers “to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things” (Berg 2007:3).

It is also possible to mix or combine the strategies. If both quantitative and qualitative strategies are used, it is called a mixed methods research (Bryman & Bell 2007). In the literature eight generic methodologies are found which the researcher can consider applying them in her study (Anderson 2009; Bryman & Bell 2007; Easterby-Smith et al 2008):

- Experimental or quasi-experimental design in combination with a quantitative strategy
- Cross-sectional design in combination with a quantitative or qualitative strategy
- Survey research in in combination with a quantitative strategy
- Longitudinal design in combination with a quantitative or qualitative strategy
- Case study design in combination with a mixed methods research or both quantitative or qualitative strategy
- Comparative design in combination with a quantitative or qualitative strategy
- Action research in combination with a qualitative strategy

It is discernible that the methodologies are not uniformly classified to quantitative or qualitative research.

On the epistemology of relativism which underlies this study both research strategies – qualitative and quantitative – can be used. The relativism also allows using mixed methods research. In this study, the quality of things in the social world is explored. In this research, it is primarily concerned with the understanding of social phenomena. The researcher would like to understand the procedure in organisations of the German building trade when the team performance changes because of the higher average age in the team. Words, descriptions, values or aims, for example, are necessary for analysing and explaining. Research questions of the what and how have to be answered. In qualitative research the researcher has the opportunity of obtaining data about different attitudes and opinions from individuals (Berg 2007; Creswell 1994). This is desirable in relativism (Crotty 1998).

Quantitative research is used to test theories. The use of quantitative research has the advantage that a stable data basis exists through objective and comparable data (Atteslander 2010). As all research steps are defined in advance, the approach is rather rigid but objective. In order to obtain representative statements, large case studies or samples are necessary. Standardized survey instruments facilitate data collection. This more closed research methodology ensures this secure data base (Toepfer 2010). The basis of this research is not a

theory which has to be formed or checked. The researcher would like to know how the relationship between performance, higher average age and pay works. The questions of this research do not provide a basis for a high level of measurement, which is characteristic of quantitative research. The answers (data) to these research questions are subjective and interpretive. Qualitative research allows this quality of data. This research methodology is rather open and offers the researcher high variability in the selection of participants and instruments (Toepfer 2010). Basis of decisions, opinions or values can be questioned. This is beneficial for this research because the research questions leave a wide range for answers. However, the researcher must not underestimate that the key informants have a special meaning. Care has been taken to determine the importance of each key informant related to the research questions. The collected data from the key informants form the basis for answering the research questions. As the qualitative research is largely free from objective and systematically prepared data, there is the problem that the subjective statements of the key informants must be so meaningful and systematically processed that they capture the cause-effect-interrelations.

These explanations show that the framework conditions of qualitative research are much more suitable to this research than the quantitative ones. Thus, quantitative or mixed methods research is excluded. In addition, my philosophy fits into this approach. As my methodological technique builds on the epistemology of relativism I have chosen a qualitative strategy in terms of the research methodology. Cross-sectional, longitudinal, case study, comparative design and action research are available for qualitative research.

The next sections deal with the decision and its reasons about the research design which is the case study research.

3.2.4 Selection of the research design

In the previous section the research methodologies combined with a qualitative approach have been clarified. The next step is to design the study. A research design provides “a framework for the collection and analysis of data” (Bryman & Bell 2007:40). The following sections provide this framework. Three main questions are to be answered in this enquiry:

- 1) What are the effects of changing work team demographic composition on team performance?
- 2) What are the interrelations between the effects of team performance on related pay?
- 3) How could a flexible payment system be established in order to realise pay adjustments for the team members?

The research questions ask for effects, interrelations and options of flexible pay systems. Explanations of social phenomena can answer these questions, such as the procedure to compose work teams for construction sites with different demands.

In order to get answers to these research questions, it is necessary that the researcher accesses at least one organisation of the building trade in order to establish contact with the actors. They are the data source as participants. In the following the methodologies that have been worked out in the previous section as available for qualitative research in general are discussed to be suitable for the application in this study.

Comparative research can be applied to questions that compare contrasting cases or situations (Anderson 2009). This research design focuses on the comparison as a method strategy. A specific social phenomenon in different cultures, countries or organisations is compared to reveal similarities and differences. However, the aim of this design is to obtain a typology by comparison (Azarian 2011). In order to answer the research questions of this study, the method of comparing organisations is possible, but not purposeful because the organisations in the German building trade have no special distinguishing features in relation to the research questions. This study is about obtaining, analysing and interpreting a variety of response possibilities, and less comparing this data. In addition, organisations of the German building trade are not so contrasting that the comparison as a research method in applying different cases leads to a better understanding of the social phenomenon. Therefore, this approach is not considered suitable for this study.

The cross-sectional research strategy is also not an option for answering the research questions because this approach is concerned with a collection of data that has been standardized at a single point of time in order to perform a cross-section calculation (Bryman & Bell 2007). The method of cross-section is also not purposeful because the data basis for answering the research questions of this study is based on diversity. It is not necessary that the data is collected at the same time. The same applies to the longitudinal research design,

which is centered on a longitudinal calculation. As well as the cross-sectional calculation this calculation also does not lead to answers to the research questions of this study.

The methodology of action research focuses on a problem that the researcher and the organisation often develop together within the organisation (Bryman & Bell 2007). Action research promotes continuous learning for both participants, the researcher and the members in the organisation. The resulting changes are implemented in the action research process in order to evaluate and reflect on them. In principle, action research can be applied to this study, but it is not suitable, as the researcher would have to accompany a longer-lasting process to answer the research questions, which includes the changes in team performance and related pay. The subsequent evaluation process for the flexible pay system also requires a longer deployment in the organisation. A disadvantage is also that the data collection only dates from one organisation and therefore, a limited applicability of the results exists. On the other hand, action research offers an in-depth analysis of a problem situation with the possibility of implementation and evaluation. For myself as a researcher who has an outsider role, this approach represents quite an interesting way to answer the research questions, but it is not realisable for personal reasons: I am not able to do a monthly or even a long-term commitment in an organisation of the German building trade to carry out an action research.

Case study research is another methodology to edit the topic. A case study is “an analysis of social phenomena specific to time and place” (Ragin & Becker 1992). Case study research is useful for explanatory purposes (Gummesson 1991; Yin 2009) on which this study is also based. Qualitative case study means to achieve greater understanding of the case: What are the specific characteristics of the case? What are the significant attitudes? In addition to analysing the interactions combined with the embeddedness and the context of the case particularities and uniqueness are also subjects of the inquiry (Stake 1995). This approach can answer the questions of what and how as provided in this study (Yin 2009). The research intends to develop a model of flexible pay which considers the changing workforce composition. As the purpose of this research is exploratory, knowledge must be established of why social things happen in real life (Thomas 2011) such as to achieve knowledge about the relationship between higher average age in work teams in combination with pay. For me as a researcher, case studies offer the possibility to analyse a specific topic in organisations of the German building trade to understand behaviour and decisions which are made by the members in the organisations. The deep immersion in the case or cases by the researcher provides a holistic view of a specific social phenomenon (Gummesson 1991). It is

advantageous that the cases are carried out in a real-life context. The reality offers experiences, opinions and values from different views. The researcher is interested in collecting this type of data for this study because it supports her relativist stance (Stake 1995). This means that the data is to be analyzed and interpreted. The researcher copes with the complexity of a problem by carrying out a specific and selected environment from which causal relationships and explanations can be derived. The procedure of case study research is clearly defined. The real-life data collected is analysed and interpreted by compiling, disassembling and reassembling (Yin 2011) so that the research questions can be answered based on this processed data. Thus, the approach is transparent, comparable and achieves a “high conceptual validity” (George & Bennett 2005:19). If the steps with their procedures are followed exactly during the process of the case study, the results are a foundation for the model which is to be developed in this study. By examining the real organisations (cases) new aspects can be identified to expand theoretical knowledge about ageing, performance and pay. To identify and recognize effects of specific changes and their impacts on other factors it is available to review the literature as well as to obtain descriptions and interpretations of participants. The model as the result of this research can offer a basis for a theory. The researcher has to be aware that each case is a more or less unique entity. The case can bring out problems and different relationships which the researcher cannot sufficiently understand. It is recognized that the case study approach is subjective. It is based on the embodied philosophy, previous experiences of the researcher and on the subjective views of the participants. For this reason, it is important that the reader recognizes in the study how the data is collected and processed. This approach can be compatible with the philosophical assumption of relativism which is the stance of the researcher. As the knowledge constructed and the interpretations can differ from one to another researcher, qualitative research can discover and represent multiple views of the case and thus many realities (Stake 1995). As a qualitative researcher I am aware that the data taken from the social phenomena can be differently interpreted by other researchers. For this reason, it is imperative that the underlying assumptions are explained in the study.

This approach has in addition to the merits also reviews. To take an enquiry seriously it is a requirement to maintain the systematic procedures during the whole process of the research, especially the steps of data collection and data analysis. As the “workload is heavy” (Stake 2006:30) and a lot of data has to be managed, the critics of case study research do not trust in the credibility of the procedures (Yin 2012). On the one hand, the researcher obtains a

holistic view of the case; on the other hand, the data collected in a case offers only a part of the whole social world. A factor which is relevant to an outcome does not say anything about its contribution to the magnitude of the outcome (George & Bennett 2005). The transferability of findings to other cases is another aspect of criticism. A factor with relevance to the outcome in one case does not necessarily have significance in other cases (George & Bennett 2005). It is also questioned whether the findings can be generalized (Anderson 2009; George & Bennett 2005; Gummesson 1991; Yin 2012). This disadvantage mentioned in the literature does not touch this study because a generalisation does not have to be the result of this study. For the data analysis of various cases, the following must be considered: It is not so simple to draw conclusions from one case to another. One case studied provides a new explanation to a social phenomenon which is relevant to a wide range of cases, or a lot of cases do not supply a pattern (George & Bennett 2005).

In summary, this methodology has been chosen as the most advantageous and purposeful approach to answer the research questions given that the case study research is philosophically and methodologically suitable. The objectives defined are achieved by using a case study approach.

3.2.5 Case study research design

The researcher decided to apply the three phases of case studies which are presented by George and Bennett (2005) because this systematic procedure is used to ensure answering the research questions. These three phases defined has to be passed through to achieve the objectives. Table 7 shows an overview of the different phases of a case study following George and Bennett (2005).

Phase One: Designing case study research	Task 1	Specification of the problem and research objectives
	Task 2	Specification of the desired outcomes
	Task 3	Case selection
	Task 4	Formulation of data requirements and general questions
Phase Two: Carrying out the case studies	Step 1	Immersing oneself in the case
	Step 2	Case study analysis
	Step 3	Developing explanations for the outcome of each case
Phase Three: Drawing the implications of case findings for a model		

Table 7: The three phases of case studies (following George & Bennett 2005)

Phase One - Task 1

In the first phase the case study research is designed. Firstly, the research problem and the research objectives are specified. For the complete presentation of the phases, the research questions are mentioned again:

- 1) What are the effects of changing work team demographic composition on team performance?
- 2) What are the interrelations between the effects of team performance on related pay?
- 3) How could a flexible payment system be established in order to realise pay adjustments for the team members?

To answer these questions, the following objectives have to be fulfilled:

- To identify the effects of changing work team demographic composition on team performance
- To explore the interrelations between the effects of work team demographic composition on team performance
- To explore the interrelations between the effects of team performance on related pay
- To examine the options available to introduce a flexible payment system that considers changing work team demographic composition in combination with team performance

- To examine the practical implications and potential of a flexible payment system as proposed.

Phase One - Task 2

The second task of designing the case study research is to specify the desired outcomes in order to achieve the objectives mentioned above. Four main topics are investigated:

- the organisational and demographic structure
- the team composition
- the team performance
- the related pay

The following outcomes are desired from these topics mentioned above:

1. To acquire information about the organisational and demographic structure of each case organisation:
 - Number of employees and their functions in the organisation
 - Age structure of the organisation
 - Identification of workers with special or changing roles and their purpose
2. To acquire information and attitudes about the team composition and team performance:
 - Criteria used to establish the work teams
 - Description of the performance change when the team composition is changed
 - Influence of the composition of the work team on the work performance of the team or the team results
 - Description of the performance change of the work teams if the average age increases
 - Designation of impacts of a higher average age on the following factors:
 - speed of work
 - time in finding solutions
 - cooperation
 - quantity of work
 - quality of work
 - team spirit
 - customer satisfaction

3. To acquire information and attitudes about team performance and payment:
 - Description of the matching between performance and payment
 - Description of the payment adjusted to individual performance
 - Information about the impact of performance change on payment
 - Assessment of the performance- and the hourly payment development in relationship to age
 - Possibilities to include flexibility in the payment, in addition also independently from current collective pay agreements
 - Information about the use of performance-related wages
 - Wishes and requirements for an increase of pay flexibility

Phase One - Task 3

After specifying the outcomes the cases are selected. The following step of the case selection is one of the central phases in a case study research because this phase delivers the data and is the basis for further findings. The researcher uses the definition of a case as “generally a bounded entity” related to a person, organisation or other social phenomena according to Yin (2012:6). A case is singular, particular and unique (Simons 2009). These characteristics demonstrate the central importance. Ragin and Becker (1992:6) recommend answering the question “what is this [event] a case of?” carefully when selecting cases. If the question whether the selected case represents a “designated phenomenon” can be answered positively, a case can be included in the selection (George & Bennett 2005:18). The number of cases can be one or up to 30 (Easterby-Smith et al. 2008). There are two types of design in the case study research possible: the single-case design with one case or the multiple-case design with two or more cases (Yin 2009). In order to manage the defined resources it is necessary to design the research to an extent so that a comparison and an analysis are still possible to handle for the researcher. The complexity should be within a framework that the researcher can cope with. Regarding this research the cases selected are organisations in the German building trade. As a single case only provides a bounded entity and as different businesses of this trade are integrated in this study a multiple-case design is chosen. The organisations selected have defined team structures with a uniform size as possible, different age classes and the variability of the team composition. The decision-makers have the responsibility of the team composition and the pay. The reason for choosing different businesses is to obtain

more diverse information about the basis of decisions, experiences and opinions in the German building trade. The detailed presentation of the case selection is given in the section of 3.4.2 'selection of the cases'.

Phase One - Task 4

For the last task of phase one the researcher has to do another preliminary work. She defined the data requirements and the general questions before carrying out the case study itself. This ensures that the study is performed systematically. A multiple-case study requires robust data (Yin 2009). To guarantee this requirement the researcher selected the cases carefully and thus she ensures that the results are similar and offer a basis for interpreting. The approach of this multiple-case design is holistic. This means that the data are analyzed and interpreted undivided. The results of each organisation are not separately considered. If the initial results show new insights or approaches a return to the literature is done to verify them or to see what other researchers have written about that before (Easterby-Smith et al. 2008). The researcher assigned that the type of case studies is associate to the configurative-idiographic classification according to Eckstein (1975). This type allows the researcher to describe, interpret and design the individual case. Regarding this research the objectives defined by providing a basis for theory-building are reflected in these types of case studies. The results of this kind of case study do not contribute directly to a theory (George & Bennett 2005). In addition, the data used must be valid and reliable. The methods used for data collection, processing and interpretation must meet these data requirements. Section 3.6 deals with quality criteria in case study research in detail. Furthermore, it is necessary to define general questions that are derived from the desired outcomes. These general questions are applied to each case by using them in the data collection methods. This shape of standardizing ensures that the data requirements can be realized in a systematic and comparable way. The general questions which are specifically used in the cases, are carried out in detail in the section 3.4.

Phase Two – Step 1

After specifying the research problem, the related objectives and the desired outcomes and after the selection of the cases and the formulation of the data requirements and general questions the second phase of the case study research starts. In this phase the case studies are

carried out in three steps. The first step is “immersing oneself in the case“ (George & Bennett 2005). An invitation letter, a direct contact and a detailed description of the research topic and the objectives are mediated by the researcher to the participants. Since the themes of performance and pay are sensitive topics, it is necessary that the researcher build a trust base with the participants in order to get the desired information and attitudes. The basis for getting these personal data is the immersion in the world of the building trade. The previous knowledge of the German building trade, which the researcher has also developed from the literature review, helps to immerse herself in this working world. The most common methods of data collection in the case study research are interviewing, observation, coding, data management and interpretation (Stake 2006). In this study triangulation is applied to take two different perspectives in relation to one research subject by using different data sources combined with different methods (Flick 2008). In this case study research the decision-makers and the workers are interviewed. The decision-makers are asked in semi-structured expert interviews. The method of focus groups is applied for the workers. The aim of using triangulation in this study is to make the research design more robust. The exact procedure is described in section 3.4.

Phase Two – Step 2 und 3

The next step of phase two is the analysis of the cases. By analysing and interpreting the data the explanations for the outcomes are developed (Stake 1995). Due to the amount of data collected this step consumes a lot of time. The analysing process consists of five steps which are: (1) compiling, (2) disassembling, (3) reassembling, (4) interpreting and (5) concluding (Yin 2011). In section 3.5 the data analysis and interpretation methods are described. The last step in the phase of carrying out the case studies is to develop explanations for the outcome of each case. Using the methods of analysis and interpretation described in section 3.5 findings and interpretations are discussed in detail in the sections 5. and 6.

Phase Three

The third and last phase in a case study research is ‘Drawing the implications of case findings for a model‘. It forms the basis for theory-building. In this phase the researcher develops the model from the analysis and the interpretation of the findings in combination with the knowledge from the literature review. The researcher presents a model with which a flexible

payment system can be established in order to realise pay adjustments for the team members who work in the German building trade. The presentation takes place in section 6. This study ends with a conclusion.

3.3 Research sample and data sources

To answer the research questions and achieve the research objectives it is necessary in the first step of the enquiry to identify the effects on performance in work teams caused by the changing workforce composition. The changing workforce composition, resulting from the ageing population, is first of all an external influence factor with which the organisations will be faced in the German building trade. With the change of the workforce composition the work teams will also be composed differently, especially in terms of age. A change in the team composition has an impact on the team performance. The results of the work teams are different if the team composition changes. The decision-makers in the organisations deal with these changes. The primary interest is to identify the effects of this altered social behaviour.

The starting point for the second step of the enquiry are the effects of the changing team composition on team performance which are identified in the first step. In this stage of examination the related pay to team performance is identified. Interrelations between effects and pay are the task of this step of enquiry.

Case study research is designed to provide data that reveal and explain these effects and interrelations.

To provide data that are significant for understanding these phenomena studied and contributed to answering the research questions, the cases are selected to meet the following criteria:

- As the model which is the result of this study refers to the German building the case studies used are drawn from organisations in this trade. The underlying data for this model must also originate from this sector accordingly. For a better handling of the case organisations during the following investigation, the researcher lists organisations in the vicinity of her residential area. She gathers data from these

organisations through her personal relationships and internet research in order to obtain initial information.

- In order to obtain a large diversity (Stake 2006), the case organisations are taken from different crafts of the German building trade. Various staff or organisational structures allow different perspectives on the research topic. Also, not all crafts of the German building trade have been selected, because the investigation would have led to an excessive amount of data material which the researcher cannot cope with.
- As the majority of trade organisations are small or very small, the case organisations are also selected from this company size. Representativity is therefore supported. The most interesting group for the case study are companies with up to 19 employees because the organisation size is still clear and manageable.
- The organisations selected have employees with different age classes. The proposed classification of the age groups is as follows: 1) 17-30 years, 2) 30-50 years, and 3) 50-67 years. All the different age groups should be represented so that the team composition can vary. The organisations have defined team structures and the variability of the team composition. Having different age classifications in the organisations is meaningful to indicate differences in performance between younger and older workers (50 years old and older). Also can be received on dealing with different age structures.
- The decision-makers have the responsibility of the team composition and the related pay. They are the ones who define the boundaries and have a direct impact on team performance and the related pay. They are not chosen randomly but specifically because they are the main contributors to achieve the objectives of the study. This ensures that participants work in an environment that can provide answers to the research questions.
- All participants in the case organisations are in principle interested in the research topic and are motivated to express information, individual experiences and opinions on this subject. This allows the researcher to obtain open, honest and extensive data.
- Last but not least, the researcher is given real access to case organisations with the criteria defined in order to get in touch with the participants who agree that their data may be used. Organisations which meet these criteria but which do not allow the researcher access to their members have not been considered further.

Data collection is stopped if the amount of data is adequate to explain and interpret the social phenomena. The decision to terminate the collection of data at a certain amount of data is necessary because every case is unique, real and provides individual data; saturation is never reached (Rudestam & Newton 2007).

The aim is to understand the complexity of the individual expert's experience. Thereby, the social phenomena of interest can be investigated.

3.4 Limitations and delimitations

This section identifies potential weaknesses of the study and the scope of the study by explaining the limitations and delimitations.

This study is limited to the particular area of the German building trade in the county of Lippe in North Rhine-Westphalia, Germany. The limitation to this area is due to the access to organisations from this area, which the researcher has made possible from her private network. That means that the organisations were not going to be random. After the selection of possible organisations of this area that meet the criteria of 3.3, the researcher personally contacted 27 relevant organisations and asked the decision-makers for their cooperation. After that only 15 invitations could be sent. Only 13 decision-makers agreed so that 13 organisations could be defined as case organisations for the case study. The size of the sample is another limitation of this study. 13 decision-makers participated in the expert interviews, one of which acted as a pilot. There were seven workers who were allowed to take part in focus groups. The researcher could form three focus groups, one of which with two participants acted as a pilot. To counteract the limitation, the researcher made sure that the sample represents the most typical organisations of the trade, so that the 13 expert interviews cover a certain limited representativeness. The researcher is aware that the number of participants in the focus groups is small. Unfortunately, no larger number of participants could be generated from the case organisations. In most cases the decision-makers of the case organisations have rejected a participation of their employees because the researcher should not confront them with the research topic for reasons of motivation, agitation or misunderstanding. The researcher is also aware that basing the study in a larger sample size

could have generated more variants to the results. Possibly, the results could have had more or other significant relationships or interrelations from the data.

In addition, handling self-reported data from interviews and focus groups means being open to influences by forms of bias (Saunders et al. 2003). They become apparent if they are different to data of other sources. As the data is difficult to verify independently, this is another limitation of this study.

The generalisation of the findings is excluded because the German building trade represents a minority in the working population. Although the building trade represents a share of 34.58 % of the total trade, it only represents 4.54 % of the entire working population (Federal Statistical Office (2015a)). As the culture, structures and functions are different in other industries, the transferability is critical, but cannot be excluded completely. As qualitative research is characterized by detailed descriptions and explanations the reader is afforded the opportunity to compare and integrate the information from the study with his or her experience.

These limitations in access, sample size, bias in data, lack of generalisation and transferability do not prevent the researcher from completing the study.

3.5 Data collection using triangulation

The research topic of this study is based first of all, generally on the German building trade. The individuals working in this trade are assigned to two groups of people: the owners of the organisations or their decision-makers and the workers in the organisations of the German building trade. Both groups of people are covered by the research topic because they represent the two contracting parties which have agreed to an employment contract which shall govern the provision of services and payment flow. If both groups of people are involved in the data collection, the perspectives of both can be systematically linked and an in-depth understanding can be obtained. The researcher defines the term ‘data‘ by the “smallest or the lowest entities or recorded elements” (Yin 2011:130). The researcher understands a method as an “individual technique for data collection, analysis etc.” (Easterby-Smith et al. 2002:31). The aim of the researcher is to produce empirical knowledge

to answer the research questions based on data which are properly understood. To reach this aim the researcher decided to use triangulation. In the context of this research, triangulation means to take two different perspectives in relation to the research subject by using different data sources combined with different methods (Flick 2008). The result of triangulation offers the advantages of the presence and the connection of different data types and thus a broader picture of the research subject. The multiple case study design combined with triangulation fits to the principles of relativism because using this combination ensures that different perspectives are guided within the research topic (Easterby-Smith et al. 2002; Guba & Lincoln 1998). Despite the application of the two perspectives, the researcher does not expect a complete and comprehensive picture of the research subject, because she still assumes that there are other options that are not covered by her research. Likewise triangulation does not lead to increased validation of data or to a higher accuracy of the data (Fielding & Fielding 1986). Since each method of the triangulation is specifically approached to the research questions through different participant groups and methods, the data obtained may have both accordances and discrepancies (Flick 2008). In the analysis of the data, all results are taken into account, whether they are the equal or different. This increases the complexity of the researcher's analysis. In the following sections the course of action by using triangulation is described in-depth.

To answer the research question 'what are the effects of changing work team demographic composition on team performance' it is necessary to collect data about team structures.

Subjects of sub-questions are:

- team composition for certain construction sites
- significance of the age of the team members
- team roles used
- team performance in work teams with different age groups
- increasing average age in work teams

The second research question refers to the extent of impact of the effects of changing workforce composition to the related pay. Subjects of the sub-questions are:

- significance of the age of the team members on team-based pay
- congruence between performance and pay
- development of pay during the working life

- team members' existing pay
- adaptation of pay to performance

The third research question deals with possible options for a flexible payment system. To answer this question ideas and possibilities are developed. Subjects of the sub-questions are:

- possible pay of team members of work teams taking into account the age of the individual
- options of flexible pay systems

The raised questions require two methods of data collecting. In order to identify key factors impacting on performance and interrelationships, semi-structured and in-depth expert-interviews and focus group interviews will be carried out. These two different data collection methods are used within this study to investigate the same social phenomenon. Triangulation is applied. Triangulation is an approach with which these two perspectives are introduced into the topic of this research (Kuckartz 2014). The different methods are linked in working steps which follow each other. The interviews deliver insights about things, the researcher cannot see himself/herself (Stake 1995). In addition, the focus groups interviews which take place with employees after the expert interviews enable a second perspective to the topic of the research to be obtained. Different sources strengthen the validity (Yin 2011).

The method of interviewing is used because an “interview serves as a sufficient device to focus discussion on the research questions of the study” (Rudestam & Newton 2007:109). Interviews also offer the possibility to elicit data to topics in depth. Questions of ‘how’ and ‘what’ ask for the basis, criteria or explanations of certain decisions or social phenomena. They ask which criteria are used in making decisions which are carried out in their organisations. Also, the interviewer can ask the interviewee for ideas, feelings and aspirations. To prepare the interview it is necessary to decide the extent of structure. In this case study the interview will go into the depth of the topics in a semi-structured form. Semi-structured interviews offer a guide so that the respondent provides personal opinions on the matters discussed and there is also space for new approaches and ideas. In particular with the subject of pay the interview makes brainstorming elements available. It is a qualitative conversation about a specific topic (Yin 2011). As both parties are not strictly bounded to a questionnaire, this kind of conversation offers freedom in content and speech for example for ideas, new approaches, explaining experiences. In doing so, this freedom is disadvantageous

in relation to the validity. The researcher as an interviewer controls the interview so that the contributions of the participants pertain as much as possible to the topic. She is aware that she must deal with a complex situation. As an introduction to the topic the researcher as an interviewer starts with a prepared opening statement to the interviewee and at least one opening question. It is her responsibility that the interview runs progressively and fluently (Rudestam & Newton 2007). If the progress of the interview slows down the researcher prepared some questions in advance help to continue the conversation. They should be adaptive to the particular situation. The researcher understands interviewing as an interactive research between the interviewer and the interviewee (Kvale 2007). The interviewer has a plan of contents for this, treated and discussed, and a broad schedule which allows answers to the research questions to be obtained (Stake 1995). It is necessary that the interview conditions are consistent so that the complexity of the data handling does not increase. A high degree of complexity of different data is avoided so as not to weaken reliability. Understanding the interviewee's world and its deeper meanings is one of the main issue of the interview (Yin 2011). In the following sub-sections the procedure of the data collection, the selection of the cases and the two different data collection methods are described in detail so that the whole process of data collection is comprehensive.

3.5.1 Description of the procedure

As this research has an exploratory purpose and is based on a qualitative research approach the case study design was chosen to answer the research questions. In a multiple case study relevant data can be collected, analysed and interpreted. Derived from the research questions the main subjects for which data collecting is necessary are determined. The data sources must be specified in a way that they deliver information about the main subjects. In this research people working in the German building trade are the data source. There are two main organisational groups working in this trade: the decision-makers and the workers. Both groups are integrated in the case study design. After selecting the different businesses from the German building trade the next step of the procedure is to search out and to determine the case organisations. Each business selected is represented by a case organisation. In the first steps the decision-makers are in the focus.

In order to get information from these groups about the main subjects the data collection methods of semi-structured and in-depth expert interviews and focus groups were chosen. The purpose to all research interviews is to obtain information of a certain kind. The main purpose of the exploratory interviews in this study is to develop perceptions and ideas and to improve the conceptualization of the research problem. The interviewer must ensure that she remains mostly in a one-way process. This means that she operates a balanced conversation but her share in the conversation is smaller than the interviewee's share. The essential speech proportion is borne by the interviewee. Once the interview becomes a two-way exchange, it loses value (Oppenheim 1992/2005). The method of interviewing requires the definition of leading questions. First, a questioning route is developed for structuring the expert interview (Berg 2007). A few outsiders who were asked by the researcher to give feedback to the questioning route with the leading questions helped to improve the interview guide. The researcher must be aware that her questions were not always exactly understood by the interviewees as she wishes (Foddy 1993/1994). The interviewee interprets questions in a different way than the interviewer. It must also be assumed that the interviewee does not always understand what kind of information the interviewer wants to receive. It may also occur that different participants are likely to interpret particular questions in quite different ways (Foddy 1993/1994). There is a great deal of scope in communication between the two interview partners. It is the duty of the interviewer to make sure that all questions are understood. The questions which are used in the interviews of this study are therefore not complicated.

After that each decision-maker who was identified gets a written invitation to take part in an expert interview. A list of the interview themes is sent with the invitation letter so that the expert interviewees can prepare themselves if they wish to (Saunders et al. 2003). Then interviews take place one after the other. During the interviews aspects which have not been previously considered by the research topic occur so that further literature reviews are necessary such as the handling of group dynamic processes, group communication and the labour market situation. After the completion of the expert interviews the second organisational group of the German building trade, the workers, become the focus of data collection. The method of data collection was the focus group.

Before practically using this method a questioning route is developed to structure the focus group interviews. This form of interview also needs a structure and a framework to ensure an effective research interview achieving the necessary information (Anderson 2009). The

structure and contents are the same as in the expert interviews, if possible. This ensures that data on the same topic is collected and that the complexity of data handling remains clear within the processing. The focus group interviews take place in the organisations during work time. The interviewer starts with an introduction to the topic and mentions that the participation is voluntary. After that some leading questions delve into the topic. In the main part of the interview the participants communicate their opinions, attitudes and feelings. During the interview the interviewer asks further prepared leading questions and listens actively. It is necessary to repeat or summarize what has been said to ensure the right understanding. Sometimes the interviewer stops or guides the flow of conversation into another direction if the interviewee spends too much time on an issue which has nothing to do with the research topic. In the end the interviewer asks the participants if they would like add comments or additional information. Then she thanks for the participation and explains the next steps.

In the next section there is more information about the selection of the cases and the both methods of data collection.

3.5.2 Selection of the cases

To be successful in case study research, one of the most crucial aspects is the selection of the case or cases which answer the research questions (Yin 2009). The preliminary work is very difficult because it is critical to know all the concrete settings of the single case previously which are necessary for the selection (George & Bennett 2005). The case selection is done before knowing exactly how the social world will develop during the case study. The decision of the researcher to select a case is based on causal conditions identified before dealing with the case in depth. The researcher wants to exclude accusations that the cases are inappropriate or unsuitable related to the research topic.

The case organisations of the German building trade are selected as samples in such a way that their decision-makers have the flexibility in assembling the work teams regarding different age groups and know about the pay structures of the team members. A sample is a smaller group which is usually but not always a representative group (Oppenheim 1992/2005). It is the goal to get a good spread of samples so that the most important trades

are covered in the research. The sample size of 13 case organisations with 13 decision-makers as experts and seven workers in focus groups is sufficient to cover the main trades. The use of several cases is advantageous because the possibility exists to find common relationships among the cases (Stake 1995). These decision-makers and their employees are the interviewees. From the perspective of this research they are the experiential experts in their field of activity (Meuser & Nagel 1991). The methods of in-depth qualitative expert interviews and focus group interviews provide to identify performance effects and interrelations. Furthermore, data can be collected by interviewing for the aspects of the possibilities of flexible pay systems and the practicability and the limits of a model. The objectives defined can be reached with these methods of data collecting.

The purpose of this multiple case study is to explore with a sample of organisation owners in the German building trade and a sample of their workers what the effects of changing work team demographic composition on team performance, what the interrelations between the effects of team performance on related pay are and to discuss how a flexible payment system could be established. According to the Federal Statistical Office (2012a) in Germany the building trade is divided into two main fields, the main construction trade and the finishing trade. Altogether 21 different trades are summarized in these statistics. From the variety of the different disciplines in the German building trade eleven different trades are chosen. The trade of the horticulturists which is also selected for this multiple case study is assigned to the category of agriculture. As the horticulture trade is organized very similarly to the construction trade and because there is access to an organisation this trade is also added to the multiple case study. Therefore, twelve different business types from the building trade are included in the research: roofing trade, heating engineering, tiling, carpentry, bricklaying, scaffolding, house-painting, electrics, plumbing, glazier, cabinet making and horticulture. At least one organisation is drawn from each business type and constitutes a case study. This number of case studies provides a sufficient and broad amount of data upon which to base the analysis as the majority of the building trade included within these business types. The organisations selected have the following characteristics: defined team structures, relatively uniform team size and team member composition.

All organisations selected are located in the county of Lippe in North Rhine-Westphalia, Germany. They represent typical organisations of trades. They offer their services to both B2B (business-to-business) or B2C (business-to-consumer). Their services are characterized by individual manufacture based on a customer's order. Therefore standardization is hardly

possible. The location of their premises is mostly in a residential area, partly connected to the private home of the owner. Some are located in smaller industrial areas of the cities in the county of Lippe. Most of these organisations show their whole team, which consists of an average of 7-10 employees, on their websites on the internet.

On the one hand the workers in all selected organisations deal with different building materials or work with different technologies. But on the other hand they all mainly do manual, partly hard, but also knowledge work. In addition, organisational tasks have to be done by the tradesmen/women. Their jobs contain tasks like construction, fitting, installation, restoration, repairing, demolition, organizing or finding solutions. The job of a tradesman occurs primarily outdoors at building sites in construction work teams. Some occupations also carry out their work indoors (“Berufsinformationen finden” 2016). The physical strains are often characterized as unbalanced like constant carrying, working in a stooped position or exposed to all kind of weather. Commonly customer orders require the execution by a work team consisting of at least two or more workers.

3.5.3 The method of semi-structured and in-depth expert interviews

The method of semi-structured and in-depth expert interviews is used to generate data to answer the research questions. In expert interviews both process and context knowledge can be reconstructed (Flick 2009). The interviewees will be key informants determined by their role and relationship with the team and related systems of payment. They possess knowledge about issues of how judgements are formed outside the team, in particular to performance. They are able to decide about the wages of their employees. They have views and opinions about the interrelations between performance and pay and its effects. In the interview their experiences and lived meanings of their everyday world can be captured (Kvale 2007). It is to be noted that for most participants this interview is the first one they have ever had. The participants are unsure because they are in this new interview situation. It is possible that they feel uncomfortable in their role, but still want to do a good job. Critical interviewees fear the potential use to which their data is used, especially when it comes to sensitive and personal information. Furthermore, expert interviews are elaborate and time-consuming. Often the participants are difficult to reach and the schedules must be planned very long in advance

because the participants are very busy. Another disadvantage is that the interview contents cannot be generalized because this is individualised content.

For this research a total of 15 invitations had been sent. Two of them had not registered or cancelled. 13 decision-makers participated in the expert interviews, one of which acted as a pilot. For piloting the interview structure and questions a pre-test is performed in one of the organisations before starting with the others. Hereby the researcher has the possibility to test and improve the course of the interview. The verbal introduction in the topic of the research at the beginning of the interview is additionally better attuned through more expression. Some questions are changed or added. Furthermore the feedback of the pre-test interviewee with reference to the moderator function is helpful to improve the behavior of the researcher during the interview. The owner of each case organisation which is shown in table 8 is the expert who was interviewed. Before the interview each expert identified was asked to take part in an interview by sending him an initial letter (see annex III). This letter contains both the personal introduction of the researcher and the subject, the background and the target of the research. It is pointed out that the participation is voluntary and that the interview is recorded. Furthermore the handling of personal data is noted: All information is kept confidential; the identity of the participant is not disclosed and the interview results are analyzed and presented anonymously. At the end of the letter the researcher announced that she would be contact in the coming days to make an appointment. Besides a summary of the research background the attachment of the initial letter offers a list of the leading questions (see annex IV). Thereby it is ensured that the participant can prepare himself for the interview. The leading questions of the semi-structured and in-depth expert interviews are divided into three parts:

1. To get information about the organisational and demographic structure of the company:
 - How many people are employed and in which functions do they work?
 - What is the age structure of your company?
 - Are there workers who do special or changing roles?
2. To get information and attitudes about the team composition and team performance:
 - What criteria are used to establish the working groups?
 - How does the performance change when the team composition is changed?
 - In which way does the composition of the working group influence the work performance of the group or the group results?

- How does the performance of the work teams change if the average age increases?
- What is the impact of a higher average age on the following factors:
 - speed of work
 - time in finding solutions
 - cooperation
 - quantity of work
 - quality of work
 - team spirit
 - customer satisfaction
 - others

3. To get information and attitudes about team performance and payment:

- How does performance and payment fit together?
- How is payment adjusted to individual performance?
- How is the impact of performance change on payment?
- How do you estimate the performance- and the hourly payment development in relationship to age?
- How could flexibility be included in the payment? Own ideas?
- Do you pay performance-related wages? Why? Why not?
- How could flexibility in payment be undertaken, independently from current collective pay agreement possibilities?
- Which adjustments would you wish to see in the increase of pay flexibility?

The interviews are conducted in the German language and face-to-face. The location where the interview takes place is either in the office of the participant or in the premises of the researcher. All interviews are recorded as consent by the interviewees was granted. Otherwise the interviewer would have taken notes of the answers and statements. An interview lasts approximately 45-60 minutes. The experts provide candid responses and are open to share their thoughts and opinions. Each interview is transcribed and safe-guarded on the PC hard drive of the researcher. As this data was password protected only the researcher has access to this information. The interviews were followed up with e-mails and phone calls for clarification purposes.

3.5.4 The method of focus group

With the method of in-depth interviews which are carried out with the decision-makers of the case organisations as experts it is possible to generate data about the management of team composition, team performance and related pay. On the other hand there are the workers in the organisations of the German building trade. They are the ones who are affected by the decisions related to the team composition and related pay. They are the ones who perform on the construction sites in the team. As the other party of the employment contract the worker can have another perspective to the topic of the research. To find out his opinions it is appropriate to interview him together with others in focus groups. In focus groups the researcher gets different viewpoints because the participants discuss a certain issue which is in the focus (Kvale 2007). They are often used for exploratory studies (Kvale 2007). Focus groups deliver information about attitudes and expectations of the team members related to the components that constitute the system of payment. The research questions deal with performance and pay – subjects which pertain with feelings and motivation. Discussions with focus groups can provide insight into subjects like these (Krueger & Casey 2015). Group interactions are desired as part of the method. The participants can draw from each other. New ideas can collectively develop within the group (Berg 2007). The aim of focus group interviews is not to reach a result. It is more important to find out factors that influence the participants (Kvale 2007). Krueger & Casey (2015:21) consider important five characteristics for focus groups: “(1) a small group of people, who (2) possess certain characteristics, (3) provide qualitative data (4) in a focused discussion (5) to help understand the topic of interest.”

The focus group is designed for small groups of individuals (Berg 2007). The participants take part voluntarily. The attendance usually ranges from four to twelve. Smaller groups are called “mini-focus groups” (Krueger & Casey 2015:6). Smaller groups allow each person a greater opportunity to talk. It allows for more in-depth conversation.

As the organisations are very small the researcher plans to work with mini-focus groups. This offers the advantage that enough different ideas can emerge. The members have a higher proportion of speaking (Krueger & Casey 2015). In addition, for this research the skilled workers are “hard-to-reach individuals” (Stewart & Shamdasani 2015). In most cases the decision-makers of the case organisations have rejected a participation of their employees

because the researcher should not confront them with the research topic for reasons of motivation, agitation or misunderstandings. Two decision-makers have given their approval for the execution of a focus group. They have defined which employees were allowed to participate. Finally, two mini-focus groups are formed. The two participants of the first group work are plumbers and the three members of the second group work are roofers. All of them are employees of the case organisations.

The researcher as the moderator of the discussion must take care that she does not deeply influence the participants. Furthermore there is the risk that one or a few participants are dominant. Then others hold back or do not dare to give their opinions anymore. Another disadvantage is that only a limited number of questions can be used in the focus group interviews because there must be enough time to talk about each subject in detail. The moderator should give any member the possibility to take part (Berg 2007).

There were seven workers who were allowed to take part in focus groups. The researcher could form three focus groups, one of which with two participants acted as a pilot.

The piloting is performed as follows: For testing and improving the interview structure and questions a pre-test is performed in a focus group before starting with the others. The questions for the focus groups are based on the leading questions of the in-depth expert interviews. The pre-test focus group consists of two participants. They are employees of two different organisations of the German building trade. By carrying out the pre-test the researcher has the possibility to improve the course of the focus group. The discussion in the pre-test has been longer than expected. Two questions have been too complex; the participants do not know any meaningful answer and feel a bit uncomfortable. So some questions are deleted. Furthermore the feedback of the pre-test interviewees with reference to the moderator function is helpful to improve the behavior of the researcher during the interview. After the piloting each member of the two remaining focus groups is asked to take part in the focus group interview by sending him an initial letter (see annex V). This letter contains both the personal introduction of the researcher and the subject, the background and the target of the research. It is pointed out that the participation is voluntary and that the interview is to be recorded. As well as in the in-depth expert interviews the handling of personal data is noted: All information would be kept confidential; the identity of the participant is not disclosed and the interview results are analyzed and presented anonymously. At the end of the letter the researcher announces that she would be in contact

in the coming days to make an appointment. Besides a summary of the research background the attachment of the initial letter offers a list of the leading questions which the researcher would like to discuss in the group (see annex VI). Thereby it is ensured that the participant can prepare himself for the focus group. The leading questions of the focus group interviews are divided into two parts:

1. To get information and attitudes about the team composition and team performance:

- How does the performance change when the team composition is changed?
- In which way does the composition of the working group influence the work performance of the group or the group results?
- What do you think: How does the performance of the work teams change if the average age increases?

2. To get information and attitudes about team performance and payment:

- How is payment adjusted to individual performance?
- What do you think about flexibility in the payment?
- How would you like to be paid when you are older? The same as today or in another way, if yes, how?

As an outsider of the trade, a personal presentation of the researcher is required at the beginning of the focus group interview. She explained the reason of the study and her personal goals so that the participants gain confidence. She introduces the topics of the discussion (Kvale 2007) by giving an overview. She starts with opening questions which someone can answer shortly so that the atmosphere becomes comfortable for everyone. Then she uses the leading questions which have been detailed in the initial letter the participants have been sent. The researcher as a moderator leads the interview. Participants may feel uncomfortable in a group if they express a different opinion than the rest of the group. The interviewer encourages participants to open and trusting conversation so that all opinions can be included in the discussion. The element of discussion about age in connection with performance is mostly factual. If the discussion comes on pay, it is more restless and hot-tempered. It becomes noticeable that the workers are more affected by this issue. The volume of their voices rise and the comments are more mixed. Here the interviewer must stay calm and lead the discussion in a way so that everyone can express his opinion, but one by one. This ensures that no information is lost. The interviewer has to be open to all comments and opinions. Responding individual comments with one's own opinion influences the further discussion process. The dynamics of the discussion change. Therefore, personal reactions

should be under control (Krueger & Casey 2015). The interviewer needs to hold back her own opinion. Capturing the group discussion and controlling the group dynamics are the tasks of the interviewer. The interviews are conducted in the German language and face-to-face. The interviews take place in one of the rooms in the office of the organisation. All interviews are recorded if all interviewees agree. Otherwise the interviewer would have taken notes of the answers and statements. A focus group interview lasts approximately 30 minutes. As well as the experts the participants provide candid responses and are open to share their thoughts and opinions. Each interview is transcribed and safe-guarded on the PC hard drive of the researcher. The transcription is difficult because the voices are often mixed on the tapes recorded. As this data is password protected only the researcher has access to this information.

3.6 Data analysis methods and interpretation

This section gives an overview of the methods of data analysis and interpretation which are applied in this study. They are briefly described in the sections 4. and 5.

To use the methods of in-depth qualitative semi-structured expert-interviews and focus groups means to obtain a mass of data to analyse and interpret. After generating data, which is done by in-depth and semi-structured interviews with the decision-makers as experts in the German building trade and focus groups with workers in this trade, the stage of data analysis follows. Analysing means coding, interpreting and making sense of data (Easterby-Smith et al. 2008). The analysis method of Yin (2011) is applied for this research because this method is specialized in analysing qualitative data. The analysing and interpreting process following Yin (2011) consists of five steps which are:

- (1) compiling,
- (2) disassembling,
- (3) reassembling,
- (4) interpreting and
- (5) concluding.

These phases are passed in sequence. Yin (2011) represents these phases in a five-phased cycle (see figure 17), so that a circuit is formed.

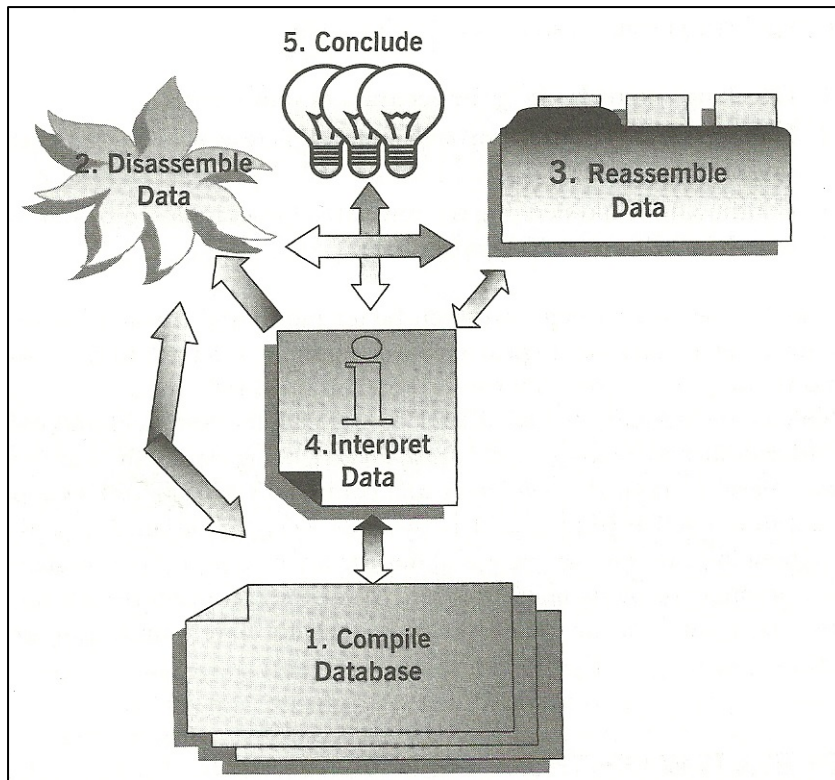


Figure 17: Five-phase cycle for analysing qualitative data (Yin 2011:178)

A cycle is useful because the phases can be repeated until the complete analysis and data interpretation process is done. The arrows going in two directions indicate the possibility of going back and repeating the certain phase. In this stage the researcher has a major influence on how data is interpreted (Denzin & Lincoln 1998).

For the first step of compiling Meuser and Nagel (1991) recommend transforming the oral language to a written language. There is no focus on the language of the interviewees.

Narrative or linguistic elements are not considered. For a more efficient data analysis, the qualitative data analysis computer software NVivo was used (Yin 2011) as a database. Using the programme of NVivo helps the researcher to determine nodes and to classify the data collected. She uses the programme for phase one (compile database), phase two (disassemble data), phase three (reassemble data) and partially phase four (interpret data) of the five-phase cycle of Yin (2011). The use of NVivo has both advantages and limitations. Advantages are: All data is processed and no data is lost. The researcher retains the overview of the defined nodes and headings. During the phase of reassembling shifts are easy to perform. The assigned statements are easy to survey and analyse. In addition, the cross-case analysis is simplified. On the other hand, the researcher runs the risk that the data will be processed less emotionally and in a more automated way because she works in a digital programme.

Working in programmes can reduce the use of the researcher's thoughts and emotions within the interview situation. This can cause that valuable interpretation of information to be lost. Comments or highlightings of the researcher on individual statements for further analysis can be realised only with difficulty in NVivo. Working with a highlighter on paper leads to a more intensive engagement with the text or the statement. For this reason, the researcher finishes working with NVivo during the interpretation phase and continues to work with paper.

After data which has been collected is kept accurately in records all interviews recorded – expert interviews and focus groups – are written down in files in the local language which is German. Each interview has its own file. Two files are available for each interview: an audio file and a word file. For the following work the researcher uses the word files. In the second step of analysis – disassembling – the compiled data are fragmented. To achieve this, all data is put into the programme of NVivo to get a systematic data preparation. The researcher reads all data carefully and marks references that belong to the same or a similar issue. After extracting the relevant text passages they are assigned to the research questions while maintaining the source. Others text passages which do not have any reference to the research questions are not considered for further processing. The interview content is reproduced in the words of the researcher and related to a topic (Mayer 2009). Thus, every statement gets an assignment to certain generic terms. This step is followed by the phase of reassembling which means to arrange the texts according to subjects and compared thematically. The researcher merges the assigned text passages under different headings. For this work step, she defines different nodes in NVivo. A node is a “collection of references about a specific theme, place, person or other area of interest“ (“Definition of a node“ 2017). Then the researcher classifies the data collected by marking relevant text passages and labelling the sources. Here are three examples for nodes the researcher has defined:

- A change in team composition affects performance
- In case of decreasing performance no pay adjustment is made
- Ideas to improve the pay flexibility

A total of 26 nodes are defined for the expert interviews and 16 nodes for the focus groups. The references from the interviews are assigned. Not every spoken word can be assigned to a node because there is also interview content that is not directly related to the research topic and research questions. The result of this third working step is the complete disassembly of

the interview texts with an assignment of the statements to the nodes. During the analysis process the phases of disassembling and reassembling can be repeated several times in different ways. The result is a development of captions in preparation for the next step of interpretation.

The reassembled data is used in creating the findings. In this step similarities and differences are formulated. In doing that, same or opposite directions are recognized. The aim is to receive systematizations, typings, patterns and generalizations by topical comparison and conceptualisation (Meuser & Nagel 1991). The researcher analyses the reassembled data in the programme of NVivo by reading all statements assigned to a node carefully again and by adding each node with a heading which is a complete sentence. A heading includes the key message of all statements which are assigned in a node. This key message is based on the interpretation of the researcher. Statements which do not fit into the heading message of this particular node are initially separated. Following the constitution of the headings, the statements which are omitted from the existing nodes are analysed again. These statements are assigned to other already existing headings or form a new common node with a heading. The researcher ends her work in NVivo when she translates the findings into English and continues to process it in the thesis. Section 4 presents the headings with the key message and findings systematically and in detail. First, there is the presentation of the findings from the expert interviews and secondly, the presentation of the findings from the focus groups. At the end of the section a summary combines both parts. The presentation of the data from the two different sources is also done by quotes from the participants in the interviews and focus groups. The translation of the verbal speech from German into English is done by the researcher herself, as she is proficient in both German and English. This can ensure that the interpretation is made in her understanding of the data that has emerged. An external translator might have interpreted and translated the meaning of the spoken language differently. Translations in research are interpretations and are part of the analysis of the data (Creswell 1994; Marshall & Rosman 2011). The translated direct speech of the participants contributes to the description and explanation of the findings (Denzin & Lincoln (1998).

Then the final phase of ‘concluding’ follows in which the researcher draws the conclusions from the entire study involving the data prepared and interpreted in the previous phases (Yin 2011). Findings of other theoretical and empirical studies can be integrated. An interpretation of the material occurs during the whole process because the researcher determines the focus by aggregating the data. The researcher works out the relevance of the

study results to other settings (Easterby-Smith et al. 2008). In this phase, the researcher analyses why pay flexibility is necessary at all. She comes to the conclusion that a system of pay flexibility is not unilaterally stated or mutually agreed, but rather consists of several dimensions to be successfully established. Her conclusions are reflected in a model of pay flexibility. The conclusions have the claim of comprehensibility. The development of the model results from the derivation of the conclusions. An outlook on further research to the research topic forms the end of the analysis.

3.7 Quality criteria in case study research

Quality criteria should ensure that the qualitative study is believable, accurate and plausible. All users of the study want to be sure that the methods and data used are valid and reliable. As these criteria are very important to the researcher, they are explained and defined below by using definitions and explanations from the literature review.

For a relativist the “validation is the process of evaluating the trustworthiness of reported observations, interpretations and generalizations” (Mishler 1990). The researcher understands validity as a judgment on the data whether they actually deliver the results for which they are intended (Anderson 2009). As the case study approach is subjective and interpretable (Stake 1995) it is important to ensure reliability and validity of the data gathered by the researcher. Especially in qualitative research, reliability and validity are significant in the stage of analysing (Kvale 2007) in which the researcher constructs new thinking and knowledge. Reliability means that there is transparency between the raw data and the data analyzed and interpreted (Easterby-Smith et al. 2008). Valid data are “sound, well grounded, justifiable, strong and convincing” (Kvale 2007:122). Validity presumes reliability: If the method is not reliable, the data cannot be valid (Bryman & Bell 2007).

The quality of this study is very important to the researcher. At each stage of work, she works carefully to realise the quality criteria of reliability, validity, transparency, credibility, dependability and transferability as much as possible. In general, she can justify her decisions in every stage of the investigation that she has done. The research strategy and design, the results and the interpretations are presented comprehensively and transparently so that other researchers can share the insights, the argumentation and the approaches. The researcher has

endeavored to enhance her trustworthiness by keeping the context and the circumstances as uniform as possible in order to avoid differences. The process of phase 2 of the case study research design "carrying out the case studies" which is presented in table 7 has been carefully followed. The instruments used deliver accurate and stable data. In particular, the step of developing the explanations is explained in detail in order to ensure confirmability for other researchers because confirmability leads to trustworthiness. If others can track the processes and procedures used to collect and interpret the data dependability is supported, especially by providing detailed explanations of how the data are collected and analysed (Bloomberg & Volpe 2012). The researcher measures what she intends to measure. She always keeps an eye on possible conflation and permeability of observed concepts. The information is sampled and chosen purposefully rather than randomly so that the theoretical needs of the study are achieved (Rudestam & Newton 2007). The reader should feel certain this has been done appropriately. The information provided has the origin in two different sources. Two different methods are used to corroborate the evidence via different means and the researcher's interpretation. Triangulation is applied. Triangulation means that more than one perspective is used to investigate a research question in order to increase the confidence in the validity of the results (Kuckartz 2014). Triangulation of data collection methods also lends credibility (Bloomberg & Volpe 2012). The methods used are chosen to produce the same or similar results, on other comparable occasions. To expand reliability and credibility the researcher communicates clear and briefly how data is collected and analyzed. The researcher reports how she creates the data and how she comes to possess them. Furthermore, the interviews are conducted in such a way that similar responses would be given in the same interview. The answers and statements given in the interviews are still valid in a few months. They do not change with mood or fatigue. Systematically recording is important. Raw data is always gathered and analyzed in the same way. No different methods are used. Piloting is used to hedge the methods and instruments. The first step of analysing the data recorded is by transforming all data into a written language and the following interpretation. The validity is better if the transcription is close to the interviews (Kvale 2007). This ensures that all data can be used. Validity and trustworthiness are increased by: If parts of the interview cannot be transcribed exactly the interviewee is asked later again about the content. Corrections are integrated. This measure increases the degree of validity and reliability of the transcribed interview content. Other external factors influence the data is avoided. To improve the validity the interviewer repeats or summarizes the main statements of the interviewees during an interview. She confirms the statements. The researcher's coding scheme is introduced for

increasing the replicability. The researcher is aware that the interactions in the setting and the interpretation should be valid. Transparency in the process of analysis is realised as far as reasonably possible so that other researchers are enabled to evaluate them (George & Bennett 2005). Detailed descriptions and explanations are intended to reinforce this quality criterion.

The quality of qualitative research is judged by its validity, reliability, transparency and communicability (Rubin & Rubin 1995). As these quality criteria are applied in each process of this study, the researcher is sure that she achieves these standards. All users of the study can be sure that the methods and data used are valid and reliable.

3.8 Ethics of qualitative research

The researcher of this study understands ethics as follows: Ethics means to carry out moral principles (Marshall & Rossman 2011). This includes treating people with respect in the form of protecting their anonymity and privacy when they participate. The aim of the issue of ethics is to protect the rights of the participants by establishing safeguards before, during and after the study. The participants are to be protected against harm. The confidentiality of their data must be ensured. At every stage they can judge for themselves. They take part voluntarily and their explicit consent is needed. Ethics means also to inform the participant about the aim and purpose of the study (Thomas 2011). In addition, the participant is protected from harm related to physical, emotional or any other kind (Denzin & Lincoln 1998). Moreover, freedom to information is respected and maintained. This also refers to the right to privacy. The explanations are original except where indicated by specific reference in the text.

The researcher of this study declares to maintain confidentiality and high ethical standards. Furthermore, she follows these five norms of ethics without any exception (Sieber 1992):

- Use people only for valid research
- Use people only for research conducted by competent researchers
- Put people only in situations without unusual and unnecessary risks or conduct research only on a population which will benefit from the knowledge derived from the research

- Put people only in conditions where they are not placed
- Use people only if they can decide themselves about participation in the research.

This research is also subject to the research ethics of the University of Gloucestershire which are manifested in the ‘Handbook of Principles and Procedures’, approved by University Research Degrees Committee (2008) (see annex II).

In addition, providing trustworthiness in expert interviews and focus groups and keeping it during the whole research process is an important issue which is considered to be necessarily respected for the participants. In the initial letter of contact to the respondents (see annex III and V) each participant will be informed about the background and the purpose of the interview. So he or she knows what his or her data is used for. Then, he or she can decide whether he or she wants to participate or not. He or she receives the information that the interview is recorded. He or she is also advised that participation is voluntary. All information is treated confidentially. The identity of the participants is not published. The data of the interview is anonymously evaluated. In addition, at the beginning of the interview, the interviewer once again verbally refers to this confidential treatment of the personal data. Full names are not mentioned, so that no conclusions can be drawn of people. The subsequent storage and electronic keeping of the data also take place in such a way that no third party has access to the data. The data transcribed is stored on a locked DVD. Whereas the participants are sharing their organisational structures, their decision-making procedures and their feelings, opinions and apprehensions with the researcher, the researcher must accept that each participant has his or her own social values and an individual world view (Denzin & Lincoln 1998). These issues are assured by protecting the confidentiality of the interviewees in the stages of compiling, disassembling and reassembling. The information is processed anonymously. In the stage of interpreting it is the responsibility of the researcher to analyse the statements of the interviewees in a way which is as secured and verified as possible. The integrity of the researcher is the decisive factor which means dealing with knowledge, experience in combination with honesty and fairness.

Summarized, to gain trust the researcher always gives special attention to the ethical issues of these personal requirements.

3.9 Own methodological experiences

In this section the researcher supplements the methodology chapter by some methodological experiences which she has encountered during the research work.

The process of data collecting took place over about five months. The researcher thought that it would have been easier to obtain appointments with the experts and the workers. In some cases the appointment was cancelled shortly before it should have taken place. It often required a few weeks to get a new appointment. But the interviews themselves were a real asset. Both experts and focus group participants provided a lot of data about their experience, viewpoints, feelings and aspirations to the topic of this research. Both types of group were open to all questions and discussions. Mostly at the beginning of the interviews the participants were a bit shy and reserved but this eased up in the course of the conversation. It was the first time any of them had been a participant of scientific research. Some of the participants admitted that they read the invitation with its attachment only superficially and that they were not well prepared but on the other hand curious to talk about the topic. The starting point of the research – the increasing average age in organisations with the result of changes in the team composition - was easy to explain. The topic was known by every participant. In a few interviews it was only necessary to use some leading questions to stay in the semi-structure. In some other interviews it was helpful to use the leading questions to continue the interview because the interviewee did not answer in detail. In these cases the researcher had to make sure that she did not have too much share of the talking. Most of the participants used frequently colloquial language which had the advantage of getting significant opinions and viewpoints. But on the other hand it was more difficult to emphasize and to merge the findings. Transforming the oral language to a written language meant producing a lot of data which had to be read by the researcher. Using the programme of NVivo helped the researcher to determine nodes and to classify the data collected.

4 Data collection and findings from the case studies

In this chapter the key data obtained from 13 semi-structured and in-depth expert interviews as well as from three focus groups are presented. The core of both types of interviews is to get answers to the research questions with the aim to reach the purpose of this research.

4.1 Structure of the case organisations

Although the case organisations selected represent different trades within the German building trade industry they still should have similar structures related to the size and to the age range in order to get comparable data. A different structured organisation with a larger number of employees perhaps has more or other possibilities to be managed. Similar organisational and demographical structures which provide data from nearly the same initial position are therefore a basis of a collection of comparative data for the same research topic. In the first part of the expert interviews the researcher asks for information about the organisational and demographic structure of the company. This information has been processed by the researcher. An overview of this information is shown in table 8. The overview contains the employment structure and the age range of the 13 case organisations which are chosen from the German building trade.

	number of employees	structure							age range		
		studied staff	master	foreman	skilled worker	unskilled worker	apprentice	office clerk	17-30	30-50	50-67
1. roofer (pretest)	11		2		8		1		4	6	1
2. plumber	11	1	1		5		3	1	5	3	3
3. bricklayer	13	1	2	3	5		2		4	7	2
4. electrician	6		1		5				3	3	
5. roofer	10		1		6	1	2		3	6	1
6. horticulturist	15	1	3	2	4		4	1	5	8	2
7. house-painter and decorator	17		2		10	4	1		5	7	5
8. carpenter	6		1		4			1	0	5	1
9. glazier	5		3				2		3	1	1
10. scaffolder	13	1		3	2	7			3	9	1
11. tiler	6		1		2	3			1	2	3
12. heating engineer	25		3		15	3	4		9	8	8
13. cabinet maker	12		4		7		1		1	9	2
in total	150	4	24	8	73	18	20	3	46	74	30
in %		2,7	16,0	5,3	48,7	12,0	13,3	2,0	30,7	49,3	20,0

Table 8: Structure and age range of the case organisations

Almost half of the employees are skilled workers. This means that they take part in an apprenticeship which usually lasts three years at the beginning of their working life. This apprenticeship programme is divided into phases in which the apprentice learns in a technical college or in the organisation to acquire practical knowledge. It results in an exam which consists of a written, oral and a practical part (“Apprenticeship in Germany” 2014).

A foreman is a skilled worker with a certain task to lead a team on the construction site. He is responsible to ensure that the tasks are done and the targets are reached. He instructs the other workers in detail and monitors the progress of work. He decides about operative matters, sometimes after consultation with the master (“Job description foreman” 2016). A master is also a skilled worker who passed the examination for the master tradesman's certificate. He has specific knowledge about management skills which is needed in the construction trade and is able to found and lead a handicraft business (“Master training” 2016). Office clerks are rare in organisations in the construction trade. Often the master or a tax consultant office takes over the administrative work.

23.6% of the workforce of the German building trade in 2014 were white-collar workers which also includes the studied staff and the masters in the entire construction trade (Federal Statistical Office 2015a). On average the number of employees amounts to eleven. This number ensures that the team composition can be varied by the decision-maker.

When considering the age range in the organisations selected it is appreciated that the allocation of the age ranges of the case organisations is almost identical with the age structure of the German building trade which is shown in table 1. Most employees are in the range of 30 to 50 years old, nearly 50% of the entire staff. The phenomenon of the lack of junior staff is as recognizable as the high number of workers who are 50 years old and older. Thus, the case organisations selected are useful for answering the research questions with regard to the aspect of ageing.

4.2 Different headings of the data collection

This chapter presents the data collection obtained from 13 in-depth expert interviews as well as from three focus groups conducted with two or three participants. The data of the piloting participants are also included. Based on the research aim, three main questions are to be answered:

- 1) What are the effects of changing work team demographic composition on team performance?
- 2) What are the interrelations between the effects of team performance on related pay?
- 3) How could a flexible payment system be established in order to realise pay adjustments for the team members?

If words and phrases are enclosed in quotation marks in this chapter and no literature source has been specified, the researcher cites the participants of the interviews.

The next section deals with the data which emerged from the expert interviews. The section which follows contains the data which emerged from the focus groups.

Each data is initiated with the abbreviation EI or FG. EI is the abbreviation for ‘expert interview’ and FG for ‘focus group’. Subsequently, a number combination is specified. The number before the point is the reference to the research question. The number after the point is a consecutive numbering. The term ‘data FG 1.2’ means the second data part from the focus group, referring to the first research question.

4.2.1 Data that emerged from the expert interviews

After getting information about the organisational and the demographical structure of the organisation the researcher links up to the leading questions which can answer the first research question: What are the effects of changing work team demographic composition on team performance?

Data EI 1.1: 10 out of 13 of the participants expressed that the team composition is generally based on the knowledge, skills and behaviour of each team member. The decision-makers mentioned several criteria: the previous knowledge, the expertise, the abilities, the personal preferences, the working speed, the working quality, the customer handling, strengths and weaknesses of each worker with respect to the customer order. One participant said literally: “I form the teams so that everyone can do what he can do best.” Another participant mentioned that is important that one of the team members has a driving licence.

Data EI 1.2: 9 out of 13 of the participants indicated that the team composition relating to size and age is based on the customer order. The workers are “sorted” to the customer orders. Already during the process of order acceptance the decision-maker of the organisation thoughtfully assigns the workers optimally to a team in order to realise the customer order. The customer orders are accepted if the “required capacities” are available. The team composition varies depending on the customer order. Based on the customer order the optimal team composition guarantees the desired performance.

Data EI 1.3: 4 out of 13 of the participants indicated that the team composition is adapted to the wishes of the customer. This ensures a high customer satisfaction.

Data EI 1.4: 9 out of 13 of the participants mentioned that besides the individual knowledge, the skills and the behaviour of each worker also the mix of the workers in the team counts. Some said that the “best teams are the ones which contain younger and older workers” so that the younger worker who is still resilient can do the harder manual work which the older worker is not able to do as quickly as the younger one. While often valuable work experience was connected to older workers, work speed and work quantity resulted from younger workers. Another aspect is the cooperation between the team members themselves. Hereby the hierarchy in the team is taken into account by the decision-maker. The team performance depends on the team composition.

Data EI 1.5: In one case the decision-maker stated that he only works with a fix team composition. He does not mix the team members. He said that this is the guarantee for working “without stress, but with motivation and harmony”. Also, these teams have their assigned cars to get to the construction sites.

Data EI 1.6: 8 out of 13 of the participants expressed that a changed team composition also based on a higher average age in the team has negative effects on the team performance such as a lower speed of working, a lower work quantity and more time needed in finding solutions. Two of them mentioned explicitly that the team result is the same if the team composition changes but the effort to get the same result is higher than with the “optimal” team composition.

Data EI 1.7: 5 out of 13 of the participants expressed that a changed team composition also based on a higher average age in the team can have both negative and positive effects on the team performance. The effect depends on the kind of work which has to be done by the team. On one hand the younger workers: They are more “robust and resilient” and mainly do the harder manual work. They sometimes “work faster”, but they have “less work experience” and work with “less accurateness”. Often they “shoot over the top” which means that they finish their tasks quickly but with mistakes. The mistakes have to be corrected later with additional efforts. On the other hand the older workers: They have more work experience and work “more accurately”, but sometimes “slower” relating to the harder manual work. One participant said that “older workers with more experience have a higher result of performance”; another one: “The older workers have a higher standard of working”. Older workers are better at handling customers. But these statements were also recorded:

- “A team which has only team members who are over 50 years old would not exist anymore on the market.”
- “The physical performance decreases starkly from an age range of 45-50 years.”
- “The physical performance does not really increase anymore from an age of 50 years.”
- “The physical performance can diminish at an advanced age.”
- “Especially in elderly people, there are problems with new technologies.”

Four participants stated that the disadvantages of the higher average age in work teams can be avoided by taking into account the physical resilience of each team member during the process of team composition. The younger workers accept that they have to do the harder

manual work if the older colleagues are not able to do this kind of work anymore (3 participants). Thus, the direction of the effects can be different. If there is more manual work to do for the customer order the team performance will decrease if the average age increases. However, if more work experience is needed the team performance can increase. Older workers compensate for their decreasing work speed through “well organised work” and by “always looking ahead while working”. “Age can be also an advantage.” If the average age increases the “team performance also increases but not into infinity because performance has its limits.” One decision-maker mentioned that it is his job to keep the average age on a specific level so that the team performance does not decrease.

Data EI 1.8: 6 out of 13 of the participants expressed that the working conditions have been improved in the last years or decades. “Due to the significant technological improvements heavy physical work is not as necessary as in former times.” Other materials which are more lightweight can be used. Some materials which are new for the building trade are easier to handle. New working methods improve the working conditions. A participant said: “New technologies for tools and material have dropped physical stress and thus the sick leave rate. Also, today heavier activities must not be done alone. They often can be done by several workers together.” Another participant: “the additional tools which can be used for manual work leads to health maintenance.” Two participants appealed to the order structure they have to work with: “Working speed is not needed, but a good work result” or “work speed is not the argument when talking about performance, faultlessness is more important.”

The third part of the expert interviews dealt with getting answers to the second research question (What are the interrelations between the effects of team performance on related pay?) by using the leading questions prepared for the beginning of the discussion and after that if necessary. These are the findings which emerged from the expert interviews related to the second research question:

Data EI 2.1: The overwhelming majority (11 out of 13 of the participants) indicated that they, the decision-makers, generally did not or would not adapt or reduce the pay if the performance of the worker has decreased or would decrease. Here are their statements:

- “Wage cuts in old age after a long tenure are morally problematic.”
- “I will not do any wage adjustments if there are fluctuations of performance. The wage cut will permanently stick to the worker. The worker himself will tell all his colleagues about it.”

- “If I adapt the wage there would be the risk that I lose the worker. He will not put up with it.” Or “I am afraid of the termination of the worker.”
- “Also, in case of performance reduction: The payment remains the same.”
- “No wage reduction because the collective bargaining agreement forbids this.”
- “Wage reduction is counterproductive and demotivating. Changes in wages lead to complete turmoil.”
- “Wage reduction is demotivating and causes stress.”
- “Wage reduction is degradation. There is the risk that the performance will decrease once again, so to speak, twice lower.”
- “I have always had a problem with downward wage adaption, it is demonstrably bad.”
- “I talk to my worker to find out the reasons of the performance fluctuations. He will get two or three warnings. But I would not adjust the wage after 30-years of service.”
- “The pay persists despite of the decreasing performance because the decision-maker is responsible for the planning of work which matches the wage.”
- “Payment of equal wages for equal work, regardless of individual performance, due to internal peace”
- “Payment by presence, not by performance is my opinion.”
- “The thinking in Germany is that the payment is retained even if the performance falls.”

Data EI 2.2: 6 out of 13 of the participants admitted that they would adapt pay in case of a performance reduction, this, however, only under the condition that the reduction of performance is significant, “not only 50 Cents”. One of them said that he would only adapt pay if the economic situation of the company was extremely bad and a closure was threatened, but not in case of performance problems. Another participant mentioned that he would reduce the wage if the performance reduction could not be paid for anymore by the customer and he had to compensate for it through a wage reduction. “Paid by the customer” means that the decision-maker’s calculation of the sales price includes the additional efforts of the performance reduction. One would realise the reduction of pay but he admitted the problem of a fair assessment. Only one of the participants said that he would reduce pay after a conversation with the worker. He would even reduce pay under the conditions of the collective bargaining agreement if he could find an argument for it.

Data EI 2.3: 5 out of 13 of the participants preferred to dismiss the worker instead of reducing

pay. As a wage reduction leads to the problem of the decreasing motivation or is “fatal for motivation” the participants accepted the loss of the workers more.

Data EI 2.4: 3 out of the 13 participants indicated that realising a pay rise is not a problem but only if “it is justified”, or “under the pressure to do it” or if it “fits into the wage structure”.

Data EI 2.5: 2 out of the 13 participants expressed that they do not increase pay in case of performance rise. They said that they “pay their wages based on the collective bargaining agreement” so that there are “no more arguments to pay more”.

Data EI 2.6: 6 out of 13 of the participants provided information about their alternative compensation options in case of performance reduction. Five of them do not realise any further pay increase. Instead of reducing the wage they stop increasing the wage or they pay only parts of the pay rise which is agreed by the collective bargaining agreement. Two participants mentioned that they would change their calculation of the sales prices. They would try to offer a higher price to the customer in order to compensate their additional efforts regarding the lower team performance. One participant has the possibility to “cover the worker with so much work that the worker has to do overtime hours”. He puts the worker “under time pressure by reducing the time of task completion”.

In the last part of the expert interviews the target is to discuss flexible payment in the German building trade so that the researcher can acquire findings to the third research question: How could a flexible payment system be established in order to realise pay adjustments for the team members? These are the findings emerged from the expert interviews:

Data EI 3.1: 7 out of 13 of the participants refused to use performance-based pay. Different reasons were given:

- “Performance-based pay is not common. That is why it is not applied.”
- “High quality which is indispensable cannot be realised by performance-based pay.”
- “The number of complains is too high.” Or “Performance-based pay does not work – the workers make too many mistakes.”
- “Performance-based pay can only be realised in bigger companies where the tasks are more uniform” and “where larger product series are produced”.

- “As we have too many different tasks in the building trade I cannot establish performance-based pay. The effort to cash up the variable wages is too expensive.”
- “It is only possible to offer performance-based pay for certain tasks. Possible tasks are only these which need work speed and work quantity. But it is a problem to have a mixed payment.”
- “To use performance-based pay means a lot of discussions with the workers about ideal customer orders with which the worker can earn much money.”
- “To pay on a performance basis is the fairest way to pay the workers. But the tasks in the building trade have become more single piece work so that performance-based pay cannot be realised anymore.”
- “The preliminary work in order to offer performance-based pay is too expensive because we have so many different kinds of work. An application is conceivable if the tasks are specialized like attaching clinkers or plastering.”
- “Pay for performance requires appropriate tasks, for example to settle by square meters. But these tasks were not available anymore.”
- “I shy away from the moaning and decreasing motivation.”

Data EI 3.2: All participants had a lot of ideas to realise pay flexibility by alternative ways to adapt pay to changing performance. Here is a list of their proposals which they have already realised or can be thought of to realise:

- 4 out of 13 of the participants pay an annual bonus to some or all of their workers if the profit of the past year allows it. But they had concerns that the aspect of equality in the allocation is difficult. The workers can feel treated unfairly. One of the participants said that he needs to vary his explanation between workers. A further named disadvantage is that on-off payments would only reward the performance of the past but they are no means to pay for performance in the future. Frequent on-off payments are taken for granted and thus lose their effect.
- 3 out of the 13 participants: Payment for the workers based on the profit of the customer order is a good thing but in case of selling at a loss a reduction of pay would not be instituted. One of the participants called his form of payment a “sales option model” and another one called it “profitcenter model” but both of them mentioned that the higher costs for administration are an obstacle.

- The participants mentioned further means for pay flexibility: payment above the union rate, fuel vouchers, company accident insurance, taking or taking away a company car for private use or a bonus for going on vacation at a favourable time for the decision-maker.
- One of the participants uses the possibility of the collective bargaining agreement to pay extra for certain tasks. If these tasks are dropped the extra-pay can also be stopped.

Data EI 3.3: In 8 out of 13 of the participants' interviews the conditions of the collective bargaining agreement were at the centre of the discussion. Pay flexibility was desired and would be instituted if there were possibilities within the collective bargaining agreements. One of the participants had the desire to achieve more flexibility in paying less than the collectively negotiated arrangements under certain circumstances such as decreasing performance. The collective bargaining agreement should allow the option to classify the worker's pay band based on actual performance. As long as the agreements are a basis to show what is "common to pay" on the labour market, an organisation cannot differ from these collectively negotiated arrangements. If it was common on the labour market to pay more flexibly the decision-makers would follow suit. But the motivation of the workers has to be considered. One participant said: "Even when wage cuts are legally possible there is still the big problem of losing motivation." Two participants can imagine that the minimum wage is the basis of payment, everything else is paid on top of the minimum wage, based on individual performance. Another one wished to have more pay classifications among the skilled workers so that he can pay differently based on different performance. Pay flexibility could be also realised by an adaptation of the working hours. Two participants suggested decreasing the working hours to maintain the performance when ageing. Another proposed finding possibilities for a reduction of the age of retirement for workers in the German building trade.

Data EI 3.4: In 10 out of 13 of the participants' discussions the topic of the skills shortage and the shortage of young people in the German building trade was discussed because it affects the pay flexibility. The lack of skilled workers concerns all organisations in the German building trade. Too little skilled workers are on the labour market. One participant will try to solve this problem for his organisation by hiring refugees. The young people who

leave school are often not interested in working in the building trade. One participant described them as a “badly renewable resource”. The participants said that the wages in this trade are lower than in general industry and thus the building trade is also not attractive for senior workers who could switch later into the building trade. Besides the collective bargaining agreements the participants stated that the wage is “determined on the labour market”. One participant said: “I pay the wage demanded so that the workers will stay with me.” The decision-makers are interested in remaining their workers in their organisations because of “reliability and customer retention”. As long as there are not enough skilled workers freely available who can be hired the decision-makers have a “higher tolerance towards decreasing performance”. Three participants indicated that pay flexibility can be “realised easily” in a labour market which is characterised by “plenty of workers” or “more than necessary”. Also the collective bargaining agreements would have to be adapted to the changed market conditions so that “all organisations pull together”.

Data EI 3.5: 6 out of 13 of the participants brought the topic of their order calculation into the discussion while talking about pay flexibility:

- “The offers are calculated accordingly by considering the qualification into the offer calculation.”
- “The right use of the worker is the key of flexibility. As the wage is fixed I have to adapt the workers to the orders for the best possible result.”
- “First, bad performance decreases my profit if I cannot adapt the pay. But then I try to adapt my customer orders to the remaining performance or to increase the sales price.”
- “The slower mode of operation is factored in the sales prices.”
- “I divide up older workers to construction sites which have a good profit calculation or where quality is needed.”
- “I must issue the calculation: Do I invest into a young worker or do I get the older worker through?”
- “To add the underperformance to the client’s calculation is problematic; it gets around in the market.”
- “Low performance is not factored into the sales prices.”

Data EI 3.6: 2 out of 13 of the participants said that older workers leave the building trade in order to get a new job outside the business, for example in the public service. Thereby the

“decreasing performance can be avoided” by continuous and permanent training in the latest techniques and skills (life-long learning). Another possibility is to assign tasks to the worker which are permanently easier but not as well paid. The worker has to agree.

Data EI 3.7: While discussing about performance-based pay and pay flexibility 2 out of 13 of the participants indicated that pay based on the result is only feasible in German building trade if the tasks are simple and clear. If the tasks are more complex an assignment to each worker is very complicated. The comprehensibility of the related pay becomes more and more difficult. A further problem was seen with pay connected to tasks which are done alone. A decision-maker is not able anymore to composite the teams because all the tasks have to be allocated equally to all workers. A non-uniform allocation leads to a feeling of injustice.

The following table 9 shows a summary of the data which relates to the each of the three research questions:

<p>1. research question: What are the effects of changing work team demographic composition on team performance?</p>
<p>The team composition is variously made by the decision-makers:</p> <ul style="list-style-type: none"> - based on the knowledge, skills and behaviour of each team member - based on the customer order - adapted to the wishes of the customer
<p>The team performance depends on the team composition, mixed-aged teams are beneficial</p>
<p>Higher average age in the team has different and opposite effects on performance in reference to the same factors:</p> <ul style="list-style-type: none"> - more negative: such as a lower speed of working, a lower work quantity and more time need in finding solutions - more positive: such as quality of work - no change in performance
<p>Technological improvements facilitate the physical work that requires more effort with age</p>
<p>2. research question: What are the interrelations between the effects of team performance on related pay?</p>
<p>In case of decreased performance different behaviour is determined:</p> <ul style="list-style-type: none"> - no adaptation or reduction in pay - adaptation of pay if performance decreases significantly - preference for termination prior to adaptation
<p>In case of increased performance different behaviour is determined:</p> <ul style="list-style-type: none"> - increase in pay if justified and demanded - no reaction
<p>Pay-performance discussions in the team influence the motivation, rather negative</p>
<p>3. research question: How could a flexible payment system be established in order to realise pay adjustments for the team members?</p>
<ul style="list-style-type: none"> - Rejection of performance-based pay (also for fear of decreasing motivation) - Mention of a lot of ideas to realise pay flexibility by alternative ways to adapt pay to changing performance (eg. life-long learning); motivation of the workers has to be considered - Pay flexibility is desired and would be claimed if there are possibilities therefore in the collective bargaining agreements - Pay flexibility can be realised by the order calculation
<p>It is difficult to implement pay flexibility due to the external labour market:</p> <ul style="list-style-type: none"> - The skills shortage in the German building trade inhibits pay flexibility - Too few young people decide for working in the building trade - The German building trade loses skilled workers to other jobs
<p>The comprehensibility of job tasks to the related pay becomes more and more difficult</p>

Table 9: Summary of the data from the expert interviews related to each research question

4.2.2 Data that emerged from the focus groups

A total of seven people participated in the three focus groups. Three of the participants worked as a roofer, two of them as a plumber, one as an electrician and another one as an office clerk. They were 39, 44, 48, 49, 50, 53 and 55 years old.

After acquiring information about the organisational and the demographical structure of the organisation the researcher linked up to the leading questions which can answer the first research question: What are the effects of changing work team demographic composition on team performance?

Data FG 1.1: 6 out of 7 of the participants indicated that physical performance decreases when ageing. One participant said that some tasks are not done anymore and the working quantity also decreases. Another one mentioned that “it cannot be prevented or compensated that the physical performance decreases”. If the workers get support by additional aid tools the decrease of performance is not as marked as without additional tools.

Data FG 1.2: 2 out of 7 of the participants stated that “workers in an age range between 50 and 55 years old lose their interest in having a good outlook in the usage of new technologies such as support by the internet”. They “like to answer less and less questions or find solutions in which the internet has to be used”.

Data FG 1.3: 4 out of 7 of the participants expressed that the performance does not decrease if the tasks need mostly mental or organisational skills:

- “Efficiency increases in old age, because of experience and automatisms they have learned to use”
- “Older workers handle the workflow more efficiently and effectively. They work faster in processing.”
- “The knees of an older colleague were broken, but he was fine in his head, but overall he still worked well.”
- “The older colleagues have a lower complaint rate.”
- “Older colleagues find the mistake or the solution more quickly.”

Data FG 1.4: 2 out of 7 of the participants said that the direction of performance change depends on the type of work.

Data FG 1.5: 4 out of 7 of the participants mentioned that work experience can cancel out the reduction of physical performance. These are their statements:

- “Perhaps the speed of work falls, but it is compensated through work experience.”
- “Older colleagues can balance out the decreasing physical performance by their work experience. They work with foresight for example.”
- “On the construction sites the work experience offsets the physical degradation.”
- “Experienced colleagues work with more reflection and they do not knock over everything with their backside like the younger often do.”

Data FG 1.6: 5 out of 7 of the participants considered the team composition to be important. The team composition is decided upon “based on the qualifications” and “on the skills of the workers”, but the skills “can change during the working life”. Developing the team composition “is not easy” because the team composition is “responsible for the efficient workflow” and the “team result”. The team composition should be developed in a way that “everyone should do what he can do best.” In a team “everyone knows what he has to do in the team: the younger colleagues know that they have to do the heavy physical work.” Another added that “tasks with heavy lifting are done by several workers with attention being paid to the older colleagues.” The “mix of tasks which need work experience and manual work dictate the team performance – if it decreases or not.”

Data FG 1.7: 4 out of 7 of the participants mentioned the importance of the older workers in a team and said this:

- “In a team the younger colleagues sometimes do not know exactly how and what to do on the construction site, then there are the older ones who help.”
- “Work experience among the younger is not as high as among the older workers.”
- “The younger workers need the senior colleagues.”
- “The older colleague shows how to do the work to the younger colleague, the younger learns from older.”
- “There are also activities which a younger worker can do faster, but not of the same quality.”
- “Any worker specializes in the course of his working life, then he can do some kind of work better than others.”
- “The younger worker can learn from the older colleagues.”

Data FG 1.8: 2 out of 7 of the participants discussed the importance of the team composition in connection with the problem of the younger generation in the German building trade. They said that they “also need younger workers in the team” for the manual work. With an increasing average age, a participant feels that they, the “older workers will have to do the harder work again because there are too few young colleagues in the team“. But there is “the problem that few younger workers would like to work in the building trade”. The “working conditions in the production industry are better than in the building trade”.

The next part of the focus group interviews dealt with obtaining answers to the second research question (What are the interrelations between the effects of team performance on related pay?) by using the leading questions prepared for the beginning of the discussion and after that if necessary. These are the data emerged from the focus group interviews related to the second research question:

Data FG 2.1: All 7 of the 7 of the participants rejected any reduction of pay when ageing. There was no agreement to the reduction in wages “due to physical weaknesses”. Two participants raised the issue of equity: The inequity of paying older workers the same wage even when they perform worse is accepted. “No colleague has ever complained that the older colleagues get more than the younger counterparts” if performance decreases. Furthermore they stated that wage reductions are not necessary because there are a lot of tasks for older workers in the building trade which justify the existing higher wage. Another participant said that he would “never accept any wage reduction even if the boss put pressure” on him. Another referred to the situation on the labour market: “Pay reduction will not work because no people come anymore“ into the trade industry evidenced by the shortage of younger skilled workers. Yet another mentioned that he would ask for a wage increase when he works better than his older colleague but the wage of the older colleague should not be allowed to reduce.

Data FG 2.2: 3 out of 7 of the participants described in their words the presence of seniority-based pay and defended it. These are their statements:

- “Why should the older worker, who has bowed and scraped his whole working life, get paid less in old age? After all he has not ruined himself because he wanted to do it. The consequential physical damages were not included in the wage when he was younger.”

- Expressing the importance of required professional work experience: “The one who rebuilds the hut must earn more than the one who tears apart the hut.”
- “The younger workers would like to earn more money but they know that they must become older first.”
- “A higher wage is deserved by an older worker because it has been developed throughout his working life.”
- “Also at a new employer a higher wage has to be paid to the older worker because he takes his skills with him to the new employer.”
- “If younger colleagues get higher wages than the older, the older employees would possibly boycott the carrying out of high-quality work; especially when the older colleague has received a pay cut.”

In the last part of the focus group interviews the target was to discuss the flexible payment in the German building trade so that the researcher obtained findings to the third research question: How could a flexible payment system be established in order to realise pay adjustments for the team members? These are the findings which have emerged from the focus group interviews:

Data FG 3.1: 4 out of 7 of the participants mentioned ideas related to pay flexibility. There should be the “principle: the same wage for the same work.” Furthermore it should be paid for “additional allowances for special tasks, for example as a foreman – that is fair.”

“Actually the younger should get double pay and later - towards the end of his professional life - only the half wage.” One participant indicated that a wage cut would be acceptable if the “decreasing performance can be really measurable” but the question is which “performance is meant at all”. He said that “measurement is difficult”. Another agreed by saying that “wage cuts are only acceptable if the work and the performance are measurable but the tasks in the building trade are too different to measure fairly”. However, none of them had a problem with wage increases.

Data FG 3.2: 3 out of 7 of the participants rejected any performance-based pay in the German building trade. The “tasks in the building trade are too different to realise performance-based pay.” Another participant said that “no worker would accept to be paid based on performance because the work in the building trade does not allow this.” The requirements are not available. The third participant mentioned that the “motivation in the team decreases

if one of the team members earns more than the other” when wages are paid based on performance.

Data FG 3.3: 2 out of 7 of the participants would not adapt the pay when ageing because “everyone has adapted his standard of living to the level of the wage he gets”. To the question whether it would be unfair to pay the same wage when performance decrease one of the participants answered: “It is perhaps unfair, but there is no realistic transformation”.

Data FG 3.4: 2 out of 7 of the participants discussed the importance of the team composition in combination with the achievement of the team objectives. They would like to “have a voice in the process of team composition”. Also they “manage themselves in the team on the construction site” so that they can “provide the best possible result”.

Data FG 3.5: 2 out of 7 of the participants mentioned their “early exercises before work for staying agile“, which is important in the building sector, because their “bones suffer extremely there“.

The following table 10 shows a summary of the data which relates to the each of the three research questions:

<p>1. research question: What are the effects of changing work team demographic composition on team performance?</p>
<p>The team composition:</p> <ul style="list-style-type: none"> - is based on the knowledge, skills and behaviour of each team member - is responsible for the team performance and team result - needs older team members for performance - needs also younger workers in the team (problem of offspring in the trade)
<p>The direction of performance change depends on the type of work (positive or negative):</p> <ul style="list-style-type: none"> - Physical performance decreases when ageing - Work experience can cancel the reduction of physical performance - The performance does not decrease if the tasks need mostly mental or organisational skills
<p>The assignment of the tasks in the team is carried out according to the qualifications</p>
<p>The curiosity of applying new technologies diminishes</p>
<p>2. research question: What are the interrelations between the effects of team performance on related pay?</p>
<p>No understanding to reduce the wage “due to physical weaknesses”</p>
<p>No reduction of pay due to the shortage of skilled workers</p>
<p>Seniority-based pay is defended</p>
<p>3. research question: How could a flexible payment system be established in order to realise pay adjustments for the team members?</p>
<p>Rejection of performance-based pay</p>
<p>Mention of a lot of ideas to realise pay flexibility by alternative ways to adapt pay to changing performance</p>
<p>Fair pay and measurability so that the motivation in the team does not decrease</p>
<p>Supporting the maintenance of workability</p>
<p>Workers have a voice in the process of team composition to reduce the disadvantages of the increased average age</p>

Table 10: Data from the focus groups related to the three research questions

4.3 Further data interpretation

This section deals with the fourth phase of the five-phase cycle which is presented in figure 17 on page 115. In order to go through this phase, preliminary work must be done: After the first phase of the five-phase cycle for analysing qualitative data – the compiling – the second phase of analysis – the disassembling – follows (Meuser and Nagel 1991). The compiled data are fragmented. Then the interview content is reproduced in the words of the researcher and related to a topic (Mayer 2009). Thus, every statement is assigned certain generic terms. This step is followed by the phase of reassembling which means to arrange the texts according to subjects and compared thematically. During the analysis process the phases of disassembling and reassembling are repeated a few times in different ways. The result is a development of captions in preparation for the next step of analysis. The reassembled data is used for creating the findings. In this step similarities and differences are formulated. In doing that, the same or opposite directions are recognized. The first part of interpretation is done by formulating headings for each reassembled data group. The aim is to receive systematizations, typings, patterns and generalizations by topical comparison and conceptualisation (Meuser & Nagel 1991).

Based on the data collection presented in section 4.2 the phase of interpreting is continued by integrating findings of other theoretical and empirical studies into the further interpretation of their own empirical work. In this process the exclusive analysis level of raw data is no longer pursued.

4.3.1 Cross-case matrix of different performance shapes

Performance can be measured in different forms. In the expert interviews different shapes of performance were mentioned and evaluated:

- speed of work
- time in finding solutions
- quantity of work
- quality of work

The questions referred to the change of age, for example: What is the average speed of work? Does it change when the average age increases in the team? If yes, how does it change?

In the consideration of each shape different ratings are revealed from the interviews:

8 out of 13 of the participants thought that the speed of work decreases if the average age in the work teams increases. The five others thought that the speed of work develops differently. Depending on the type of work the speed of work can increase or decrease. In the discussions on this topic the decision-makers mentioned the following:

- “Careful work in the heating engineering sometimes takes longer ... that is better than to work fast and without care.”
- “The technical requirements are growing really rapidly. Technical innovations are coming faster and faster. We are always told that every technique becomes easier, but in reality everything becomes more complicated. With regard to these technical developments an ageing person has more problems than a younger person from a certain point in time. I now note this partially to myself.”
- “The younger ones are faster, sometimes a bit more robust and resilient in our profession. This can be seen, for example, in the execution of plumbing or standing seam techniques.”
- “It may be that the over 50-year-old workers are still doing the jobs carefully, but perhaps not at the usual work speed.”
- “I had the following discussion: An older and a younger bricklayer worked together. The string adjusting the bricks constantly showed the younger one that he worked much faster than his older colleague. Then he came to me and asked for a higher wage. I pointed out to him that he also gets older and then has to rely on his younger colleagues. In the trade there is only a team which counts.”
- “With younger and more powerful workers, we may be faster in scaffolding, but we have other disadvantages, which we balance out by the more experienced people, although these may be a bit slower. We can also compensate for some disadvantages with our equipment. But it is not about the speed. Speed also means that the error rate increases. Do not forget that the accident risk increases. And I eliminate the hazard by instructing the team to reach the framework I have set, and not more. That's okay.”
- "We have an older employee in the team who is 57 years old and has problems with his lungs. I always have to provide a nimble colleague in construction who can

support his performance. From the technical knowledge, the older worker is great, but of course, he is physically not so fit. But together, they have the right speed."

- "When assessing the speed of work it depends on the type of work. If a small bathroom has to be made, it is probably the same whether an older or younger worker is in charge because there are no long ways or no heavy things to be carried."
- "If a roof had to be welded in the old days with roofing welts, it was really hard work. Today welts made of plastic are used which is much easier. Then an older worker can be just as fast as the younger."

A majority (7 out of 13 of the participants) indicated that the time of finding solutions decreases if the average age increases in a team. Three participants said that the time taken finding a solution increases and another three that there is no change. Regarding the question of the impact of a higher average age the following statements were given by the decision-makers:

- "A clear yes – they are faster. Here is an example: we had an order in the south of Germany. The colleagues had a problem to solve. They called me immediately. And because the older worker is more experienced, we could discuss it at a highly qualified level and found a quick solution on the phone."
- "The older colleagues approach the tasks more deliberately."
- "On average, older workers with more experience have a higher performance result than if I send only younger people."
- "When we wanted to install an electronic assembly, there was a laptop at each workstation, and the older one said to the younger colleague: 'You can surely use this item, can't you?' With all the electronics around, the older worker could not use his screwdriver and the tongs any more."
- In Scaffolding: "Finding solutions is already done by my work preparation. When the workers come to the construction site they know all the basic data. But there are not many parameters. They do not have to discuss further or to 'toss for' something. All work to be done is prepared. When they arrive at the construction site, they start working immediately."
- "If there is a problem on the construction site or with a plumbing order, a solution has to be found for the problem. And if I have the older people there on average, then the older one can - due to his longer professional activity – fall back upon his larger work

experience; he can 'open more drawers' (*author's note: of expertise*) than his younger colleague, in the sense of: 'So I did it last time ...'. He just has more experience."

In the consideration of the quantity of work nearly half of the participants (6 out of 13) thought that the quantity decreases. Further five participants answered that the quantity is different if the average age in the team increases. Two said that there is no change in quantity of work. There are some of their statements:

- "In a restoration a lot of dismantling has to be done. The worker must chisel a lot. The old boilers must be cut out. The old bathrooms have to be rebuilt. The work quantity of the elderly will be clearly reduced."
- From heating engineering: "If an older employee is physically not as fit - as I say - a 25-year-old worker, then I do not get the quantity of work in the sense of a 25-year-old worker who can work hard. If I have a 35-year-old worker he has - of course - already more knowledge. It is difficult to say, but as a rule it gets slower with workers who are older. But that is a fluent process. They are not ten years older one day to the next, but I will probably composite the team differently in ten years with which I am still working today, because there are also other workers employed."
- "I would sort the workers slightly differently to the orders, but this depends on the type of order. If, for example, a ladder has to be used at a height of ten meters in front of a house to install a lamp there, then I would possibly send the older employee in addition because he knows how to execute the order, but the younger worker does the physically heavier type of work. They organize that on site by themselves."
- Answer to the question of the impact on the work quantity: "No. We are no longer in the Stone Age. We do not have to push pipes anymore. The materials have changed, the tools have changed. I do not take a heavy wooden plate today and carry it through the room, because I put it on a cart. This is the way we have been taught at the master school, and also by the employer's mutual insurance association: to use as many tools as possible and to make it as easy as possible for yourself. If one of my workers is working on the ground and screwing something up there, I say: 'Put it on a workbench, on a cart, pump up the forklift truck, or whatever so that you are working in the standing position - do it easily as possible'. This is also a preventive measure so that the workers do not 'suffer early'".

Quality of work is also differently shaped: While 6 out of 13 of the participants indicated that quality of work increases, six others said that there is no change in the quality of work. One participant mentioned that the development of quality is different if the average age of a work team increases. The decision-makers stated the following:

- "The older workers work cleaner and more accomplished. This is especially important when it comes to fine tasks, for example in the bathroom."
- "The older ones make fewer mistakes in the execution of the customer orders."
- "The quality of work increases. But there is also a turning point. If a worker reaches the age of 60 years old, then working with electronics is hard for him. He does not want to do it anymore. Then I send a younger one, who programmes the heating."
- "Some customer orders are not carried out by the young journeymen as carefully as by the experienced older staff. "
- "I divide the older throughout different construction sites, which are paid well and adequately. Then I am definitely on the safe side. I put quality more in the foreground than quantity. This is what the customers pay for in the end. Whether a bathroom costs 3.000 Euros or 3.500 Euros, most private customers do not really care. The main thing is that the result fits in the end."
- "If I exert too much pressure on the team, the quality suffers. Then quantity is only made, but - as we said in the past 'quantity without quality' - that is simply bad. But when the average age increases, the quality is likely to increase because I have more knowledge in the team. But the efficiency and the quantity decrease."
- "With the increasing average age, the quality is becoming better, because the elderly have a different view of the orders. The younger ones would rather say: 'Well, okay, then we will just finish it,' while the older one would say: 'Ok, the boss will say I am sitting for two hours too long on the order. But the order is properly finished.'"

In the discussions the researcher asked the decision-makers how cooperation, team spirit and customer satisfaction are influenced if the average age in the work teams increases. These factors are associated with the team performance and the team success as a whole.

In the consideration of each factor different ratings are revealed from the interviews:

6 out of 13 of the participants thought that cooperation does not change if the average age in the work teams increases. The seven others split up into the other categories: three of them

thought that cooperation decreases, two of them thought that cooperation increases and another two participants thought that it develops differently. The following statements were given by the decision-makers:

- "It has a very good effect on teamwork when you have a broad spectrum of employees in all age groups. There is a Whats app group with old and young, where they exchange. If someone has a problem with the customer, he asks the group."
- "I see no problem in working together if there is a higher average age in the teams."
- "With a different team composition in our scaffolding business, for the team members it is hard to cope with it. For example, this can mean a company car replacement. Some could no longer go with their long-established company car and would have to work in another team. But I can understand that because the workers have their T-shirts, their jackets, gloves and possibly their boots in it. But in the long run I will sometimes be forced to do a change in the team composition."
- "The cooperation does not depend on the increasing age average, but on the general working atmosphere in the organisation. If this is good, then the cooperation is also good, if everyone understands each other well and no hierarchy is present. It is difficult if I as a boss single out some workers, then it is always difficult."
- "I see no difficulty in the cooperation of several generations. I have the trainee, who starts at 16 years of age, I have the one who finished his apprenticeship at mid-25 and then I have the 55-year-old worker. The collaboration is the same as if the 55-year-old is now only 42 years old. If I go through the workshop and imagine just a bit: There might be the idea that the time span between these three people is so big that they cannot work together because they have grown up differently. But I think just the opposite and that it was much worse before, twenty or twenty-five years ago."

The effects of increasing average age on team spirit are also different and are split up into all four categories: 5 participants - no change, 4 participants: increase of team spirit, 2 participants: decrease of team spirit and 2: different effects on team spirit. These are the statements given in the interviews by the decision-makers:

- "If the team works, then someone and sometimes another one has to 'bend down deeper'. They do not talk about it. But if someone enters into the team, who takes simply the order slip away and gives the work instructions to the others, the team spirit gets worse. There is already a hierarchy in the team that must be adhered to,

which is also a bit influenced by the age structure. If the hierarchy is well-lived, the physical performance as a whole also fits. The workers then say: 'it's not bad that I sometimes sweat a little more than my colleague.'

- "If there is someone in the team who works so slowly so that 'you can mend his pants while walking', then everyone is dissatisfied. The daily routine is slowed down. But after one or two times the situation will escalate. The team note itself that it can no longer manage the daily routine. But this does not depend on age."
- "The older the workers get, the more special they become. For example, an older worker who is now 56 years old has problems when I give him two construction sites a day. I am talking about smaller construction sites, such as Grandma's and Grandpa's house, where ten tiles must be replaced. The worker gets nervous in the morning. With three construction sites he is completely overwhelmed. Then I have to go to the construction site in the afternoon and give him the next instructions. He is just afraid that he cannot finish his work. "
- "Team spirit is our business. This is the issue of the boss. I need to bring the spirit to the team in the morning. It does not matter how old the 'troop' is. "
- "We feel like a large family. We know all of our colleagues better than the wife at home because we work eight hours together every day. I think the togetherness welds more together. Age does not matter."

In the consideration of customer satisfaction 5 out of 13 of the participants said that the customer satisfaction increases. 5 out of 13 participants mentioned different effects which mean both increase and decrease of customer satisfaction. 3 out of 13 of the participants thought that there is no change in customer satisfaction if the average age in the work teams increase. Here are some of their comments:

- "The older colleagues have a better way of dealing with the customer."
- "A worker who is older and more experienced can deal a bit more strongly with the customer. But it is different. This cannot be generalised. There are customers who are happy when they always get the same older mechanic. However, other customers say that he talked too much. Then we send a younger one."
- "An older customer would not like to get an 18-year-old 'whippersnapper'. He wants to work with a 58-year-old mechanic, who may be a bit slower. In contrast, a 20-year-

old customer may have a problem with a 58-year-old worker with whom the screwdriver falls down and where everything takes a bit longer.”

- “I appreciate that the customer satisfaction would rise when I have more older team members. A customer expects more quality work by an older employee than a younger one who has just finished his apprenticeship.”
- "I think the customer satisfaction remains on average the same. This depends on the skills and expertise of the installers. It can also change. The customers notice when orders just take too long. For example, the older colleague who has problems with his lungs: If he goes down to the car to get new material and simply needs too long to go upstairs, then the customer says that the working hours have become too much. ‘He is a very kind, nice man, but I do not pay for the slow work’."
- “An older worker suggests more experience to the customer that he can work better than a younger colleague. But we also had the other way, when we talk about light technology. The customer rather expects a younger worker to deal with electronics than an older one. If an older worker installs electronics the customer is more skeptical. The change in customer satisfaction: yes and no or perhaps.”

In the focus groups, these selected shapes of performance were not explicitly addressed.

Some participants made statements on these during the discussions. Here are some quotes:

- "There are tasks in the roofing trade where I cannot keep up with the youth anymore because the young people simply do the work and thus perform much more. But whether the quality is the same that is just another thing."
- "You do not necessarily become faster, when you get older, in terms of quantity. But in my opinion, the efficiency is higher because there is not so much need to think about how to do it and a young person must think about it."
- "For us older people, there are automatic mechanisms running all by themselves. That is why we are not necessarily slower than the young people because we do not have to think much about how we do it."
- "An older worker performs tasks faster, because he does not have to think so much. He knows how the work processes are. But he lets up when the work is physically demanding and his work power is simply no longer sufficient. Or if he already has problems with the knees or with the back."

- "I ask two colleagues (*author's note: a younger and an older*) to cover a roof gutter. Then the younger one will stay there, scratch his head and perhaps will need three or four times more than an experienced person who does not need much time for the solution."
- "The older colleague knows the tricks and techniques that he has developed over time. He works out of his stomach. I mean that the workflow becomes more efficient with increasing age. So he works faster."
- "There are also differences between the younger journeymen related to what they can perform, I mean from the head. Some have absolutely no imagination about what they have to do when they come to a construction site. For example, we have to roof a garden house. Then they bring the gas bottle, but the burner remains in the car."
- "The older colleague finds the error faster. Then he can order the spare part more quickly."
- "The quantity of work of the older people decreases definitely when they have to drag the radiators, to prise open the walls or to lay cables."

The following table 11 shows the shapes mentioned during the interviews and the answers of the experts and workers.

	expert interviews						
SHAPES OF PERFORMANCE	(1)	(2)	(3)	(4)	(5)	(6)	(7)
speed of work	decrease	decrease	decrease	decrease	different	decrease	different
time in finding solutions	decrease	decrease	increase	no change	increase	decrease	decrease
quantity of work	decrease	decrease	different	different	different	decrease	no change
quality of work	no change	increase	different	no change	increase	increase	no change
cooperation	no change	no change	different	increase	no change	different	decrease
team spirit	no change	increase	different	increase	no change	different	increase
customer satisfaction	increase	different	increase	different	increase	no change	no change

	expert interviews						focus groups
SHAPES OF PERFORMANCE	(8)	(9)	(10)	(11)	(12)	(13)	all
speed of work	decrease	different	decrease	decrease	different	different	different
time in finding solutions	no change	increase	no change	decrease	decrease	decrease	increase
quantity of work	decrease	different	decrease	decrease	different	no change	decrease or different
quality of work	no change	increase	no change	no change	increase	increase	increase
cooperation	decrease	no change	no change	decrease	no change	increase	-
team spirit	decrease	no change	no change	decrease	no change	increase	-
customer satisfaction	increase	different	different	increase	different	no change	-

Table 11: Overview of the direction of change related to a higher average age

According to the experts and the workers in the focus groups these selected shapes of performance develop differently regarding the increasing age of the workers. The effects on the team performance triggered by the changing work team demographic composition are

different: The direction of the shapes increases and/or decreases or there is no change in the direction if the average age in the work teams increases. In the focus groups the opinion is more uniform: while the quality of the work increases, the quantity of work decreases with increasing age but only if the tasks stress physically. Solutions are found faster with increasing age.

Furthermore, there are other factors which are related to team performance and which are subject to change if the average age in the work teams increases. In the expert interviews these factors were in addition discussed:

- level of sickness
- handling / openness to changed technical requirements
- willingness to learn new technologies
- enthusiasm for new trends
- willingness to do overtime
- organisation of work
- resilience
- capacity

The factors which were added by the experts during the interviews show the following results:

3 out of 13 of the participants indicated that the level of sickness increases if the average age increases in the work teams of the German building trade. One participant said that the level of sickness can be different. When talking about the handling and openness to changed technical requirements or the willingness to learn new technologies 3 out of 13 of the participants mentioned that the development of these factors will get worse. Older workers close one's mind to new workflows and new technologies more than younger workers. The enthusiasm declines. 2 out of 13 of the participants said that their older workers do not like to do overtime anymore. They "do not need any additional money anymore which arises from overtime work". Another participant said exactly the opposite: His older workers "are ready again to do overtime work because their children are grown up and now they have time to do it". One participant mentioned that the older workers have a more efficient organisation of work which results in a higher performance. Two other participants indicated that as the

resilience and the capacity of his older workers decreases the team performance decreases in total.

4.3.2 Cross-case analysis

Based on the data collection from the experts and focus group interviews, the data obtained are now further analyzed and interpreted by the researcher. The following aspects must be taken into account when considering whether changes in demographic team composition have effects on team performance.

The customer order is at the centre of decision making when composing the teams. The decision-makers who are responsible for the process of the team composition know exactly the procedures and the necessary tasks which have to be done on the construction site. In this process the assessment of the proportion of physical work is just as crucial as the proportion of organisational-mental work. This is important to compose the teams optimally. As they also have knowledge about the qualifications and skills of each worker, they can perform the optimal matching between customer order and team members. Another aspect is the cooperation among each member in the team. The decision-maker considers who can work with whom because teamwork is also crucial for the work result.

The jobs in the building trade include both physical-manual and organisational-mental tasks. The respective proportions vary from order to order. In some building trades the physical-manual work is even more pronounced than in other building trade areas. Thus the trade of the roofing, bricklaying or scaffolding is more strongly characterized by physically demanding work than the job of an electrician or plumber. The daily business is marked by the fact that the younger workers perform more manual work, whereas the older workers carry out the less physically challenging work. Both the decision-makers as well as the participants of the focus groups associated work experience with a higher age. These factors are respected and accepted by both sides - the younger and the elderly workers. A success factor for performance is therefore the optimal team composition, which can vary from order to order. It is an interaction between the personal skills of the workers, the order structure and also the customer who assigns the order. As the team members are frequently in customer contact, this influence factor is also relevant to the order result.

Thus, mixed-aged teams are certainly a success factor in the building trade sector.

In addition, no systematic work preparation or a written analysis of the partial tasks takes place. The calculation of the offers is based on the experience of the decision-makers. A mostly hands-on method is inaccurate and superficial.

A higher average age in work teams will change the team composition. Physically demanding work is reduced by the use of further technical auxiliary means. However, parts of physical work will still be preserved. The decision-makers and the workers assume if the structure of the work remains the same as today while the average age increases the older and therefore more experienced workers perform efficiently and effectively as so far by means of an improved organisation of their work. The decision-makers then gradually change the team composition so that the work results follow the calculated amount of work. If this cannot be achieved, more working time is required for partial tasks - the older worker needs longer for a specific task or two workers do this specific task. The work result is reached but the effort for it has increased. Another alternative is rejecting the order if the decision-maker knows that his organisation is not able to carry out the order. Overall the team performance is decided by the team composition. Both decision-makers and focus group participants agree that the team composition is an important success factor. The team sent to the construction site must have all skills necessary to achieve the work result, whether the average age is higher or not. The goal is always to accomplish the work result with the best possible input of human resources. The decision-maker also pays attention to the fact that the older worker can avoid physically more demanding tasks. A permanent physical loading can lead to a higher rate of sick leave which is not desired.

Another aspect is the organisational hierarchy created by the team itself. It is characterized by professional education and work experience and is linked to the individual's age. Usually the older colleagues with more work experience are in the higher levels of this hierarchy. The task assignment takes place through this hierarchy which is implicitly available in the team on the construction site. If a foreman is named, he or she decides on the organisation in the team.

Physical performance decreases with age. The professional experience can compensate the decreasing physical performance to a certain extent. However, this has limitations, as it emerged from the statements of the participants. They would like to have a reduction in the retirement age or, if possible in the specific building trade, go on with physically easier tasks

(like customer service, gardening, repair work) or leave their profession completely to go to another business (for example in the public service). If the organisation is flexible with regard to the order and workers' structure so that the decision-maker can vary the team composition depending on the order, the team performance can be maintained even if the average age increases. However, the decision-maker will have problems to maintain this flexibility of human-resource allocation due to the skills shortage on the labour market and the lack of young people in the working population. He is forced to invest in counteractive measures to maintain his profit. The counteractive measures mentioned by the participants are to use further technical aids, lighter or easier processing materials or to invest in workplace health promotion. The employment of refugees who immigrate to Germany has also been posited as an alternative.

The changed work team demographic composition has effects on team performance:

- If the customer order consists of increased physical activities, the work results are achieved with increased operating expenses because a team with a higher average age generally requires longer for the physical activities than at an average younger team.
- If the customer order consists primarily of activities that require work experience for organisational and mental tasks and less of work with physical tasks, then the work result is generally achieved faster with less operating expenses when the average age increases in the team.
- As the jobs in the building trade are always a mixture of tasks which need physical efforts and work experience, the teams have to be composed in a way that correspond to the order structure. Mixed-aged teams are ideal because the team members can do both the physically challenging tasks and the organisational-mental tasks in which professional experience is necessary. Starting from the respective focus the decision-makers who are responsible for the team composition must mix the team accordingly with more older or more younger workers.

In the following, the interrelations between the effects of the changing work team demographic composition on the team performance and the related pay are analyzed and interpreted.

As the building trade is tariff-bounded to collective bargaining agreements, wages cannot be freely negotiated. They are dependent on regulations of collective bargaining

agreements, which are partly generally binding or subject to a minimum wage. The tariff-bounded pay is based on the assigned tariff wage grade. This assigned tariff wage grade depends on the professional education of the job-holder and his/her job description. A reference to performance is not available. Payment is made on the basis of contractually agreed working hours. In any of the organisations integrated in this research the teams themselves were rewarded. Individual pay was usual. For both contract partners the fact was clear that a classification into the corresponding tariff wage grade has to be performed. A discussion may only take place about the level within the tariff wage grade. The collective bargaining agreement is considered irrefutable by the decision-makers. A collective bargaining agreement clause, which for example allows company-specific changes would also only be used if this were to be a common practice in the relevant building trade. The researcher does not see that these decision-makers behave like pioneers who try new ways of cooperation. The fear of losing a well qualified and experienced skilled worker to a competitor prevents new forms of agreement in pay flexibility. Pay flexibility does not mean a wage reduction while maintaining performance, but it means an increase in the design options for pay in better coordination with the business needs.

Wage flexibility would be possible by using piece-rated or performance-based pay but these types of pay are often not realized in organisations of the German building trade because most tasks are not suitable for them. As there is a variety of different tasks and a high variance in each order which is customer-specific and individual, the definition of a calculation basis for these types of pay flexibility is extensive. The statement could be possibly unclear and insufficiently comprehensible for the worker. The cost of the wage calculation could be correspondingly high and no longer be economically related to the effects of piece-rated or performance-based pay.

Wage adjustments upwards, if the performance increases, are not problematic. If a wage increase is realised, the decision-makers usually give an additional pay per hour. Frequently, the decision-maker rejects an extraordinary payment by referring to the collective bargaining agreement. This ensures the principle of "equal pay for equal work" (quotation of a participant). It is uncertain whether all team members consider this principle to be fair. Voluntary and one-off bonuses are also spread between the workers which are often based on the overall profit of the organisation. They are usually paid once a year.

In the case of wage adjustments downwards for underachievement, considerable problems are seen by both the decision-makers and the workers. For the most interviewed decision-makers, wage reduction is out of the question. They reject this for various reasons: lack of legal or collective bargaining possibilities, inhibition of conflicts, avoidance of trouble and demotivation, or moral and social reasons. They acknowledge that they will only act if there are significant and permanent reductions in performance. Before a wage adjustment, several appraisal interviews with the worker will usually take place in which pressure is exerted on the worker to increase performance. If the performance reduction is significant in a way that it can no longer be compensated for or otherwise solved by the decision-maker, the decision-maker prefers to terminate the employment contract with the worker. A more conflict-free alternative of pay reductions is to charge future wage increases: Already paid additional pay per hour is reduced within the wage rise of the collective bargaining agreement so that the worker's pay is not increased in total. The pay height stagnates.

Seniority-based pay is common in the building trade and is accepted by both contracting parties. For this additional reason an interrelation between performance and pay is not pronounced.

Individual performance and pay are linked to the individual's motivation. The decision-makers see a direct link between these two factors. In order to attain performance, the decision-makers try to agree to a wage which the worker is satisfied with. Generally, the decision-makers avoid a discussion with their employees about pay, neither an increase nor a reduction. Regular appraisal interviews do not take place and are not common. Trouble in the team is avoided by the decision-makers. They assume that individual wage adjustments will be discussed in the organisation within a short time by other workers. Demotivation as a result of wage adjustments is counterproductive, as well as the time spent by the workers to talk about wage changes among others instead of dealing with the actual professional tasks. As in most cases the decision-makers do not work on the construction sites, they lose the influence over demotivated or distracted workers on the construction site. The decision-makers cannot - or only limited way - affect the opinion and behavior of the workers in the team. Beside the spread of demotivation and trouble in the team, there is also the fear that performance will be restrained after a change in pay has been carried out. Thus there is an interaction between a motivating or demotivating wage to the performance of the worker. Workers who are satisfied with their wages

provide the desired performance, while workers who are rather dissatisfied with their pay may restrain performance when they feel unfairly paid. Vice versa, however, the participants see the need to adjust pay to a changed performance, but the implementation is rejected for reasons of decreasing motivation and a sense of justice.

In addition, a long-term cooperation between the decision-maker and a worker prevents an interaction between performance and pay. The personal relationship in small organisations is human. Often personal and family circumstances are known to each other. A wage adjustment in the case of decreasing performance is not carried out because of "moral reasons" (quote of a participant). The researcher had the impression that the decision-makers shy away from such negative conversations and therefore accept the negative consequences of a performance reduction by renouncing profit.

There are interrelationships between the effects of changing work team demographic composition on team performance and the related pay. These are the following:

- Team members are paid on an individual basis, not on the basis of team performance. The principle of seniority-based pay is distinctive in the German building trade. In relation to this aspect, changes of team performance have no direct interrelation to the payment of the individual.
- Increases in the performance of the individual are often rewarded with an extra pay above the rate agreed or occasionally with a one-off bonus payment.
- Performance reductions of the individual are very often tolerated and very rarely result in a pay cut. Pay cuts are generally unacceptable for workers.
- Communication about changed performance in connection with the pay takes place only minimally.
- The possibilities offered by the collective bargaining agreements to pay on performance were not used. Moreover, the collective bargaining agreement prevents wage flexibility.
- Motivation is an element to connect team performance with pay. The payment is a satisfaction or dissatisfaction factor with an interrelation to the individual performance and therefore to the team performance.
- Personal relationships between decision-makers and workers have an influence on the interrelation between performance and pay.

As long as the collective bargaining agreements in force offer opportunities for performance-based pay but without an application by the decision-makers, pay flexibility is currently only implemented to a very limited extent on the basis of the collective bargaining agreements. The decision-makers get by with one-off bonus payments, extra payments, delivery of vouchers, attendance bonuses, reduction of company benefits and, in rare cases, a reduction in pay.

The external labour market conditions also have influences on pay flexibility. The current labour market in the German building trade is characterized by a lack of skilled labour and a lack of junior staff while the trade has a high level of incoming orders at the same time. The working conditions in the building trade do not seem as attractive to the young people as those of the industry. For the researcher, the impression emerged that, on the other hand, no special efforts were made by the decision-makers to increase the attractiveness of the trade to the next generation in order to win them over. The increased advertising activities undertaken by associations of the trades in the recent years, for example the website of “handwerk.de”, which promotes the apprenticeship, or the participation in regional job fairs, are not enough to close the gap.

The organisations are in a dilemma between the skills shortage and the established conditions of the collective bargaining agreements. These two external factors cannot be influenced by the decision-makers. They significantly limit pay flexibility. Deviations from the usual payment modalities can lead to workers being dissatisfied and leaving the organisation. For the decision-maker, pay flexibility is a competitive disadvantage.

Pay flexibility is generally desired by the decision-makers. Pay dynamics has an impact on their profit. They advocate a model of flexibility that fulfils the following minimum criteria:

- pay flexibility as part of the collective bargaining agreements
- basis is minimum wage
- measurable, uncomplicated, clear and equitable
- low administrative and payroll expenses
- application without negative discussions with the workers
- no loss of motivation in the team
- performance and pay are in an economic relationship

- aim of increasing performance with a guaranteed quality standard

On the other hand, pay flexibility is critically viewed or rejected by the workers. The workers advocate a steady positive development of their wages. They said that fluctuating wages could not be combined with their established standard of living. For some participants stagnation in the development of their wages is conceivable if the performance decreases permanently. The minimum criteria for pay flexibility are justice and measurability. The researcher noticed that the workers were aware that they are in a comfortable situation. They know about the dilemma in which the decision-makers of the building trade are stuck and they know about their importance on the labour market. The market position of the workers is positive. The current labour market is characterized by a higher level of labour supply by the organisations, which cannot be covered by the labour demand of the workers. This is another reason for the restraint on pay flexibility.

As pay flexibility cannot be directly implemented optimally by the decision-makers, an indirect possibility of pay flexibility is to adjust the selling prices according to the performance of the workers. In case of a reduction in performance, this means that selling prices must increase. But there is the risk that the selling prices will no longer be competitive. A performance increase is usually not included in the selling price, but leads to an increase in the profit of the decision-maker, if the market price allows this. A change in the calculation of selling prices means the inclusion of a third party, which is the customer, when considering pay flexibility.

In summary, the two contracting parties want to optimize their professional situation. As the labour market currently offers advantages for the worker, the worker is in a more favourable negotiating position. Because the decision-makers and workers work closely together in the small organisations of the building trade, a balanced and stress-free working environment between the two contract parties is important. Although the decision-makers want to keep the wage dynamic and flexible, they are in a more disadvantageous situation due to the labour market situation. It is particularly difficult for them to adjust the wages, especially in cases of reduced performance. The decision-makers avoid direct pay flexibility and apply indirect possibilities to keep their profit. Likewise, the phenomenon is observed that the decision-makers remain in their negative situation and thus accept it. Their proposals and ideas for increased pay flexibility are therefore small.

The following figure 18 gives an overview of the recent main aspects of analysis raised from the in-depth expert interviews and focus group interviews with the workers done in the case organisations.

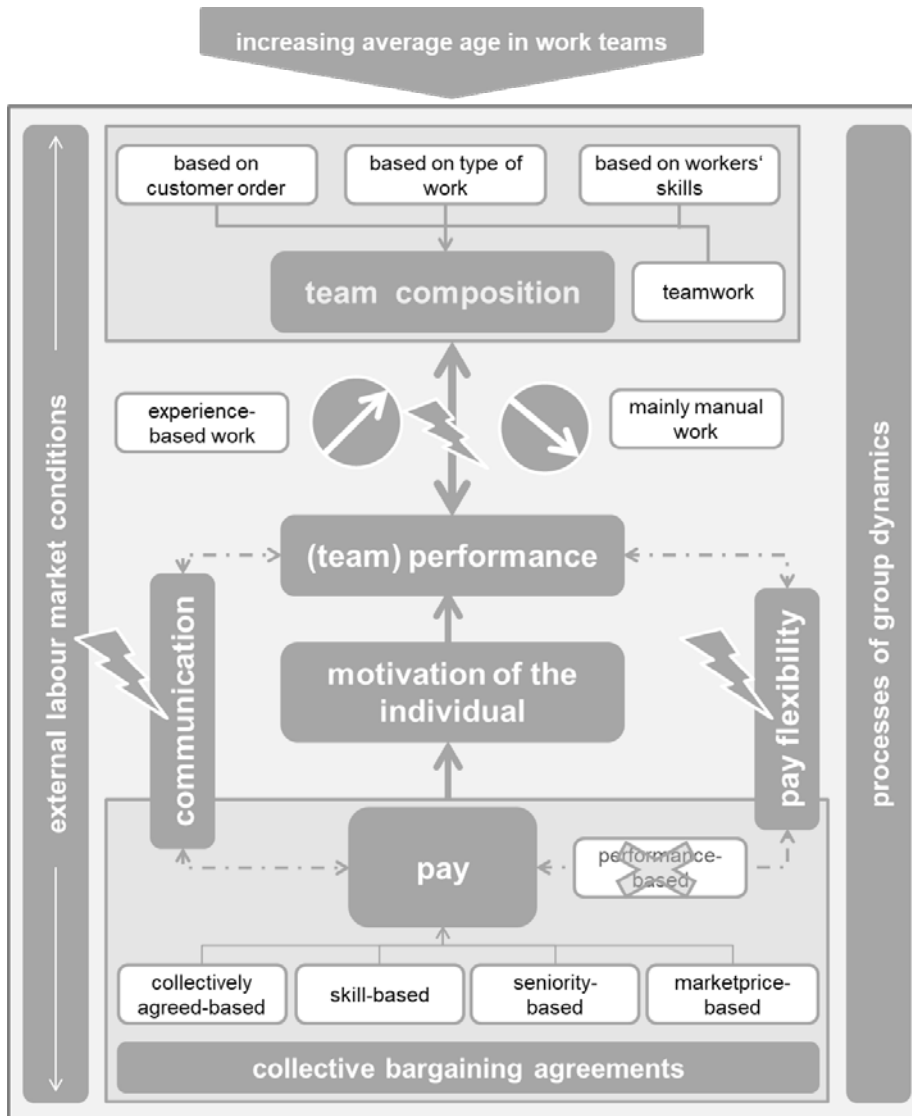


Figure 18: Relationships between the main aspects of analysis

From the empirical research results a very similar picture of the relationships between ageing and pay as in the literature review, shown in figure 15 (page 77). The main line, which runs in the middle of figure 18, shows the relationship between increasing average age in workteams and pay. On the one hand, this relationship is due to the changed team composition, which has an effect on performance, and on the other hand, to pay via the motivation of the individual with an influence on performance. Team composition is based on different aspects carried out by the decision-makers. Pay has different characteristics based on the collective bargaining agreements. A tension field - represented by a flash of lightning -

exists in the relationship of team composition and performance, because the classification of experience-based and manual work becomes more difficult with a higher average age in the work teams. Other points of conflict (represented also by flashes of lightning) are the communication in this thematic context, which is low to none at all in the organisations of the German building trade, and the topic of the pay flexibility, because there are different preferences between the two groups of decision-makers and workers. The interrelations are accompanied by conditions of the external labour market and of processes of group dynamics. Although the starting point is a higher average age in the work teams, it should be noted that pay and pay flexibility are attributed to the individual rather than to the team. The effects of the interrelation between performance and pay are to be considered individually.

4.3.3 Labour market conditions influences on pay flexibility

The following explanations on pay flexibility are based on a combination of the findings from the literature review and the data analysis and interpretation of the case studies. Based on the findings of the literature described in 2., and the data from the interviews described in section 4., it is assumed that a higher average age affects performance. The effects are both positive and negative with respect to performance. Further, the behaviour shown in the different situations results from the findings on the topic of pay dynamic, which is shown in section 2.4.7, and from the responses of the participants in the expert interviews and focus groups.

Pay flexibility is not subject to a fixed system which is based in a law or in a collective bargaining agreement. Frame conditions like minimum wage or guaranteed wages are fixed in laws or agreements. The employment contract is also a basis of frame conditions. At the time the contract was concluded certain conditions were available on which the contract had been concluded. Pay flexibility is needed if the agreed terms of the employment contract can no longer be adhered to by one of contractual partners.

This may be given when the worker gets older and his/her physical performance diminishes. The worker tries to balance his/her physical deficits with his/her professional experience. If his/her assigned tasks are suitable, he/she realises it. If, however, his/her tasks consist mainly of manual work, his performance will slow down in the long term. In terms of employment,

he/she can no longer provide his/her owed labour work in the full extent owned to the other contractual partner, his/her employer. In the case of an exclusive consideration of the contract services the wage agreed before the performance reduction is therefore no longer justified from the economic point of view.

There are two perspectives in this situation: the one of the decision-maker and the other of the workers. Before the two perspectives are explained in detail, the current market conditions are presented. The German building trade is currently in a good economic position. The demand for their services is high and the needs cannot be fulfilled promptly by the organisations.

Furthermore, the market is characterized by a skills shortage of labour force. A sufficient availability of skilled workers in the building trade is currently not available. The organisations offer more labour on the labour market than can be covered by the workers. From the general worker's point of view, this offer is an advantageous situation. The individual worker, who loses his efficiency and performs less, is also member of this labour market. The worker can benefit from the advantageous situation on the labour market. With regard to pay flexibility, which can mean a wage reduction for him/her, he/she behaves passively and will not initiate a wage adjustment by himself/herself. As long as no pressure is made by the other contract partner, he/she will continue to maximize his/her profit which means to go on working on a wage level justified for higher performance. The behaviour of the decision-maker is also adapted to the conditions of the labour market. He/she knows that he/she can hire a new worker from the labour market only with difficulties because of the lack of skilled workers on the labour market. He/she behaves with caution and restraint. As he/she knows his/her disadvantageous situation, their behavior is self-conscious particularly when they talk with the worker about the decreased performance. Some workers, on the other hand, will react disapprovingly and fight against a pay reduction.

Pay flexibility is almost not present at all in these circumstances. Either the decision-maker will not even push for a wage reduction or the worker will refuse it obstinately. In addition, the decision-maker's attitude towards this situation is even more comprehensible and rather socially minded often due to a long job tenure. The following figure 19 shows the behaviour and reactions of the two actors which have been perceived in the current labour market situation. Pay flexibility in combination with decreasing performance is shown in the quadrants III and IV of the graph and thus represent the two perspectives. The perspective of

the employer is shown in the upper quadrants IV and I, the lower quadrant III and II show the worker's perspective.

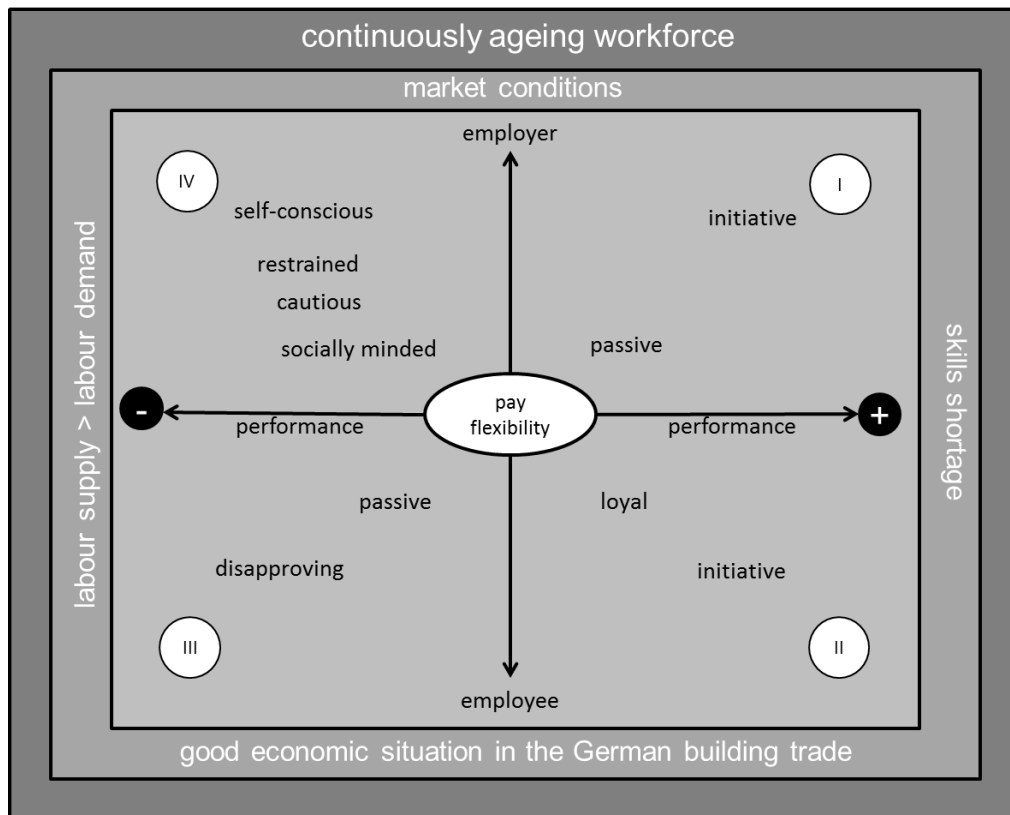


Figure 19: Pay flexibility in an ageing workforce (skills shortage)

The two quadrants on the right side (I and II) deal with the perspectives of the employer and the employee when the performance of the worker increases with the increasing average age. In the case of a little improvement in performance, the worker continues to behave loyally and remains on to the agreed tariff wage. With increasing performance the worker will take the initiative and ask the employer for an increase of his/her wage. Pay flexibility is activated.

The opposite can also be argued in this situation. The agreed performance at the beginning of the contract has increased. Thus, the employer also has to pay for the increased performance. An alternative for the employer is to reject the increased performance in order not to pay an increased wage. Both parties of the contract want to maximize their profits. In principle, the employer will first behave passively and will not require pay flexibility, because this would mean for him/her paying a higher wage.

For reasons of employee retention the employer can also be willing to pay a higher wage in order not to lose the worker to a competitor. In this case, it is both an issue of the

performance-pay relationship and also the issue of keeping the employee. Overall, in the case of an increased labour supply on the labour market in combination with a skills shortage of work force, pay flexibility is only slightly distinct with decreasing performance, while pay flexibility increases when performance increases.

In the media it is often asserted that wages are adjusted in relation to performance. But as the current situation makes clear, the implementation of pay flexibility takes place in the fewest cases.

Under the assumption that there are enough skilled workers on the labour market available for the organisations the labour market conditions change. A different picture of pay flexibility emerges. The behaviour of the market participants changes. The employers are in the advantageous situation and try to implement pay flexibility. This is achieved by the fact that the workers are dependent on the job offer and are less likely to negotiate their wages. Under these labour market conditions, pay flexibility is more readily able to be utilised by the employer because the labour market conditions are more advantageous for him/her. In particular, the passive role that the employer has to deal with under disadvantageous labour market conditions (from his point of view) is lessened. The employer can keep his profit and does not have to yield to a performance reduction as quickly as under the market conditions with a skill shortage.

This analysis and interpretation show that the labour market conditions have a decisive influence on the expansion of pay flexibility.

4.3.4 Moral dilemma of pay flexibility

The increasing average age of the German population will be reflected in the organisations of the German building trade. This development cannot be prevented by the organisations of the German building trade and leads to effects in their work organisation. This could be evidenced both from the literature review as well as from the data of the case studies. The work organisations of the German building trade which were participants of this research are characterised by a management of work teams with two or more team members depending on the type of business on the construction site and customer order. The work

team composition is a central factor in this research. It plays a key role in being successful or not from the perspective of the decision-maker. If the work teams are composed in the future in the same way as today, the average age in the work teams will increase. This arises from the fact that more elderly workers will work in these work teams than younger ones. A flexible handling of the team composition can also lead to work teams with a constant average age and work teams with a higher average age in the same organisation. It can make sense to composite a younger team for an order which contains mainly manual tasks because younger workers are more appropriate for them. If more organisational-mental tasks have to be done to realise the customer order older team members can be more suitable because of their work experience (Esser & Schelenz 2013). Last but not least the decision-maker decides about the team composition from customer order to customer order. He is convinced that - based on the existing staff - the team composition chosen is the best related to the team performance, quality, effectiveness, working result, team spirit, customer satisfaction and last to his own profit. Related pay is mostly not a priority for the decision-makers when composing the work teams. The same results from the literature review: there is no direct relationship found between a changed team composition and the related pay.

Beside the consideration of the effects following from the increasing average age accompanied by a change in the work team composition, the current external market situation must be taken into account. At the moment the German building trade is influenced by a strong economic situation having seen many important investments into the building construction (“Auftragsflut“ 2016). Especially in the area investigated, the county of Lippe in North Rhine-Westphalia, the local press reported in October 2016 that the trade business is booming (Frühauf 2016), also the Handwerkskammer Ostwestfalen-Lippe zu Bielefeld (2017). The orders could no longer be completed promptly and in timely manner (Dumke & Göttker 2016). Customers must wait weeks until a tradesman will be able to take up the order (Hölzle 2016). The fact that the orders cannot be processed immediately is an indication that the organisations have no free capacity. At the moment the German building trade cannot always satisfy their customers completely. The demand on the labour market has increased (Dietrich 2017; Roth 2016). But on the other hand the demand gap cannot be closed because there are not enough people seeking work who are skilled and ask for work in the German building trade. In addition, the lack of young people is clearly noticeable (Handwerkskammer Reutlingen 2016; Thomae 2014). The labour demand is higher than the labour supply. The decision-makers know about their disadvantageous situation on the labour market. This

situation indicates to the skilled workers employed by the organisations of the building trade that they can demand higher wages because the decision-makers depend on them. They can exert pressure on the pay level. The decision-makers in the organisation are forced into the situation as it is described in the insider-outsider-theory (Lindbeck & Snower 1988; Lindbeck & Snower 2001; Solow 1985) and discussed in the literature review of this research. The adaptation of the wages occurs exclusively by the action of the incumbent employees, the insiders, who take advantage of the demand situation of the employer and secure their employment in this context. On one hand the employers are often forced to accept a demand of a wage increase and on the other hand they are not in the situation to negotiate with the worker about a pay cut in case of bad performance. Pay flexibility is restricted by the current situation of full employment on the labour market related to skilled workers of the German building trade from the view point of the decision-makers. However, the workers can use their advantageous situation and push through their demands of wage increase. Also new workers in organisations can require higher wages because the decision-makers are dependent on hiring them. The German press confirms generally an increase in wages (“66 Tage warten auf den Handwerker“ 2016) in 2016. The same phenomenon has been described for the United States: wages have been rising at an accelerating pace, because the demand for labour increases (Feldstein 2015). It is to be assumed that in the opposite situation on the labour market which means more labour supply than labour demand there are more possibilities to realise pay flexibility.

Collective bargaining agreements influence pay flexibility unless the law does not make any change in this context. All organisations investigated use agreements which have similar structures: between six to 26 different wage groups are available. The professional education of the worker is the first feature for the wage classification. The second feature are his/her working abilities and professional knowledge. The tasks to be performed by the worker are the third feature which is decisive for the classification of the worker (§ 5, 2.2 Tarifvertrag für das Baugewerbe [collective agreement of the building industry]). When signing the contract both parties can negotiate over the wage classification. Both parties have the intention to maximize their profit: The worker wants a high classification with which a higher wage is connected. However, the decision-maker wants a lower level of classification to pay a lower wage. The professional education mostly offers no basis for negotiation. But the parties can have different opinions of how to classify the two other features of abilities, knowledge and the tasks carried out. The workers have a strong interest in employment

which is based on a collective bargaining agreement because this agreement offers social security and ensures a standard of living. The worker knows that a reduction of his wage is only possible under certain conditions. On the other hand, the decision-maker is aware of the advantage in using a collective bargaining agreement in that it constitutes a basis for the same organisational regulations and is fair to all workers. He/she is not forced to define organisational regulations himself/herself. It is more comfortable for him/her to revert to existing regulations. In addition, it is also possible to hide behind these regulations in order to avoid a discussion with his/her workers. A disadvantage is that wages cannot be freely negotiated. The wages have been defined by the employers' association and the trade union. Often the wages agreed are on a level that the decision-maker is not able to pay above on the general pay scale. The possibilities of paying performance-based wages are available. A separate agreement for the building trade contains thirteen different articles to agree performance-based pay and thus is very extensive. Pay flexibility based on performance can be realised if agreed with the worker. It is even permissible to reduce the hourly wage rate at lower performance taking into account the minimum wage (§ 6, 5 Rahmentarifvertrag für Leistungslohn im Baugewerbe [collective agreement for performance-based pay in the construction industry] 2005). But these regulations are complicated in the application for organisations with a size to ten employees. The advantages of this performance-based pay which supports pay flexibility are devoured by the complicated handling of this method which requires additional expense in administration. It is not surprising that both the decision-makers and the workers interviewed rejected this method of pay.

It is also not surprising that the article of the bargaining agreement in which the decision-maker is enabled to reduce the wage in case of declining capacity has not been mentioned in the interviews or is not in use. The procedure is very extensive because in addition, the social partners have to be involved and have to agree. Therefore, discussions and conflicts can arise between the employer and the employee combined with the representatives of the employers' association and the trade union. As a concrete performance measurement is only rarely carried out, a demonstration of decreasing capacity can be difficult. Possibly, medical certificates might also be provided within the process.

Overall, the data analysis and interpretation have shown so far that there is no unified and matching understanding of both parties for a system of pay flexibility, but rather two contrasting views.

The workers associate the term "flexibility" rather with something negative and unsettling. They wish fundamental stability and safeguarding in their payment. Changes should have only positive effects, so no cuts in pay are desirable. The worker in the German building trade knows that as he/she gets older, he/she has more work expertise and professional experience, but he/she also becomes physically weaker. However, he/she does not address this by himself/herself at his/her employer, unless it becomes unavoidable. He/she feels that it is unjust if, after several years of good performance - both mental and physical – he/she may now have to accept a wage adjustment because he/she can no longer physically perform the required services. But the workers recognise the problem and have many ideas on how the problem can be countered.

The decision-makers have a more differentiated view. They realise the benefits which a flexible payment can have but on the other hand they see the problems associated with pay flexibility, if it comes to wage cuts. The employers would like to have more pay flexibility. They are limited or even prevented in their action because they cannot represent this morally themselves. They are in their role as entrepreneurs, but they also understand the viewpoint of their workers. On the other hand, they would apply more pay flexibility if this is customary in the particular trade. There are possibilities in the collective agreements. However, since the use of these possibilities is not usually common practice and the decision-makers are also not brave enough to drive it actively or try to make changes themselves, they must use other possibilities to optimise their profit. As a result, they succeed in their objectives to a moderate extent.

To realise pay flexibility also means to move the fine line between motivation and demotivation. The decision-makers know about the group dynamics processes which are initiated when discussing pay in the team. It is difficult to agree on pay which is acceptable to all parties. Increasing wages steadily with increasing age when work expertise grows, is a much easier option. But it also promotes dissatisfaction among younger workers who perform well (Stock-Homburg 2013). In relation to motivation an agreement about flexible pay with the consent of both parties is a possible way of a further effective cooperation. Life-long learning accrued by continuous training is an option for both parties, decision-makers and workers, to maintain the personal labour force at a level where performance and pay remain balanced.

It is a moral dilemma in which the demand of pay flexibility is hindered. The moral-ethical view of pay flexibility negates any negative adjustments, especially when it comes to performance reduction for age reasons. The economic perspective usually provides a balance between performance and pay. The need to continue dealing with more pay flexibility is an important issue for the German building trade industry to remain competitive. The average age increases in the teams and the resulting organisational and financial problems will eventuate. Both parties must accept the changing working conditions, as early as possible so that many possibilities for action can be discussed and addressed. Failure to tackle this issue or conflating it with other issues will result in delayed conflict.

The objective is to raise and discuss the issue openly so that arrangements can be made to a) eliminate the decision-makers' fear of ageing work teams and b) protect the workers against wage reductions in age. The model on pay flexibility which is developed in the next chapter on the basis of the previous data, insights and considerations, is intended to approach pay flexibility systematically and structurally at an early stage to ensure planning security for the decision-makers (order planning) and for the workers (life planning).

But pay flexibility is successful if both socially acceptable and profitable. Both requirements must be met so that the contracted parties escape from their social dilemma.

4.4 Summarized findings of the expert interviews and focus groups

A summary of the data collection and data interpretation follows based on both the semi-structured and in-depth expert interviews and the focus groups with the workers.

Some data is initiated with the abbreviation EI or FG. EI is the abbreviation for 'expert interview' and FG for 'focus group'. Subsequently, a number combination is specified. The number before the point is the reference to the research question. The number after the point is a consecutive numbering. The term 'data FG 1.2' means the second data part from the focus group, referring to the first research question. Data marked in this way refers to the contents of the section 4.2.1 if related to the expert interviews and 4.2.2 if related to the focus groups.

Summarized findings related to the first research question: What are the effects of changing work team demographic composition on team performance?

- The team composition is based generally on the knowledge, skills and behaviour of each team member (from EI 1.1 and FG 1.6) or on the customer order (from EI 1.2, 5.1) or is custom-built (from EI 1.3).
- The mix of the workers (from EI 1.4) and to have older workers in a team (from FG 1.7) is important for performance.
- A changed team composition has negative effects on the team performance (from EI 1.6).
- Physical performance decreases when ageing (from FG 1.1, 5.1) but work experience can offset the reduction of physical performance (from FG 1.5)
- Performance does not decrease if the tasks need mostly mental or organisational skills (from FG 1.3)
- A changed team composition can have both negative and positive effects on team performance. The effect depends on the kind of work which has to be done by the team (from EI 1.7 and FG 1.4).
- Related to the selected shapes of performance (speed of work, time in finding solutions, quantity and quality of work) the direction of change is not uniform across the cases. The decision-makers evaluate the shapes of performance more differentially than the workers. The closest match of both groups of participants consists in evaluating first, the quality of work which predominantly increases with increasing average age and secondly, the quantity of work which decreases mostly in physical work or is considered differently regarding from other tasks (see cross-case matrix 4.3.1).
- Working conditions have been improved in the last years or decades (from EI 1.8). But older workers lose interest in approaching the use of new technologies (from FG 1.2).

Summarized findings related to the second research question: What are the interrelations between the effects of team performance on related pay?

- A direct link between performance and pay is not common in the building trade. Piece-rated or performance-based pay which is included in the collective agreements, is not applied (see 4.3.2).

- Irregular special payments to individual workers are more usual in case of good performance (see 4.3.2).
- Performance and pay are linked to the individual's motivation. A key issue in deciding on changes in pay are the possible effects on motivation. Wage adjustments are avoided if demotivation is the result (see 4.3.2).
- The decision-makers and the focus group participants generally rejected adapting or reducing pay if the performance of the worker has decreased or would decrease (from EI 2.1 and FG 2.1).
- The decision-makers would adapt the pay only in case of a significant performance reduction (from EI 2.2).
- Communication about changed performance in connection with the pay takes place only minimally (see 4.3.2). The decision-makers preferred to dismiss the worker instead of reducing their pay (from EI 2.3) or use alternative compensation options in case of performance reduction (from EI 2.6).
- Realising a pay rise is not a problem (from EI 2.4).
- Seniority-based pay has a presence (see 4.3.2) and is defended by the workers (from FG 2.2).
- Personal relationships between decision-makers and workers have an influence on the interrelation between performance and pay (see 4.3.2).
- The skills shortage on the labour market of the German building trade and the processes of group dynamics are interrelated between performance and pay which represent the more external framework conditions (see 4.3.2).

Summarized findings related to the third research question: How could a flexible payment system be established in order to realise pay adjustments for the team members?

- Both the decision-makers and the participants of the focus groups refused to use performance-based pay (from EI 3.1 and FG 3.2) because the parameters of performance become more and more difficult (from EI 3.7).
- There are many ideas to realise pay flexibility by alternative ways to adapt pay to changing performance (from EI 3.2).
- Pay flexibility was desired and would be claimed if there are possibilities within the collective bargaining agreements (from EI 3.3) or if the measurement and comprehensibility of pay flexibility are available (from FG 3.1).

- The skills shortage and the shortage of young people in the German building trade affects the pay flexibility (from EI 3.4, FG 1.8 and FG 2.1; see 4.3.3) and therefore the team composition which is important to achieve performance (from FG 3.4).
- The order calculation and pay flexibility are connected to each other (from EI 3.5).
- Both, decision-makers and workers, want to keep their standard of living or maximize their profits. Therefore, work motivation must be maintained (see 4.3.2).
- Measures to maintain workability supports the process of pay flexibility (from FG 3.5).
- There is a dilemma of pay flexibility being socially acceptable as well as profitable (see 4.3.4).

Regarding the development of a model of pay flexibility which is based on the increasing average age of the demographic change it is important to take into account the different requirements of the decision-makers and the workers. Both parties think that pay flexibility is desirable, but no party wishes to manage pay-for-performance in the traditional narrow sense. The moral dilemma, in which pay flexibility stalls, must be resolved. For that, pay flexibility is only successful if socially acceptable and profitable. Both requirements must be fulfilled. The decision-makers generally desire pay flexibility because flexibility in pay has an impact on their profit. From their point of view pay flexibility should fulfil the following minimum criteria:

- part of the collective bargaining agreements
- basis is the minimum wage
- measurable, uncomplicated, clear, equitable and individual
- low administrative and payroll expenses
- application without negative discussions with the workers
- no loss of motivation in the team
- performance and pay are in an economic relationship
- aim of increasing performance with a guaranteed quality standard
- pay reductions should be avoided
- competitiveness must be maintained

The workers have the following requirements for a system of pay flexibility:

- part of the collective bargaining agreements
- measurable, comprehensible and equitable
- safeguarding must be realised to maintain a standard of living
- The aim is the maintenance of workability, for example through health care and continuous training (life-long learning)

The extent of pay flexibility is also determined by labour market conditions. A labour market characterized by skilled shortage is less elastic with respect to pay flexibility. An aspect which has also been taken into account when developing the model of pay flexibility.

5 Results of the research

The starting point of this research is the increasing average age of the German population and the associated ageing workforce. This tendency also affects work teams in the German building trade. The literature review has shown that changes in the age structure have effects on the team performance. The aim of this research is to develop a model of pay flexibility for work teams in the German building trade related to the changing workforce composition. The model of pay flexibility may include new thinking about pay and thus performance forms a basis for new concepts of payment. The minimum requirements are for it to be socially acceptable, while profitable. In our world in which countries increasingly focus on the total national demands with concurrent diminished attention on long-standing communities, it is important that the individual working person with his/her individual needs are taken into consideration. With this model, a step forward should be taken in a working world that can be determined by all participants.

In developing this model, the knowledge of experts and participants, which is collected in semi-structured in-depth expert interviews and focus group interviews, is analysed and interpreted. The aim of the interviews was to find out how the experts gear the team composition towards performance while the average age of the team members is constantly increasing. It additionally highlights, how experts would like to pay each team member under unrestricted conditions. The aim of the focus group was to gather information about the

opinions, attitudes, feelings or fears of the workers in the German building trade when talking about their role in an ageing workforce with the key aspects of performance and related pay. The methods of expert interviews and focus groups are embedded in the methodology of a multiple-case study with triangulation. The research methodology has a philosophical framework based on the researcher's assumptions of relativism.

In the following sections the knowledge of the literature review and the analysed and interpreted data from the interviews are even more connected to one another to develop a model of pay flexibility to reach the research aim.

5.1 Why pay flexibility at all?

Market conditions are constantly changing. Not only the markets on which products or money are traded are subject to change, also the labour market changes. The labour market in Germany is characterized by the tariff autonomy of the collective bargaining parties. Employers' associations and trade unions are responsible for the shaping of working conditions in economic organisations. The Collective Bargaining Law [Tarifvertragsgesetz] forms its legal basis. Regulations for minimum wages in different businesses and declarations of general binding for collective bargaining agreements are topics which are determined by the state. Otherwise the state is largely excluded from this process. The market participants, represented by their associations or unions, work mainly independently and freely on the labour market. However, very extensive and partly complicated collective bargaining agreements are the result of decades of cooperation between the collective bargaining parties. The wage bargaining agreements, which constitute only a part of the entire collective bargaining agreements, have thus obtained the almost uniform structure described above. For workers, they mean safeguarding. For employers, on the other hand, they considerably restrict the individual within this contract law. In the case of deviations from the originally agreed conditions in the employment contract, the employer cannot make unilateral changes. In particular, it is not possible to react to fluctuations in performance with wage adjustments if this has not been expressly agreed. Companies of the building trade are economically active organisations which want to maximize their profits. For this reason, they may also be given the opportunity to make adjustments to the price of labour if the agreed due

performance is no longer made available. Pay flexibility is largely foreseen in the collective bargaining agreements and is also not desired by the workers or trade unions as it reduces safeguarding. As mentioned under 2.4.5, two collective bargaining agreements investigated have an additional article governing paying lower wages combined with lower capacity. These are paragraph 9 of the federal basic collective agreement for commercial workers in the horticulture, landscape and sports arena building and paragraph 23 in the basic agreement for the commercial workers in the roofing trade. It is mandatory that the social partners have to be asked. Implementation is subject to their approval. Therefore, the procedure is very extensive, but still possible.

Another example is taken from the collective agreements of the German chemical industry. The collective bargaining parties of the chemical industry concluded a completely new collective agreement in 2012, which focuses on the consequences of demographic change. The preamble of the agreement states that "the effects of demographic change must be shaped" (see annex VII). The common intention and task of the social partners of the chemical industry is to enable a sustainable and expansive personnel policy by means of future-oriented framework arrangements. On the one hand, this takes into account the needs of the organisations for changing human resources structures, and on the other hand the interests of the employees in age-appropriate and performance-related working conditions as well as flexible transitional forms for the process of retirement. Different elements are part of the agreement: "To carry out a demographic analysis, measures for an age-appropriate and health-oriented design of the work process with the aim of improving the employability and efficiency, measures for qualification throughout the whole working life, measures for the prevention and use of various instruments for sliding transfers between the phases of education, work and retirement" (Collective agreement of the German chemical industry "working lifetime and demography"; see annex VII). The collective bargaining parties have recognized the need to create framework conditions on a collective level that allow organisations to prepare and adapt themselves to the ageing workforce. The aim of the new collective bargaining agreement of the chemical industry is "to make a substantial contribution to secure competitiveness" (Collective agreement of the German chemical industry "working lifetime and demography"; see annex VII) and thus jobs.

This collective bargaining agreement deals indirectly with pay flexibility. It makes possible the initiation of measures to stabilise principles of employment and to create working conditions with regard to the future in order to weaken the negative consequences of the

ageing workforce for employers and employees. It is a first step to continue justifying the agreed wage by adapting the framework conditions. Pay flexibility is implemented indirectly through such measures. Herewith, measures are defined and agreed on the level of collective bargaining agreements.

The German building trade should not be stuck in a moral dilemma, but it should attend to - similar to the German chemical industry - the problems of demographic change in terms of performance and pay. It can strengthen itself for example by adapting the team composition to the changed framework conditions and thus it can promote indirect pay flexibility actively. This research is intended to contribute to identify ways which the German building trade can go in order to position itself openly and be forward-looking.

Overall, it is important for both employers and employees to behave socially and at the same time to remain competitive. If they come to the conclusion that their behaviour is not sustainable, they should change it or try further alternatives. There are other options than pay flexibility available.

5.2 Requirements for a model of pay flexibility

Organisations must adapt their structures to the changed market conditions with more urgency than previously. The ongoing globalisation and the constant automation of processes require further adjustments in the organisations which can also mean a loss of jobs. In addition to the decision-makers, the workers in the organisations also have to keep up with these developments. Flexibility is expected from them (Vogel 2016). Often, workers associate this term negatively because they must give up habits and work in uncertainty. In the interviews, the researcher clearly felt that the concept of pay flexibility triggered a certain degree of uncertainty. In principle, the workers argued against a more flexible way of pay because they expected a reduction in pay at first. The fact that pay flexibility can also have a positive effect was not primarily seen by the workers. But they added in the discussions that changes in the organisations become necessary by virtue of demographic change. Their requirements for pay flexibility are a socially acceptable maintenance of the standard of living, justice and measurability.

As workers have only a certain degree of willingness to change fundamentally (Fisher 2017) and as they see few realistic benefits in pay flexibility, it cannot be assumed that this party poses any initiative for pay flexibility. From their point of view, collective bargaining agreements are the basis of their work conditions and permanent pay increases can still be negotiated individually. So, there is little motivation for flexibility in general either.

The purpose of this research is not to associate pay flexibility necessarily just with a pay reduction. This research deals with pay flexibility in a broader sense. This may include direct wage adjustments, both up and down, but also includes options of flexibility which can have an indirect effect on the pay. Organisations should be better structured to enable to adapt to changes.

The model to be developed by the researcher is based on the findings of the literature review and the results from the case studies.

In the following, the basics resulted from these two sources are listed, separately according to the three research questions. The requirements for the model of pay flexibility are derived from these basics. The derivation follows after the listing in the development and description of the model.

Each data is initiated with the abbreviation LR or CS. LR is the abbreviation for 'literature review' and CS for 'case studies'. Subsequently, a number combination is specified. The number before the point is the reference to the research question. The number after the point is a consecutive numbering. The term 'LR 1.2' means the second data part from the literature review, referring to the first research question.

These are the requirements that the researcher used from the findings and results for developing the model referred to the first research question:

- LR 1.1: Different team processes and group dynamics are available and often cannot be prevented (Berne 1963; Grand et al. 2016; Levi 2011; Stock-Homburg 2010; Taifel & Turner 2001; Thibaut & Kelley 1959).
- LR 1.2: A team develops in different phases or stages (Levine & Moreland 1994; Tuckman and Jensen 1977).
- LR 1.3: The effects of increasing average age in work teams are represented by different indicators such as team performance, team productivity, team quality or

team effectiveness. There is no clear consensus regarding the performance effects of the changing work team composition. The impacts are not uniform. They can be either positive or negative, occasionally also weak (Backes-Gellner & Veen 2008; Belbin 2010a; Belbin 2010b; Bell et al. 2011; Boersch-Supan & Weiss 2016; Cohen & Bailey 1997; Gellert & Kuipers 2008; Goebel & Zwick 2010; Horwitz & Horwitz 2007; Miliken & Martins 1996; Pelled 1996; Porter et al. 1975; Seitz & Wagner 2009).

- CS 1.1: An increase of the average age in the teams of the German building trade will have more negative consequences than positive effects because the building trade is still characterized by mostly manual work and the team performance is decreasing by a higher average age.
- CS 1.2: Team composition is a success factor for team performance and the achievement of the defined goals on the construction sites and in the workshops.
- CS 1.3: Flexible team composition is based on customer orders, type of work and workers' skills.
- CS 1.4: The teams consist of members who perform experience-based work and mainly manual work.
- CS 1.5: A team composition with mixed-aged members is an approach to solve the problem of the shortage of skilled workers and the lack of the offspring.

These are the requirements that the researcher used from the findings and results for developing the model referred to the second research question:

- LR 2.1: There is an indirect interrelation between increasing average age and pay via the summarizing term of the factor 'performance'. Whether the interrelations between performance and pay are positive or negative cannot be determined accurately because there is research supporting both. Pay impacts on the team performance by the motivation of the individual. Social group processes, the organisational context, the fulfilment of expectations, the positive reflection of self-identity and perceived compared equity influence the relationship of performance, pay and motivation (Adams 1963; Cohen & Bailey 1997; Deci & Ryan 2000; Drumm 1995; Heckhausen & Heckhausen 2006; Herzberg et al. 1959/1993; Karau & Williams 1993; Levi 2011;

Pink 2009; Porter et al. 1975; Sprenger 2002; Thierry 2001; Thönneßen 2013; von Rosenstiel 2003/2006; Vroom 1964; Weibler 2004; Weißenrieder 2014).

- LR 2.2: Communication in teams is necessary to achieve the team goals and to develop a team (Festinger 1968; Levi 2011; Mentzel et al. 2006; Schulz von Thun et al. 2001; Stock-Homburg 2010).
- LR 2.3: In principle, rewards and payments can motivate higher performance if they are attractive for the individual (Adams 1963; Karau & Williams 1993; Thierry 2001; Vroom 1964).
- CS 2.1: An interrelation between performance and pay exists factually and formally because of the collective agreements and the employment contract.
- CS 2.2: Motivation is the interrelation which informally combines performance and pay and has a considerable influence on the relationship.
- CS 2.3: The combination of increasing average age, performance and related pay leads the participants into a 'moral dilemma', especially if pay flexibility is associated with a pay reduction.
- CS 2.4: Regular communication is a measure to solve conflicts at an early stage instead of avoiding talking about problems.
- CS 2.5: To obtain steady performance from the workers, the decision-maker must constantly check the level of motivation.
- CS 2.6: Reductions in pay should be avoided, especially from a motivational point of view.

These are the requirements that the researcher used from the findings and results for developing the model referred to the third research question:

- LR 3.1: It is necessary to analyse the specific changes of team structures caused by a higher average age in order to achieve information about changes in performance and team composition. A means to achieve this information is regular communication with the team members (Backes-Gellner & Veen 2008; Belbin 2010a; Belbin 2010b; Berne 1963; Boersch-Supan & Weiss 2016; Festinger 1968; Grand et al. 2016; Hall 1973; Karau & Williams 1993; Lawler & Cohen 1992; Lazear 1981; Levi 2011; Levine & Moreland 1994; Locke & Latham 1990; Mentzel et al. 2006; Miliken & Martins 1996; Pelled 1996; Porter et al. 1975; Schulz von Thun et al. 2001; Thibaut & Kelley 1959; Tuckman and Jensen 1977).

- LR 3.2: The motivation of the individual is taken into account, because it is of central importance in terms of pay flexibility (Deci & Ryan 2000; Drumm 1995; Heckhausen & Heckhausen 2006; Herzberg et al. 1959/1993; Pink 2009; von Rosenstiel 1975; Sprenger 2002; Vroom 1964).
- LR 3.3: As equity and fairness also influence motivation and performance in terms of pay, factors such as equity and fairness have to be integrated in the development of a model of pay (Adams 1963; Levi 2011; Porter et al. 1975; von Rosenstiel 2003).
- LR 3.4: The literature review carried out that – in terms of ageing, performance and pay - the individual is at the centre of investigation. The crucial factors related to age, performance and pay refer to the individual. The team is relevant to team composition but has subordinate meaning in the relationship of performance and pay. Thus, a team-based pay should not be included in the model of pay flexibility. The model has the focus on the individual (Cardoso et al. 2010; Cohen & Bailey 1997; deMatteo et al. 1998; Karau & Williams 1993; Lawler 1981/1998; Lawler & Cohen 1992; Levi 2011; Thierry 2001; Vroom 1964).
- LR 3.5: The pay system in this construction industry is characterized by collective agreements that enable only some design options for payment. The current regulations mainly provide a payment system on an hourly wage level. Elements of pay are related to the job combined with individual skills. Performance-related elements may be paid above the collectively agreed rate. Regulations for team work or team-based pay are not included in the collective agreements investigated. The demands on the terms of collective agreements for pay flexibility have to be integrated into the model of pay flexibility because they form the contractual basis of the employment relationship in addition to the employment contract.
- LR 3.6: The external market conditions lead to specific behaviour of the employer and the employee. Negotiations about pay are influenced by the supply and demand of labour. This also determines the price of work.
- LR 3.7: Life-long learning is a means of avoiding pay reductions or adaptations which are caused by decreasing performance with increasing age (Rossnagel 2008; Staudinger 2006; Vogel 2016).
- CS 3.1: Pay flexibility is desirable, but no pay-for-performance in the traditional narrow sense.

- CS 3.2: Pay flexibility is generally desired by the decision-makers because pay dynamics has an impact on their profit. From their point of view pay flexibility should fulfil the following minimum criteria:
 - part of the collective bargaining agreements
 - basis is the minimum wage
 - measurably, uncomplicated, clearly, equitably and individual
 - low administrative and payroll expenses
 - application without negative discussions with the workers
 - no loss of motivation in the team
 - performance and pay are in an economic relationship
 - aim of increasing performance with a guaranteed quality standard
 - pay reductions should be avoided
 - competitiveness must be maintained
- CS 3.3: The workers have the following requirements for a system of pay flexibility:
 - part of the collective bargaining agreements
 - measurably, comprehensibly and equitably
 - safeguarding must be realised to maintain a standard of living
 - The aim is the maintenance of workability, for example through health care and continuous training (life-long learning)
- CS 3.4: The extent of pay flexibility is also determined by labour market conditions. A labour market characterized by skilled shortage is less elastic with respect to pay flexibility.
- CS 3.5: The moral dilemma, in which pay flexibility stalls, must be resolved.
- CS 3.6: Pay flexibility is only successful if socially acceptable and profitable. Both requirements must be fulfilled.

The findings listed above, which have been assigned to the three research questions, form the basis for the development of the model of pay flexibility, which is described in detail below.

5.3 The Four-dimensions-model of pay flexibility

This section deals with the presentation of the main achievement of this research, namely the development of a model of pay flexibility for work teams in the German building trade related to the changing workforce composition. The model of pay flexibility may include a new approach of pay and thus performance forms a basis for new concepts of payment.

Models are generally used to present reality in a simplified manner. They can present findings from studies of social phenomena to explain them. So-called explanatory models serve to simplify complex facts and to make them accessible (“model“ 2016). Complex contexts, interrelations, derivations and new ideas for example are combined in a model for the purpose of explanation. This type of model has been chosen to present the findings and recommendations for action from this study that have arisen in the context of pay flexibility connected with the ageing workforce in the German building trade.

The related research question was: How could a flexible payment system be established in order to realise pay adjustments for the team members? To answer this question, the following objectives had to be fulfilled:

- To examine the options available to introduce a flexible payment system that considers changing work team demographic composition in combination with team performance
- To examine the practical implications and potential of a flexible payment system as proposed.

In the previous section the researcher listed the requirements for a model of the pay flexibility that she derived from the literature review and from the case studies. These requirements form the basis for the model developed by the researcher herself. The respectively realised requirements are indicated in brackets by the abbreviation used in section 5.2, so that the reference to the findings is produced and shown comprehensibly. Annex VIII which lists the requirements also offers a quicker reference. Each set of data is initiated with the abbreviation LR or CS. LR is the abbreviation for ‘literature review’ and CS for ‘case studies’. Subsequently, a number combination is specified. The number before the point is the

reference to the research question. The number after the point is a consecutive numbering. The term 'LR 1.2' means the second data part from the literature review, referring to the first research question. The model is presented in the following sections.

5.3.1 The central factors of the model

The starting point of this research is the demographic change. The ageing of the population is linked to it. Derived from this the workforce in the organisations is also ageing. Pay flexibility is particularly important as a result of this change. Based on the findings and the results of this study many fields of action which are subject of pay flexibility have been identified and developed. The prerequisite for an effective application of a model is the systematic structure of it. Besides the demographic change with the ageing workforce the most important areas of action form the external structure of the model. Before the model is explained, the researcher presents a preliminary consideration of the central factors of a) performance, b) the parties involved and c) the market conditions. All these factors shaped this research.

Details of the references such as 'LR 1.1' or 'CS 1.2' are listed in annex VIII.

Performance

The team performance may increase or decrease with the changing workteam demographic composition. The team performance obtained is mainly based on the qualifications, the performance and the motivation of the individual team member, the tasks to be performed and the team composition made by the decision-maker in the organisation (see LR 1.3). As described in section 6.1, pay flexibility therefore affects both rising and falling performance. As the direction of the performance change cannot generally be determined (see LR 1.3) a flexible payment system is drawn up independently of the change in performance. Alternatively, both direction changes must be considered, as it was done in the representation of pay flexibility in figure 19 (page 163). The team performance depends on the team composition (see CS 1.2). As in most cases the team composition in the German building trade is dealt with variably, it is less practical to relate pay flexibility to the team. The system is restricted when it is installed at the higher level of the team. Therefore a system of pay flexibility should refer to the individual worker (see LR 3.1).

The parties involved

The employers and employees are the groups involved in pay flexibility. They are the two contracted partners who ultimately decide pay flexibility. They are subject to legal regulations and collective bargaining agreements, but the employment contract concluded between these two participants is the basis for their cooperation at work. Employers and employees are the main players when discussing the application of a flexible payment system in the organisations. Both the literature review and the case studies have shown that in terms of pay the individual is at the center of consideration. While the literature review has some approaches to team-based pay, the motivation of the individual is more important as a link between performance and pay (see LR 3.2, LR 3.3, LR 3.4, CS 3.2). It has emerged from the findings of the case studies that team-based pay is not an option for pay flexibility. For these reasons, the model does not refer to work teams, but to the individuals in the work teams. The model is more effective on an individual level than in a team consideration. In relation to the labour market, the collective bargaining partners contribute to the processes of pay flexibility.

Market conditions

Likewise, the framework conditions which the organisations in the building trade are subject to influence the scope of action and the leeway in decision-making of the participants involved. The previous sections of 4.3.3 and 5.1 show that the capital market and the labour market influence the actions of organisations in the building trade. The prevailing market conditions are relevant to the question of how strong pay flexibility is or can be. In addition, the applicable tariff conditions agreed by the collective bargaining parties are of central importance.

In order to meet the requirements of different participants and to show the various perspectives and the scope of pay flexibility, the researcher decided to divide her explanatory model into different dimensions. The dimensions include the main areas in which pay flexibility is implemented. Four dimensions are defined.

The four dimensions

The four dimensions are encircled by the conditions of the initial situation (demographic change with the ageing workforce). These four dimensions are called individually, contractually, collectively and market-oriented. They share the model. Each dimension stands itself alone and relates to the topic. Each individual dimension is independent of one another

and affects also pay flexibility independently of one another. Together, the four dimensions form a common entity that can create and sustain pay flexibility. In the following sections each dimension is described and explained. Each dimension has a different relationship to the topic of pay flexibility.

As the four dimensions are the centre of the model the researcher named the model “The Four-dimensions-model of pay flexibility“. The model has a circular shape. The outer ring of the circle forms the all applicable conditions of the initial situation (demographic change with the ageing workforce). The four dimensions are shown in the second circle of the model. This highlights that all dimensions are equivalent in the consideration of pay flexibility. Each dimension includes two fields of action, which are explained in detail below. Furthermore, the researcher worked out that it is particularly important for the success of pay flexibility that pay flexibility is applied socially acceptably, but also profitably (see CS 3.6). These two prerequisites are explicitly named in the model and form the inner circle to clarify that the interests of both parties involved are represented in the model. The model is intended to bring benefits to both parties in coping the future challenges of the working world (see CS 3.5). The model is shown in figure 20.

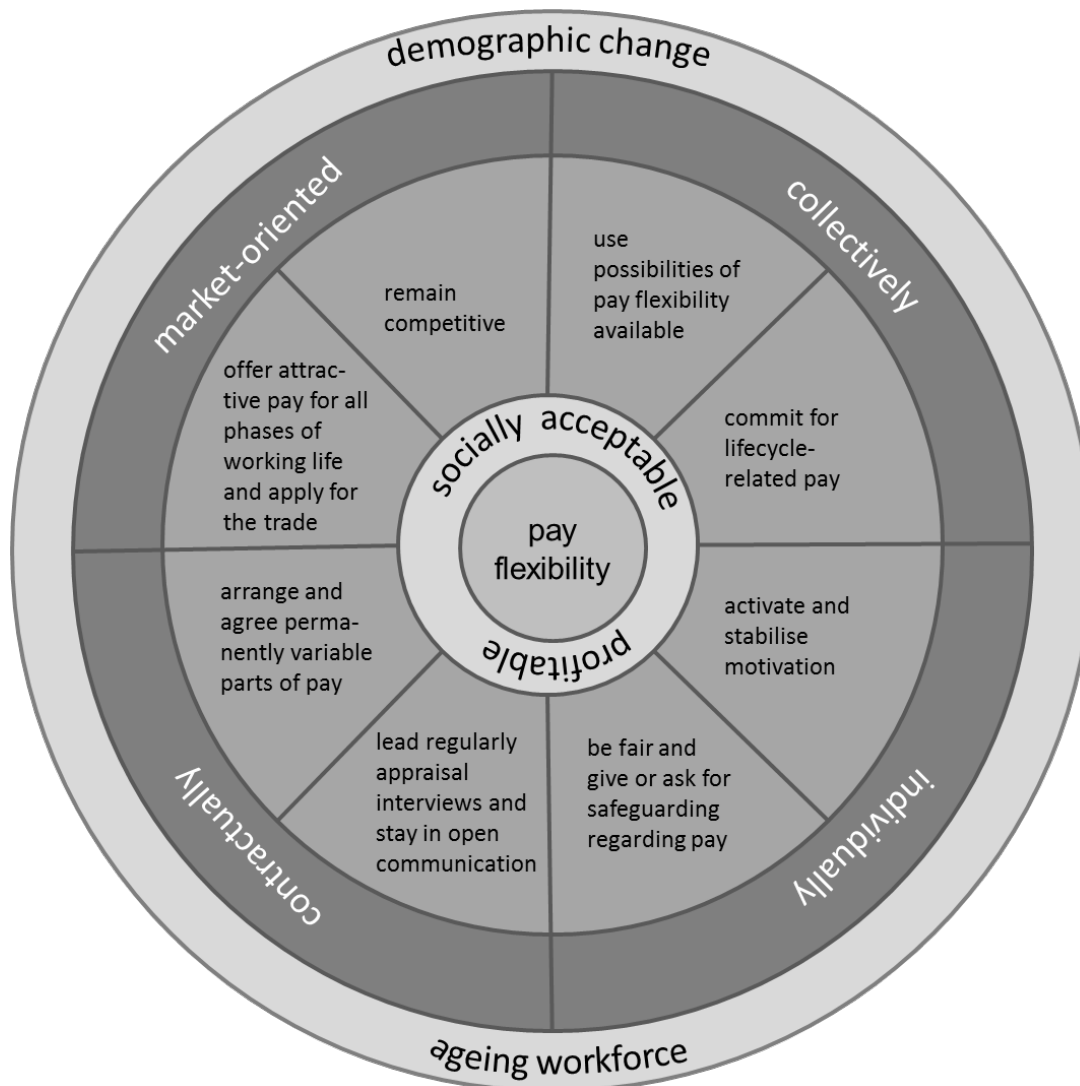


Figure 20: The Four-dimensions-model of pay flexibility (self-developed)

In the following sections each dimension is explained in detail related to the derivation and basics, substantiation and the content of the fields of action.

5.3.2 The dimension of "individually"

The starting point is based on the assumption that the interests of both parties involved are represented in the model. The model is intended to bring benefits to both parties in coping with the future challenges of the working world related to the changing workforce composition (see LR 3.6, CS 3.1). It has the claim to be socially acceptable and profitable (see CS 3.6). Thus, both parties are motivated to take part in the process of change. The

dimension of "individually" includes two fields of action, which both parties, employer and employee, should relate to themselves personally. Through their own actions they can strengthen pay flexibility. A failure to act or opposite actions can cause a reduction or suspension of pay flexibility or they even counteract pay flexibility. The actions prompted by the model were derived from the research findings. They represent particular success factors in order to achieve pay flexibility.

The first field of action is called "activate and stabilise motivation". Motivation in the context of pay and performance was an important factor in both the literature review and the case studies when answering the second research question. Motivation is the link between performance and pay (see LR 2.1, LR 2.3, LR 3.2, LR 3.3, CS 2.2).

Motivation works in both directions: the employee is demotivated if he is dissatisfied with his pay (Wunderer & Kuepers 2003). Likewise, tasks must be achievable so that the motivation for performance and the associated pay also seem to be achievable for the worker. The 'carrots' which are exposed as a reward may not be hanging high, otherwise they prevent performance (Pink 2010). In the interviews, the decision-maker indicated that they will implement no measures that lead to demotivation. In particular, wage adjustments have designated as a motivation destroyer by them. A high motivation in the team is a guarantee of performance for the decision-makers (see CS 2.5). The decision-makers have confirmed the findings of the literature review by their statements. The worker clearly expressed through their choice of words that they would be demotivated when wages are cut (see CS 2.3). They would not accept a wage adjustment. Both parties pointed out that a fair pay is motivating and that a wage adjustment downward can be demotivating for the employee and for the whole team. The factor of motivation, which stands between pay and performance, is a significant factor of influence (see LR 3.2). It is therefore important to deal with this factor. This field of action asks both parties, employer and employee, to activate and stabilise motivation. Motivation or demotivation arises in each individual person in an individual way. Whether the action of an individual leads to the motivation of another individual depends on the decision of this individual who is affected by the action. It is not the decision of the acting individual. Demanding motivation is not possible. Therefore, it is important that the effect of action is known to the other individual. Motivation can be influenced by specific actions. To activate motivation is necessary when the work team or individual workers are demotivated. It is neither in the interest of the employer nor the employee whose demotivation reduces performance. The employer needs performance to achieve his organisational objectives and

to fulfil the customer orders. The employee must provide the performance owed to receive the pay agreed. Generally, demotivation is counterproductive and requires more effort than an absence of motivation. Motivational killers should be recognized and eliminated. In this way, motivation is activated and has first a positive impact on performance and second on pay. The stabilisation of motivation is constantly required to maintain the existing level of motivation in the team or of the individual worker. The activities of the contract partners should be designed in such a way that motivation is maintained in order to realise the performance agreed. Then both partners have the least effort to fulfil their personal targets. Stabilisation of motivation also means that measures must be taken to exclude demotivation. The conscious handling of pay and performance in combination with motivation must be provided by both contract partners. This field of action has been included in the model by the researcher in order to demonstrate the influence and thus the important meaning of motivation in this context and to call for active action.

The second field of action called "individually" demands upon both the employer and the employee to be fair and give or ask for safeguarding regarding pay. In this element, two factors are connected to each other that are related to the content of the pay (see LR 3.3, CS 3.2; CS 3.3). In particular, the amount of the agreed pay has an impact on the individual's attitude towards fairness and safeguarding. Both factors can be assessed differently and subjectively by individuals. An assessment is often associated with the individual life situation or with the respective work environment. Safeguarding is at the core of the second part of this element. The employees who participated in this study commented that pay flexibility would lead them to a lack of safeguarding. The agreed pay serves to protect their standard of living (see CS 3.3). The employees are skeptical about variable parts of their wages, if they are not guaranteed. The safeguarding is not reduced by the prospect of being able to earn more at other times. Pay flexibility can be linked to fluctuating pay. Many employees find it difficult to deal with fluctuating pay and thus to economize with it. They prefer a consistent, fixed and predictable income. In order to achieve pay flexibility more easily by the employer, pay should be designed in such a way that the employee's needs of safeguarding are satisfied. Safeguarding leads to a rejection of the system. Acceptance of pay flexibility exists when there is a certainty that the standard of living is maintained.

By means of bilateral communication, the factors can be adapted to individual needs. If the employer is aware of the importance of fairness and safeguarding of his employee, this can be crucial when designing pay flexibility (see LR 3.1, CS 3.3). He can take into account these

factors when determining the amount and the scope of pay flexibility. The factor of fairness is connected with justice. Justice related to pay is the subjective assessment of whether the amount of pay is appropriate or not. In his equity theory, Adams (1963) dealt with the relationship between fairness, justice, motivation and pay. As justice perceived pay motivates and enhances performance. A performance slump is to be expected when the employee subjectively classifies his pay level as being too low compared to other employees. Objectively considered, the pay level can be justified. However, related to the motivation to perform the internally perceived justice is crucial (Levi 2011). From the perspective of the employee pay is described as unfair if increasing performance is not rewarded by a higher wage. On the other hand, the employee does not apply the argument of justice if the performance falls and the wage has to be adapted accordingly. As fairness and justice are used rather one-sidedly by the employees, pay flexibility is to be addressed by an open communication from both sides (Gertz 2007). The employer can also use the argument of fairness in open communication (see LR 3.1, LR 3.3).

The dimension "individually" thus consists of two fields of action. First, there is the demand for the activation and stabilisation of motivation and secondly for fairness and the production of safeguarding in relation to pay. If both fields of action are positive, a basis has been created to realise pay flexibility on the individual level.

5.3.3 The dimension of "contractually"

The dimension "contractually" refers to two fields of action that involve the contractual level of the two employment parties. Employer and employee are in a contractual relationship simultaneously with their work relationship. These two fields of action lead to pay flexibility or support pay flexibility. If both sides work together the fields of action can be realised. One field of action consists of the two elements including "lead regularly appraisal interviews and stay in constant communication". The demand for conducting regular appraisal interviews is based on the data of this study. In the focus groups, the workers wished to be involved in regular communication in order to contribute their ideas and suggestions. Some of the case study organisations conducted these interviews or discussions regularly. For the implementation of pay flexibility, it is necessary to talk about individual performance and the

deficits regularly (see LR 3.1, CS 2.4). If there is a culture of open communication within the organisation, which also includes the performance assessment, a subsequent adjustment of pay is easier to implement if pay is additionally perceived as fair, equitable and comprehensible by the workers (see LR 3.3). It is recommended to conduct these discussions with all employees at least once or twice a year to provide and maintain two-way feedback on performance and collaboration (Levi 2011). In general, regularly implemented processes become established and self-evident. The trade union of the German metal industry also stresses the importance of regular appraisal interviews and calls upon its members to demand these as well (Industriegewerkschaft Metall [trade union of the German metal industry] 2013). For the German building trade this element should be introduced first on a voluntary basis and become a common process. However, there is nothing to prevent a later establishment of this element in the respective collective bargaining agreement. Some decision-makers in the case organisations noted that they prefer to terminate the employment relationship if the performance drops significantly. Thus, they avoid a confrontation. Instead of discussing a solution openly, they lose a skilled worker. The inclusion of the topic of open communication in the model has arisen because a significant opportunity for improvement is seen (see CS 2.4). A regular discussion about performance and pay in general leads to the practice of talking about changes in performance (see LR 3.1). Feedback on increased or decreased performance can be given without inhibitions. The employee can express his opinion and make improvements (see LR 2.2). The risk of a termination can be reduced in the event of a strong underperformance.

In addition, some of the decision-makers interviewed feared that wage adjustments based on performance fluctuations would lead to losses in motivation in the team. But this must be prevented (see CS 2.6). Demotivation can be prevented by a constant communication based on an open culture (see LR 3.2, CS 2.4). The basis is provided to address motivation deficits. A prerequisite is that the decision-makers have or attain the skill to perform constant communication professionally (see LR 2.2). The initiative has to be taken by them. In the case of personal deficits, they should receive training in which they learn and apply the principles and effects of human communication. In some expert interviews the researcher observed that the decision-makers had inhibitions in communication to address unpleasant issues with their employees. In a few interviews, the researcher addressed this problem by mentioning that overcoming these inhibitions leads to open communication. In the discussions with the participants some of them said that they have difficulties in talking

regularly with each worker at this personal level. It is partly due to the fact that they have know each other for a long time and have a very personal relationship with them.

The worker may also have an interest in having regular communication between himself/herself and the decision-maker. These regular exchanges give him/her the opportunity to speak confidentially about his performance changes. In the expert interviews and focus groups, the participants indicated that they have often worked together for a very long time and that their families have already known each other for years. There is a trust base which can be used to talk about changes in performance. If this happens at an early stage, it is possible to talk about alternative employment opportunities or further training in order to have trained the worker in a timely manner so that he can assume other equivalent tasks in the team or in the organisation (see LR 3.7, CS 3.3). Early countermeasures can prevent a pay adjustment. In this context, concepts of life-long learning can be integrated and implemented (see LR 3.7; CS 3.3). It is conceivable that the workers can accept lower wages for physically less demanding tasks such as customer service, gardening, repair work. If there are no solutions found in a joint conversation, the regularly appraisal interview provides an opportunity for talking about a pay adjustment. Performance fluctuations and associated pay adjustments can be addressed. Pay flexibility can be achieved. The implementation of leading regular appraisal interviews and staying in constant communication means economic effort, which the employer is responsible for. The employer has to invest working time for conversation and open communication (Esser & Schelenz 2013). He must act economically in a way that the investment in working time is not higher than the benefits of pay flexibility. An economic loss from the generation of pay flexibility is not effective.

The second field of action in the dimension of „contractually“ is the field called “arrange and agree permanently variable parts of pay“. An implementation of pay flexibility in the employment contract is goal-oriented and facilitates the realisation of pay flexibility (see CS 2.1). It is ensured that pay is agreed flexibly to a defined proportion by both contracting parties. The principles that have been described in the dimension "individually" should also be taken into account. The employment contract should include the characteristics of fairness, satisfaction of the need of safeguarding and the promotion of motivation. Ideally, the design of contract components for pay flexibility is consistent or comparable in the respective organisation. Equal tasks should have the same contract structure, so that the workers have the feeling of equity. Injustice leads to demotivation according to Adams (1963), which should be excluded if possible. Differences in the design of variable contract components are

desirable for various tasks. They should be comprehensible. In principle, as the employment contract is designed for a longer period, the variable part of the contract should be designed openly and changeably (see LR 3.1; LR 3.4). Sprenger (2002) suggests a so-called 'permanently negotiable salary'. It should be defined that the flexible pay parameters can change during the term of the employment contract if the job requirements or the worker's capacity change. It is also possible to support components of seniority-based pay. It could be possible to pay out today's additional performance at a later point of time when additional performance is no longer possible due to a physical decline in performance. Usually, higher performance is rewarded today by constant fixed allowances paid above the general pay scale. If the willingness to pay over-tariff allowances exists in the organisation, they should be used flexibly rather than fixed. The implementation of the action fields of this dimension is a particular challenge for both contracting parties. As long as pay flexibility is not common in the business, individual organisations will encounter difficulties in implementing it. A change in existing contracts is expensive, as in most organisations hourly wages are paid based on the working hours. Payroll accounting is mainly simple because little fluctuating income must be settled. In the case of a new contract, variable components, such as performance-based elements, can be included right from the start of employment (see LR 3.5). The continuous conversion of fixed pay components into variable components for existing contracts is a longer process. Both contracting parties must be convinced of the advantages of the inclusion of variable or flexible components. It may be desirable to implement flexible parts of pay in smaller steps over several years of employment. For this field of action the decision-makers will need creativity for the design of flexible contract components and staying power for the long-term perspective to obtain pay flexibility. Instead of realising immediate wage increases, for example, savings are formed that will be used later in case of underperformance. On the other hand, employees can build up trust with their employers through their contractual commitment and agree on a more long-term cooperation. A deliberate and sensitive procedure does not reduce the basis of trust between the contract parties.

Both fields of action belonging to the dimension of "contractually" require a longer period of introduction and more time for implementation when the company culture provides neither open communication nor flexible pay. The flexibility is not yet very strong in the building trade. One example was provided by a radio interview with a decision-maker in the roofing trade (Dürscheidt 2017): This decision-maker could not imagine that he will use flexible

deployment options such as a reduction of working time with decreasing performance to relieve the worker and to preserve his position. In this dimension, no unilateral actions are possible. In the case of an activity by one of the contracting parties the acceptance or consent of the other is necessary. In order to obtain a quicker acceptance or approval of the other party, it is helpful when the fields of action from the dimension "individually" are realised. If there is motivation, fairness and safeguarding, a more favourable basis for the conclusion of agreements is created in the dimension "contractually". A lack of these factors makes the implementation of the demands of the dimension of "contractually" more difficult. Individual motivational factors are needed which can meet the requirements. An example is the prospect of higher pay if performance expectations are exceeded.

5.3.4 The dimension of "collectively"

The dimension of "collectively" consists of two fields of action with a focus on a collective bargaining orientation. It relates firstly to a field of action that results from the collective bargaining agreements and, secondly, a claim that is addressed to the collective bargaining partners (see LR 3.5, CS 2.1, CS 3.2). The demand is to include future-oriented possibilities of pay in the collective agreements. Both groups of participants - the decision-makers and the workers – expressed in the interviews their advocacy for the existence of collective bargaining agreements when it comes to pay. The collective bargaining agreements are a set of instruments for them which provides a legal basis for both contracting parties to which they trust (Confederation of German Employers' Associations (BDA) 2017b). Laws and collective agreements guarantee social safeguarding for the worker. Therefore, creating or extending a basis for pay flexibility - in its widest sense – is important as long as no regulations exist.

The first field of action called "use possibilities of pay flexibility available" applies to both participants, the decision-makers and the workers. The current wage structure of the various businesses in the German building trade is characterized by a landscape of unused opportunities and rigid structures resulting from the collective bargaining agreements (see LR 3.5). None of the case study organisations investigated applies the existing wage structure options for more pay flexibility, which are available in the collective bargaining agreements.

It is paid exclusively in the fixed hourly wage. Some organisations also pay partial bonuses, usually on an annual basis, or fixed over-tariff allowances per hour. Consistent payments will no longer allow unilateral changes after a certain period of time. The worker relies on the constant recurring payments. Then he/she states that he/she is dependent on these wages and that they secure his/her standard of living. The field of action of this dimension seeks to use the possibilities of pay flexibility of the relevant collective bargaining agreement, if there are any. However, the knowledge of the decision-makers on the existing options for pay flexibility are limited or absent. To realise the opportunities this knowledge must enter into the organisations. The collective bargaining parties or other associations of the German building trade should offer information events or training. The workers should also be informed about the design possibilities and the meaningfulness of pay flexibility, so that safeguarding arises in the organisations when this topic is addressed. If appropriate knowledge is available in the organisations related to both participants, it is possible to assess the possibilities that fit and can be applied to the respective organisation. A certain amount of time is needed to utilise the existing regulations of the collective bargaining agreements. In contrast to the rather long-term process, which has been described in the "contractually" dimension, the implementation of this field of action is likely to be shorter. The introduction is easier to argue because a legal basis already exists and the confidence in the correctness of collective agreements is present for both parties. In particular, the existing tariff regulations should be used. They enable the organisations to react to recognizable long-term performance deficits with wage adjustments. In such cases, the collective agreement provides an involvement of the collective bargaining parties. This should not deter the organisations. The collective bargaining parties fulfil the purpose of a controlling body for both the employer and the employee. The result can be positive for both contracting parties because the employment relationship can be secured in the long term even with a performance restriction. Thus, a termination of the employment contract can be avoided. The implementation of the measures is again based on the principle that in the long-term no higher costs will be incurred by the realisation of pay flexibility contrasting with pay flexibility benefits. It must be taken into account that introduction phases for process changes are often complex, but lead to cost savings in the long term.

The second field of action of this dimension is called "commit for lifecycle-related pay". It includes the requirement to add lifecycle-related pay in the collective bargaining agreements of the German building trade in order to reflect the changes resulting from the ageing

workforce into pay structures. A prototype for the design of this requirement is provided by the above mentioned collective agreement of the chemical industry of Germany, which was agreed in 2012 and deals with the consequences of the demographic changes. The main priorities of this collective agreement, which has an indirect impact on pay flexibility, are:

- measures for an age-appropriate and health-oriented design of the work processes and work organisation
- increase of working time flexibility
- measures for the prevention of employability
- measures for work qualifications within the full working life
- ensuring the transfer of experience in the organisations

This collective bargaining agreement provides a set of possibilities to meet the challenges of demographic change. It has a long-term effect: tariff increases are distributed both to the actual wages and to these measures. It is a long-term financing structure, which can be used individually in case of a performance reduction. A pay reduction of the existing wage is no longer applicable or pay restrictions are filled by funds, if there are performance restrictions (see CS 3.2). As every worker pays into this fund, regardless of whether he/she uses measures personally, this is based on the principle of solidarity.

It is evident that the measures have a preventive effect, so that neither a mental nor a physical performance deficit arises. Maintaining the human capacity by using different measures is at the centre of this agreement (see CS 1.1). Increasing flexibility of working time by reducing total working time for example also leads to a performance maintenance such as lifelong learning and knowledge preservation. Certainly, such a collective agreement cannot be identically morphed into the German building trade. The demand to be expressed by this field of action in the model, is the inclusion of collectively agreed commitments to address the disadvantages of the demographic change (see LR 3.5). The demographic change, which is linked to an ageing workforce, presents particular challenges for the German building trade. The trade is still to be characterized by predominantly physical work, which requires a good physical performance of the workers (see CS 1.4). As physical performance cannot be guaranteed up to the age of retirement and additionally there are the problems to allure junior staff to the trade, it is necessary to create collectively agreed possibilities as quickly as possible in order to enable the organisations to deal differently the various life phases of their workers. For example, it could be a possibility to form reserves for an ‘old-age fund’, which

can be used later in working life in case of a performance limitation. Another option is to freeze the base salary in connection with the promotion of variable parts in the payment. Overall, the collective agreements of the German building trade should provide more opportunities of pay flexibility by measures to maintain the performance or by measures for the safeguarding and a fixed handling of performance restrictions. Since the organisations of the building trade have different structures and key activities, the content of collective agreements should be specifically mentioned but not described in detail. It is important to give a scope of design and a scope for action into the organisations in order to meet their individual needs as best as possible.

Collective bargaining to ensure employability in old age could also be a way of solving the problem of the youth generation. The fear of young people, that they will no longer be able to exercise their profession in old age in a trade for health reasons, can be counteracted with the regulations in the collective agreement (see LR 3.5, LR 3.7, CS 3.4). The agreement of future-oriented measures is attractive and motivating for young people to start their professional life in the building trade. Thereby, the recruiting of junior staff is supported.

Both fields of action of the dimension „collectively“ refer first, to regulations which are already included in the collective bargaining agreements and which should be launched, or secondly, to the requirements placed on the collective agreements in order to deal with demographic change in the future. Pay flexibility is directly or indirectly taken into account in the recommendations in this dimension, as the proposed measures finance themselves by being planned and financed in the long term. This is utilised at a later date, namely, when the worker finds themselves the situation that they are not able to fulfil their tasks as once they could. He/she is given the certainty that he/she keeps his/her job up to retirement age. It also offers a long-term attractive workplace with social safeguarding. The decision-maker does not need to worry that he pays an excessively high wage, which no concomitant performance.

5.3.5 The dimension of "market-oriented"

The dimension of "market-oriented" is divided into two fields of action. Both fields of action offer demands to organisations of the German building trade for their market orientation with

the aim of achieving or obtaining pay flexibility. In the following, both fields of action are described and explained in detail.

The field of action called "offer attractive pay for all phases of working life and apply for the trade" deals with the orientation of organisations to the labour market in order to strengthen pay flexibility in a more indirect way.

The labour market is currently characterised by a high labour demand by the organisations. The organisations have to recruit workers in order to process their high backlog of orders (Handwerkskammer Ostwestfalen-Lippe zu Bielefeld 2017). They need skilled workers and people in their twenties who can be trained in the trade. This dimension is part of the model of pay flexibility, because an attractive job offer is crucial (Avantgarde experts 2016), so that the worker is interested in an activity in the building trade at all. If people in their twenties are induced to join the building trade, the demand of the workers and the decision-makers for mixed-aged teams can be much better ensured. The team composition, which is significantly important for the team performance (see LR 3.1, CS 1.2), can be designed more variably by the decision-maker if there are more possibilities of composition. Mixed-aged age team structures support this demand (see CS 1.5). Pay flexibility is achieved if the teams can be composed in such a way that performance and payment of the individual fit (see LR 3.4, CS 1.3). In this context, the desires of the workers should also be realised so that they can utilise and integrate their knowledge into the process of the team composition. This in turn increases motivation and identification with the tasks.

The two previous dimensions have described the fact that pay flexibility is integrated both on the basis of collective bargaining agreements and individual employment contracts. The design of pay flexibility has to satisfy the requirements of both the decision-makers and the workers. Both parties have the aim of maximising their profit. However, they pursue different ways of achieving this aim. When communicating an attractive job offer on the labour market, the advantages for the worker have to be the focus. The consideration of "all phases of working life" signals to the jobseeker that a long-term working relationship is desired. The design of pay is geared to this long-term work relationship and is made flexible by focusing on various phases of working life. Attractiveness in pay is achieved when the needs of the worker are covered by the design of pay. The work offer includes the factors of fairness, safeguarding and motivation described in the dimension of "individually". Collective pay options, which are interesting for the worker, should be well communicated, as well as the

opportunities that the organisation can offer with an employment contract. At the beginning of the introduction of more pay flexibility in the German building trade without presence of the collective pay options, organisations should carefully but nevertheless significantly and continuously approach the topic. Gentleness as well as empathy in the procedure are important to bring the older workers (55 years old and older) to a realignment and convince them. Younger workers need more explanations regarding the need for different and more flexible pay. With the introduction of other collective bargaining regulations on pay flexibility, the employer can delve aggressively into the labour market. The topic is broadened with the consequence of reaching more potential applicants for the trade. Then, the organisation itself can communicate the possibilities of the pay design it can offer. In addition, the field of action contains the demand to present an attractive offer on the labour market as well as the explicit requirement to apply for the trade. The trade offers a positive employment perspective (Busch 2013). According to the Prognos study (Astor et al. 2013), the current good order situation will continue in the future. This can be bundled with the offer of a future-oriented pay system, which takes into account the different phases of working life (see LR 3.6). Secure prospects of the future combined with good employment opportunities in old age are attractive for applicants of the building trade. A prerequisite for the design of these working conditions is also pay flexibility. As the organisations of the German building trade move in a labour market characterized by a high level of labour supply and a low level of labour demand, it is necessary to promote attractive working conditions. An intensive and target group-oriented communication about the job offer and the working conditions by the organisations to the labour market is essential in order to attract skilled workers (see LR 3.6). On the other hand, workers who are not yet employed are given a limited insight into the world of working in the building trade. This demand places new tasks to the organisations of the German building trade. The general skepticism about changes that was felt in the interviews of the study has to be overcome. A positive advertising for the trade presupposes that those who advertise are also convinced of their job offers. In this field, there is still a need for action.

The field of action called "remain competitive" of the dimension "market-oriented" deals with the competitiveness of organisations in the German building trade. This field of action has been added to the dimension, to secure continuously and permanently the economic aspect while implementing pay flexibility. Measures for pay flexibility are to be defined in order to make organisations competitive. The expert interviews highlighted the importance of

the interrelations between the type of customer orders in connection with the composition of the work teams (see CS 1.3). The team composition according to different criteria is carried out as closely as possible to the customer orders. According to his/her qualifications, skills and knowledge the worker is classified into a work team in which he fits personally. The aim is to achieve a high level of performance of the work team (see LR 1.1; LR 1.2). In this way, the decision-maker of the organisation can ensure that he receives the highest output of work for the agreed pay. The aim is to be able to offer the product or the service at a competitive price on the market in order to receive the customer order (see LR 3.6). This can also be in the interest of the workers. Then both their jobs and their pay are ensured. The different team composition which influences the pay is the variable related to pay flexibility (see LR 3.1). In this respect, the control of pay flexibility is performed indirectly through the team composition. This approach is the common practice in today's building trade. Additionally regarding this aspect, it is necessary that skilled workers are recruited by attractive pay for all age structures. If pay components are to be more variable in the future, pay can also become a stronger variable beside the team composition. The more flexible pricing for products or services leads to greater competitiveness. Competitiveness is a guarantee for the existence of an organisation on the market. The stability of an organisation on the market is desired by both the decision-makers and the workers. On the other hand, all actions and efforts for pay flexibility must be appropriate so that they are - in terms of costs - lower than the expected profit from the efforts. Costs related to pay flexibility are, for example, conversion costs, handling costs, or investment in working hours for communication with applicants and workers. The profit from pay flexibility can be generated in all phases of a working life. The absolute amount of profit is based on the nature and extent of wage adjustment. In principle, organisations with a balanced age structure can continuously generate profit from pay flexibility, because there are constantly different phases of working life among the workers. Pay, which is adapted to the different phases of working life, has various measures of flexibility in the background. There are phases in which more investment must be made than profit flows or vice versa. The returns can be used for competitiveness, for example, by offering competitive prices or by making reserves for investment. The offers of pay flexibility to job candidates or workers is intended to strengthen the competitiveness of the organisation. An endangerment of the market position must be prevented. This field of action is geared to the organisation's holistic and long-term efficiency in order to ensure competitiveness. The decision-maker is intended to adjust the pay flexibility in such a way that only those measures or pay components are agreed upon or used which have an economically efficient

effect, but with the different temporal perspectives (short-term, medium-term and long-term effects).

The attractiveness of the entire job offer is characterised by social acceptance, comprehensibility, fairness, justice and safeguarding from the perspective of the worker (see LR 3.4). Too strong a profit orientation by the decision-maker leads to a loss of trust and demotivation on the part of the worker. This, in turn, may cause unwanted performance decrease. The decision-maker moves in the area of conflict between his interests and those of his workers and finds a balance between different objectives if possible. The moral dilemma should be prevented (see CS 3.5). A cautious and appropriate approach is therefore necessary. Also the open communication as described in the dimension "contractually", combined with transparency of decisions, is of importance. Thus, the workers can understand the decisions. Particularly in smaller organisations, such as in the German building trade, this is possible because daily contact is constant.

Both fields of action cover areas which indirectly reach pay flexibility. One focus is to satisfy the demand for labour by offering attractive working conditions in the building trade. The goal is to composite the teams in a way so that both the workers and customers are satisfied: the worker by being deployed in a performance-related way and the customer by obtaining his order as agreed. Both aspects lead to the fact that the employer operates profitably and the organisation remains competitive.

6 Contributions and an outlook to further research

This last section concentrates on creating an overall picture of the results and contributions of the study and presents implications for further research and practice. In addition, the limitations of the study are addressed. At the end of this section, an outlook to further research and application approaches is addressed.

The Four-dimensions-model of pay flexibility is based on the findings of the literature review and of the case studies carried out to provide a basis for establishing a flexible payment in order to realise pay adjustments – both direct or indirect – for the team members in the German building trade. Table 12 shows in which part of the model the results of the literature

review have been processed, table 13 shows those of the case studies. The results and findings are listed on the left side of each table. The dimension and the action field of the model in which the results and findings are integrated are placed opposite to the respective result or finding on the right side of each table. These tables demonstrate that all requirements that have arisen from the literature review and from the case studies have been realised in the model. On the other hand each dimension and each action field has a relation to the results and findings.

Results and findings of the literature review:	Realised in dimension/field of action (of the "The Four-dimensions-Model of pay flexibility")
LR 3.1: It is necessary to analyse the specific changes of team structures caused by a higher average age in order to achieve information about changes in performance and team composition. A means to achieve this information is regular communication with the team members.	Contractually: Employer and employee should lead regularly appraisal interviews and stay in open communication
LR 3.2: The motivation of the individual is taken into account, because it is of central importance in terms of pay flexibility.	Individually: Employer should activate and stabilise motivation of the employee
LR 3.3: As equity and fairness also influence motivation and performance in terms of pay, factors such as equity and fairness have to be integrated in the development of a model of pay.	Individually: Employer should be fair and give safeguarding regarding pay
LR 3.4: The literature review carried out that – in terms of ageing, performance and pay - the individual is in the centre of investigation. The crucial factors related to age, performance and pay refer to the individual. The model has the focus on the individual.	Contractually: Employer should arrange and agree permanently variable parts of pay; Contractually: Employee should agree permanently variable parts of pay; Collectively: Employer (and employee) should use possibilities of pay flexibility available
LR 3.5: The demands on the terms of collective agreements for pay flexibility have to be integrated into the model of pay flexibility because they form the contractual basis of the employment relationship in addition to the employment contract.	Collectively: Employer (and employee) should use possibilities of pay flexibility available; Collectively: Social partners should commit for lifecycle-related pay
LR 3.6: The external market conditions lead to specific behaviour of the employer and the employee. Negotiations about pay are influenced by the supply and demand of labour. This also determines the price of work.	Market-oriented: Employer should offer attractive pay for all phases of working life and apply for the trade; Market-oriented: Employee, trade unions and associations should apply for the trade
LR 3.7: Life-long learning is a means of avoiding pay reductions or adaptations which are caused by decreasing performance with increasing age.	Contractually: Employer and employee should lead regularly appraisal interviews and stay in open communication; Collectively: Social partners should commit for lifecycle-related pay

Table 12: Results and findings of the literature review realised in the model

Results and findings of the case studies:	Realised in dimension/field of action (of the "The Four-dimensions-Model of pay flexibility")
CS 3.1: Pay flexibility is desirable, but no pay-for-performance in the traditional narrow sense.	Collectively: Employer (and employee) should use possibilities of pay flexibility available
CS 3.2: Pay flexibility is generally desired by the decision-makers because pay dynamics has an impact on their profit. From their point of view pay flexibility should fulfil the following minimum criteria:	Market-oriented: Employer and employee should remain competitive
- part of the collective bargaining agreements	Collectively: Employer (and employee) should use possibilities of pay flexibility available; Collectively: Social partners should commit for lifecycle-related pay
- basis is the minimum wage	Contractually: Employer should arrange and agree permanently variable parts of pay; Contractually: Employee should agree permanently variable parts of pay
- measurable, uncomplicated, clear, equitable and individual	Individually: Employer should be fair and give safeguarding regarding pay
- low administrative and payroll expenses	Market-oriented: Employer and employee should remain competitive
- application without negative discussions with the workers	Contractually: Employer and employee should lead regularly appraisal interviews and stay in open communication
- no loss of motivation in the team	Individually: Employer should activate and stabilise motivation of the employee
- performance and pay are in an economic relationship	Inner circle of the model: Pay flexibility must be profitable and socially acceptable.
- aim of increasing performance with a guaranteed quality standard	Market-oriented: Employer and employee should remain competitive
- pay reductions should be avoided	Contractually: Employer should arrange and agree permanently variable parts of pay; Contractually: Employee should agree permanently variable parts of pay
- competitiveness must be maintained	Market-oriented: Employer and employee should remain competitive
CS 3.3: The workers have the following requirements for a system of pay flexibility:	
- part of the collective bargaining agreements	Collectively: Employer (and employee) should use possibilities of pay flexibility available; Collectively: Social partners should commit for lifecycle-related pay
- measurable, comprehensible and equitable	Individually: Employer should be fair and give safeguarding regarding pay
- safeguarding must be realised to maintain a standard of living	Individually: Employer should be fair and give safeguarding regarding pay; Individually: Employee should ask for safeguarding regarding pay
- The aim is the maintenance of workability, for example through health care and continuous training (life-long learning)	Collectively: Social partners should commit for lifecycle-related pay
CS 3.4: The extent of pay flexibility is also determined by the labour market conditions. A labour market characterized by skilled shortage is less elastic with respect to pay flexibility.	Market-oriented: Employer should offer attractive pay for all phases of working life and apply for the trade; Market-oriented: Employee, trade unions and associations should apply for the trade
CS 3.5: The moral dilemma, in which pay flexibility stalls, must be resolved.	Inner circle of the model: Pay flexibility must be profitable and socially acceptable.
CS 3.6: Pay flexibility is only successful if socially acceptable and profitable. Both requirements must be fulfilled.	Inner circle of the model: Pay flexibility must be profitable and socially acceptable.

Table 13: Results and findings of the case studies realised in the model

The background of the third research question is the increasing average age in work teams due to the demographic change. It has been found that a higher average age in work teams leads or will lead to changed performance results. Today, changed performance affects team members directly in the rarest of cases. Since there is little pay flexibility in the organisations due to rigid structures in collective bargaining agreements and employment contracts, the decision-makers in the organisations avoid a loss of profit through intelligent management of the orders in combination with the work team composition. As the average age in work teams increases, this method of management will become less realisable. Pay flexibility is intended to support both contracting parties, employers and employees, in order to maintain their competitiveness. It is considered on an individual level because the factors influencing the pay do not extend to the team as a whole. Each team member, as the individual, assesses the attractiveness of pay depending on his/her economic and personal situation and his/her phase of working life. Pay and pay flexibility cannot be identical for all work team members at all times. It must be tailored to the individual in order to be effective. Thus, the model addresses the individual team member and not the work team as a whole. The model includes four dimensions in which pay flexibility is introduced, built and maintained. The circular arrangement of the model clarifies that the dimensions do not build on one another but act in parallel on pay flexibility. These dimensions are: individually, contractually, collectively and market-oriented. Each dimension contains two fields of action which contribute significantly to the success of pay flexibility. They address both the employer and the employee. Each field of action stands by itself, but there are substantial interrelations between the different fields of action. Activities of every dimension are equally important to realise pay flexibility. Due to increased pay flexibility, a different pay culture is created, which softens or replaces the existing and rather rigid structures of pay. The successful establishment of pay flexibility in the German building trade also depends to a large extent on whether all parties involved - employer, employee and their respective social partners (employers' associations and trade unions) consider the changed pay terms to be meaningful and have faith in them. The objective is to ensure that both contracting parties experience a win-win situation in their joint employment relationship. There will be effects of the demographic changes to the team performance in the German building trade, especially an ageing workforce with a higher average age in the work teams. It must be emphasized that a fair and socially accepted pay in all phases of working life connected with life-long learning contributes to competitiveness for both the building trade and its workers. So far, the decision-makers and the workers avoid communication about decreasing performance. They hide behind the collective agreements in

order not to become active. As flexibility cannot be implemented immediately a start should currently be made to open the subject of pay flexibility so that the effects can be recognized in a few years. Parts of the process need a longer time to be established. When performance changes, it is important to talk about this phenomenon, ideally in an earlier stage. Currently, decision-makers rather dismiss a worker than talk about the decreasing performance. The decision-makers should especially have the courage to propose pay flexibility in the employment contract. Under certain conditions, the workers are willing to agree to pay flexibility (safeguarding, equity, fairness, motivation) because they also achieve advantages, for example a secure job until retirement. Trade unions and employers' associations should be involved in this change process. It should be taken into account that the current labour market conditions, especially the shortage of skilled workers, makes the realisation more difficult. Therefore it is important to start early with an implementation.

With this research, the following research objectives have been achieved:

- To identify the effects of changing work team demographic composition on team performance
- To explore the interrelations between the effects of work team demographic composition on team performance
- To explore the interrelations between the effects of team performance on related pay
- To examine the options available to introduce a flexible payment system that considers changing work team demographic composition in combination with team performance
- To examine the practical implications and potential of a flexible payment system as proposed.

Research contribution to theory

This research offers various contributions to theory. The study forms a basis to reduce further problems of the ageing workforce in terms of changing performance on related pay in work teams. It contributes the importance of demonstrating that a higher average age and ageing in work teams and pay are connected. Most research in terms of demographic change investigates the increasing age and performance, but not the related pay which may have to adapt to the changes. Starting from the approach that pay follows performance (Weißerrieder

2014) or pay is related to performance (Lawler 1998), the study has shown that there are many aspects that influence pay flexibility:

- Labour market conditions
- Competition situation of the respective organisation
- Basics in law and collective agreements
- Structure of the customer orders
- Possibilities for variable team composition
- Shaping of group dynamic processes
- Personal relationship between the decision-maker and the worker
- Qualifications, performance and motivation of the individual in the team
- Expectations of the individual to pay
- Degree of communication of all parties involved

The study provides the contribution to theory that a flexible design of pay offers a stable foundation for a long-term employment relationship, also in a world of an ageing workforce. The requirements for pay flexibility are social acceptance and profitability on an individual basis. The study also contributes to an open discussion about dealing with ageing and pay without discrimination or the fear of reducing the social standard. As a result, the researcher developed a model of pay flexibility for the German building trade, which is characterized by multi-dimensionality and eight fields of action. The model is a composition of action fields for dealing with pay in an environment which is characterised by an ageing workforce and a shortage of skilled workers. The various aspects are combined. It is a holistic approach that characterizes the model.

Research contribution to practice

The contributions of the study to practice are also various. The study shows that integration and establishment of pay flexibility in organisations provide a chance for both employer and employee: to be profitable, to reduce lack of shortage of skilled workers, safe guarding, keeping the standard of living and the possibility to stay in the job until retirement. Pay flexibility needs a longer process for acceptance and integration. A lot of research is done with production teams or with organisational-mental (knowledge) teams. This work deals with work teams in the building trade which offer a mix of physical, organisational and

mental/knowledge work. It is original because research in this business is very rare although this trade offers millions of work places and is a promising area of reform. The application and the establishment of the complete model in practice require a longer introduction in some areas. This is a longer process of change, with which all parties involved have to agree. This limits the implication of the model. Only with conviction they can be taken along the way. There is a discrepancy between the interests of the employers and the workers. While employers prefer a higher degree of flexibility for business reasons in order to maximise their profit, the workers want safeguarding and reject flexibility beyond a certain level which depends on their individual risk-level. This discrepancy leads to limitations in pay flexibility. A successful agreement on flexibility in pay is designed in such a way that both contracting parties see more advantages than disadvantages for themselves. A further limitation arises from the question of whether the German building trade is really capable of being a pioneer of changes. A limitation in the methodology is given to the different interpretation of data and different interpretation of the results (for example: bias or missing information). This is due to the qualitative approach with the subjective reality which is based on the philosophy of relativism. Case study design is subjective. Furthermore this design offers little basis for establishing reliability (low representation of the business or selection of untypical cases or cases with very unusual or unique phenomenon or problems) or to generalize the findings to a wider population of people (critical transferability). Further research with the same topic can be done in other businesses or industries in order to confirm, supplement or refute the results of this research.

Regarding the implementation of the model in practice the bargaining parties can set a framework as a further step in the future. This is a lengthy process because changes in collective agreements often take several years. In addition, as the shortage of skilled workers is one of the great challenges of the future there is no urgent need seen by the bargaining partners to address this issue in collective bargaining. There are more research and publications necessary which have to convince unions and associations that pay flexibility is important to deal with the effects of the demographic changes. They should be motivated to start or go on with negotiating pay flexibility in collective agreements by this further research. The implementation of the contents of the model is critical as under the current market conditions the building trade has to fight to get skilled workers for existing profitably in the market. The recommendation is aimed at the building trade: Try to keep mixed-aged teams at a middle average age so that the team composition can be varied based on the customer order while the team members are willing to realize life-long learning. For this, the

initiative must emanate from the employer. Another topic that could be further researched is that of the life-long learning concepts, especially for the trade which is characterised by hard-physical work. Current knowledge is used with foresight to the further consequences of the demographic changes. The implementation is only feasible if the organisations of the building trade accept the demographic changes and become more active in making the trade and the associated working conditions more attractive. Whether the organisations make use of the instruments depends on the operational personnel policy and the initiative and the understanding of the individual worker. This study with its findings and its model shows the potential for influence that the organisations can use to manage or weaken the effects of demographic change.

General next steps could be:

- indicate concrete design options in the contracts
- establishment of appraisal interviews in the collective agreements
- display a content for lifecycle-related pay for the collective bargaining agreements

Regarding an implementation of the professional practice the contracting partners need to be more sensitized to the subject of pay flexibility, especially about the further measures such as lifecycle-related pay or regular communication about performance. As the contracting partners are not aware about the strengths of pay flexibility enlightening publications of parts of the model and its implications are necessary, preferably in building trade magazines to reach these groups of people.

In addition to creating a model for the expansion and maintenance of pay flexibility which contributes to maintain competitiveness, an application of the model provides further advantages for the participants of the labour market:

- Means for dealing with the shortage of skilled workers and counteracting the loss of skilled workers
- Maintain the performance of the skilled worker up to the retirement age
- Increasing the attractiveness of the specific trades

The case studies were carried out in the German building trade but the model of pay flexibility is not limited to this trade. As the culture, structures and functions are different in other industries, the transferability is critical, but cannot be excluded. The relationships between the ageing workforce, the changing performance and the related pay were identified and new insights are found.

In addition, the model can be refined by further research. Further research is worthwhile because performance and pay will also represent the basic purpose of a working relationship in the future. The relationship between employer and employee will continue to be characterised by a rather controversial relationship. Further research in this context could deal with the following topics:

- How can self-responsibility be achieved or strengthened for a constant or increased team performance by the team members themselves?
- How can the employer integrate the team members into the responsibility for pay according to performance?
- How can life-long learning become an integral part of the relationship of performance and pay in the German building trade?
- Why do the employers and the decision-makers in German building trade behave so hesitantly in dealing with their employer branding despite the well ordered situation?
- How will work and thus pay in the German building trade develop when globalisation and digitisation continue?

The researcher hopes that the German building trade itself will become more a subject of scientific investigation because it offers many other exciting topics for social science.

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Annex I

Tarifvertrag für die gewerblichen Arbeitnehmer des Garten-, Landschafts- und Sportplatzbau

§ 9 Minderentlohnung

1. Die im Lohntarif vereinbarten Löhne gelten für voll leistungsfähige Arbeitskräfte.
2. Für Arbeitnehmer, die infolge körperlicher oder geistiger Gebrechen minderleistungsfähig sind, kann im Einvernehmen mit der Betriebsvertretung ein geminderter Lohn vereinbart werden.
3. Die Vereinbarung bedarf der Schriftform und der Zustimmung der regionalen Tarifvertragsparteien.

The Federal basic collective agreement for commercial workers in the horticulture, landscape and sports arenas building

§ 9 Reduced pay

- 1. The wages agreed in the collective wage agreement apply to fully capable workers.*
- 2. A reduced wage can be agreed for employees who are disadvantaged by physical or mental handicaps in agreement with the workers' council.*
- 3. The agreement requires the written form and the consent of the regional collective bargaining parties.*

Annex II

Extract of 'Research Ethics: A Handbook of Principles and Procedures - Approved by University Research Degrees Committee, September 2008'

Introduction

1. Professional and academic communities are placing increasingly exacting responsibilities on their members to improve the ethical standards of research and practice within their disciplines, and journal editors may require evidence that research projects have secured formal ethical clearance before agreeing to publish their findings.

2. *Research Ethics: a Handbook of Principles and Procedures* has been produced in response to this growing awareness of ethically sensitive issues in research and scholarly activity. Under the aegis of Academic Board, its intention is to guide and, where necessary, regulate the scholarly activities of researchers at undergraduate, postgraduate and staff levels within the University and to promote a stronger appreciation of ethical considerations in research.

3. The Handbook comprises three parts:

Part A is a statement of ethical principles designed to articulate a common set of values to guide and support the professional conduct of academic research and research-related activities. It is based on the statement of ethical principles which has been in use in the University since 1995 and applies principally to all research involving human subjects and participants, as well as to research on live animals.

Section 6 of Part A clarifies the requirements for approval. All University activity that fits the definitions of research in clause 4 of this preamble, including internal consultancies where university staff and/or students are participants, is subject to the provisions of this Handbook.

Part B contains the procedures by which research proposals can be assessed and, where necessary, given ethical clearance.

Part C contains selected appendices which address the general and particular concerns of research in a variety of academic and professional fields. Its intention is to act as a context for the principles and procedures and to offer critical guidance. In particular, attention is drawn to Appendix 1 which is a discussion of some of the principal issues in research ethics, and Appendix 2 which contains a sample of questions that should guide the researcher in minimising risks and moving towards best practice in research.

4. For the purposes of this Code, the definitions used for the various types of research and scholarly activities are those articulated by the Roith Report (PCFC, 1990), which have gained wide acceptance within higher education:

Basic Research: experimental and theoretical work undertaken to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view;

Strategic Research: applied research that is in a subject area which has not yet advanced to the stage where eventual applications can be clearly specified;

Applied Research: work undertaken in order to acquire new knowledge. It is, however, directed primarily towards practical aims or objectives;

Scholarship: work which is intended to expand the boundaries of knowledge within and across disciplines by in depth analysis, synthesis and interpretation of ideas and information and by making use of rigorous and documented methodology;

Creative Work: the invention and generation of ideas, images and artefacts including design. Usually applied to the pursuit of knowledge in the arts;

Consultancy: the deployment of existing knowledge for the resolution of specific problems presented by a client, usually in an industrial or commercial context;

Professional Practice: a variant of consultancy applied to certain well defined professions (for example, law, accounting, architecture, nursing, and social work).

5. The following statement of principles places a considerable emphasis on the personal responsibility of researchers to act ethically and to promote ethical behaviour in all aspects of research activities. It is also recognised that statements of principles and procedures cannot expect to cover every aspect of a complex area such as research ethics. For these reasons, the Research Ethics Sub-Committee - which will operate and monitor the procedures described in this Handbook - would welcome comments and suggestions for future enhancements from individuals, research units, or any other interested parties (Email: Malcolm MacLean and/or Sharon Brookshaw).

Retrieved from:

<http://insight.glos.ac.uk/researchmainpage/researchoffice/Documents/Research%20Ethics%20Handbook%20final%20Nov%202010.pdf>

Annex III

Initial Letter of Contact to Respondents

Sehr geehrte Frau ...,
sehr geehrter Herr ...,

ich bitte Sie im Rahmen meines Forschungsprojektes über die „Flexibilisierung der Bezahlung“ um ein Interview.

Mein Name ist Gabriele Sprenger und ich bin an der Fakultät für Betriebswirtschaft an der University of Gloucestershire in Großbritannien immatrikuliert und plane diese Universität mit dem DBA (Doctorate of Business Administration) abzuschließen. Aus diesem Anlass möchte ich Sie um Ihre Hilfe bitten. In meinem Projekt beschäftige ich mich mit der „Flexibilisierung von Bezahlung“ in deutschen Handwerksbetrieben. Der Schwerpunkt liegt auf den Herausforderungen durch den demografischen Wandel, der sich auf die Belegschaftsstruktur auswirkt. Im Mittelpunkt meiner Forschungstätigkeit steht die Frage, wie die Bezahlung von Mitarbeitern in deutschen Handwerksbetrieben flexibler gestaltet sein kann, um den sich verändernden Belegschaftsstrukturen begegnen zu können. Ich interessiere mich dabei einerseits für Veränderungen in der Teamzusammensetzung und für die Auswirkungen auf die Leistung im Team und andererseits für die Bezahlung der Teammitglieder bei sich ändernden Ergebnissen.

Zur Untersuchung dieser Fragen führe ich Gespräche mit Inhabern oder Entscheidungsträgern aus Handwerksbetrieben. Der Erfolg dieser Forschung hängt davon ab, inwieweit es gelingt, diese Experten trotz ihrer knappen Zeit für die Teilnahme an einem Gespräch zu gewinnen. Ich wäre Ihnen sehr dankbar, wenn Sie sich bereit erklären würden für ein solches Interview (Dauer ca. 60 Minuten). Die zu besprechenden Leitfragen erhalten Sie in der Anlage zu diesem Brief. Um dem Gesprächspartner eine uneingeschränkte Aufmerksamkeit geben zu können, wird das Gespräch aufgezeichnet.

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Viele Grüße

Gabriele Sprenger

Initial Letter of Contact to Respondents (Direct translation from the German version)

Dear Sir/Madam,

I am conducting a research project on “flexible pay” and I would like to ask you if you would please agree to give an interview.

My name is Gabriele Sprenger and I am from the business school at the University of Gloucestershire in Great Britain. My plan is to finish with the DBA (Doctorate of Business Administration).

For this reason, I am asking for your help. In my project I am working on flexibility in pay in the German building trade. The focus is on the challenges brought about through the demographic changes in the population profile with impacts on the workforce composition. At the centre of my research is the question of how the pay of employees in the German building trade can be more flexible in order to be able to respond to the changing workforce compositions. I am interested in on the one hand for changes in the team composition and its impact on performance and on the other hand for the pay of the team members in response to the changing results.

In order to investigate these topics, I intend to interview owners of trade enterprises or people with decision-making roles in this trade. The success of the research project depends upon these experts, despite the fact that they have limited time, agreeing to be interviewed. I would be very grateful if you would agree to give an interview (Duration: about 60 minutes). You can find the key questions to be discussed in the attachment to this letter. I would like to bring to the attention of the interviewee that the conversation will be being recorded.

Participation is voluntary. All information will be treated confidentially, the identity of the participants will not be published and the data will be evaluated and produced without names.

In the next few days I will phone you and enquire about an appointment. Today I would like to thank you for accepting my request for information. If you have any questions, please contact me (phone: or or by e-mail at).

Sincerely yours

Einführung / introduction

Aufgrund niedrigerer Geburtenraten und steigender Lebenserwartung wird die Zahl der älteren Menschen in der deutschen Bevölkerung zunehmen. Für das Jahr 2020 wird erwartet, dass die größte Altersgruppe in Deutschland zwischen 50 und 64 Jahren mit 39% vertreten sein wird. Heute wird die stärkste Altersklasse durch Mitarbeitern im Alter zwischen 35 und 49 Jahre mit 37% gebildet. Alle diese Zahlen zeigen, dass das Durchschnittsalter der Beschäftigten insgesamt steigen wird. Bis zum Jahr 2020 wird es 10,1 Millionen weniger Erwerbsfähige unter 45 Jahren in Deutschland im Vergleich zum Jahr 2000 geben. Andererseits werden 4,7 Millionen Erwerbsfähige über 45 Jahren bis zum Jahr 2020 im Gegensatz zu 2000 dem Arbeitsmarkt zur Verfügung stehen. Da die Alterung der Erwerbsbevölkerung erhebliche Auswirkungen auf Organisationen hat, soll dies näher untersucht werden. Es wird geschätzt, dass sich die Beschäftigtenstruktur in Arbeitsgruppen nach einem ähnlichen Muster ändert, wie sich dies in der Gesamtbelegschaft von Organisationen zeigt. Der Schwerpunkt der Forschung sind "Arbeitsteams" in der deutschen Bauwirtschaft. Insbesondere konzentriert sich die Forschung auf ein System flexibler Bezahlung für diese Arbeitsgruppen. Die Forschungsarbeit fragt nach den Auswirkungen, die die veränderte Zusammensetzung von Arbeitsteams auf Flexibilisierung in der Bezahlung hat bzw. haben sollte. Sie will herausfinden, wie die Flexibilität in der Bezahlung angepasst werden muss, um sich der ändernden demographischen Teamzusammensetzung zu begeben.

Ziel dieser Forschungsarbeit ist es, ein Modell der Lohnflexibilität für Arbeitsgruppen in der deutschen Bauwirtschaft, das in Zusammenhang mit der sich ändernden Zusammensetzung der Arbeitsteams steht, zu entwickeln. Das Modell der Lohnflexibilität, das neue Denkansätze über Vergütung und Leistung beinhaltet, kann die Grundlage für neue Konzepte der Bezahlung bilden.

Lower birth rates and increased life expectancy mean that the number of older people will increase within the German population. For 2020, it is expected that the largest age group in Germany will be between 50 to 64 years old, represented by 39%. Today the largest working age group is formed by employees in the age class between 35 and 49 years old with 37%. All these figures suggest that the average age of the workforce will rise overall. In total figures, there will be 10.1 million less employable persons under 45 years old in Germany by 2020 compared to in 2000. On the other hand 4.7 million employable persons over 45 years old by 2020 in contrast to 2000 will be available on the labour market. The ageing workforce has significant implications for organisations which should be explored more fully. It is estimated that the workforce composition in work teams is also changing following a similar pattern, consistent with the total workforce of organisations. The focus of this research is 'work teams' in the German building trade. In particular, the research will focus upon a system of flexible payment for the related work teams. The question posed by this research relates to the impact of changing work team composition on flexible pay. This research

explores the way in which pay flexibility for work teams may be adapted to meet the changing demographic composition.

The aim of this research is to develop a model of pay flexibility for work teams in the German building trade related to the changing workforce composition. The model of pay flexibility may include new thinking about pay and performance forms as a basis for new concepts of payment.

Angaben zur Organisationsstruktur: / *information about the organisational structure:*

Anzahl der Beschäftigten, Struktur und Altersaufteilung / *number of employees, structure and age range*

Leitfragen im Experten-Interview / *Key questions in the expert interview*

Betrachtung der Arbeitsgruppe / *examination of the work team:*

- Nach welchen Kriterien werden die Arbeitsgruppen zusammengestellt? *What are the criteria to composite the work team?*
- Wie verändert sich die Leistung bzw. das Arbeitsergebnis der Arbeitsgruppe, wenn die Zusammenstellung geändert wird? *How does the performance or the result of the work team change if team composition changes?*
- Inwiefern hat die Zusammensetzung der Arbeitsgruppe Einfluss auf die Arbeitsleistung der Gruppe bzw. auf das Arbeitsergebnis? *How does the composition of the work team influence team performance or the team result?*

Betrachtung des Einzelnen in der Arbeitsgruppe / *examination of the individual in the team:*

- Wie wirkt sich ein steigendes Durchschnittsalter auf die Leistung der Arbeitsgruppe aus? *How does an increasing average age impact on team performance?*
- Wie decken sich Leistung und Bezahlung dabei? *How do performance and pay match it?*
- Wie wird die Bezahlung an die individuelle Leistung angepasst? *How is the pay adapted to individual performance?*
- Wie wirken sich Leistungsschwankungen bei der Bezahlung aus? *How do performance variations affect in pay?*
- Wie könnte Flexibilität in die Bezahlung kommen? *How can the payment be more flexible?*
- Wird im Leistungslohn bezahlt? Warum? Warum nicht? *Are employees paid based on performance? Why? Why not?*

- Wie könnte eine Lohndynamik gestaltet sein, unabhängig von den heutigen tariflichen Zahlungsmöglichkeiten? *How can dynamism in pay be designed independently of the present options of the collective agreements?*
- Welche Anpassungsmechanismen würden Sie sich zur Erhöhung der Flexibilität in der Bezahlung wünschen? *Which adjustment mechanism would you like to increase pay flexibility?*

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The aim of this research is to develop a model of pay flexibility for work teams in the German building trade related to the changing workforce composition. The model of pay flexibility may include new thinking about pay and performance forms as a basis for new concepts of payment.

Persönliche Angaben / *personal data*:

- Wie alt sind Sie? *How old are you?*
 - Seit wann sind Sie in diesem Betrieb beschäftigt? *How long have you been working in this organisation?*
 - In welcher Funktion sind Sie beschäftigt (Helfer, Gehilfe mit wenig Erfahrung, Gehilfe mit mehrjähriger Erfahrung, Experte, Vorarbeiter, Meister,

sonstige)? *In which position are you employed (helper, assistant with little experience, assistant with several years of experience, expert, foreman, master, other)?*

Leitfragen in den Focus Gruppen / *Key questions in the focus groups*

Betrachtung der Teamzusammensetzung und Teamleistung/ *examination of the team composition and team performance:*

- Wie verändert sich die Leistung bzw. das Arbeitsergebnis der Arbeitsgruppe, wenn die Zusammenstellung geändert wird? *How does the performance or work results of the work team change if the composition is changed?*
- Inwiefern hat die Zusammensetzung der Arbeitsgruppe Einfluss auf die Arbeitsleistung der Gruppe bzw. auf das Arbeitsergebnis? *To what extent does the composition of the work team have an influence on the work performance of the team or on the work result?*
- Was meinen Sie: Wie verändert sich die Leistung des Arbeitsteams, wenn das Durchschnittsalter sich erhöht? *What do you think: How does the performance of the work team change if the average age increases?*

Teamleistung und Flexibilität in der Bezahlung/ *Team performance and pay flexibility*

- Wie wird die Bezahlung an die individuelle Leistung angepasst? *How is pay adjusted to the individual performance?*
- Was halten Sie von flexibler Bezahlung – also Bezahlung an die Leistung gebunden? *What do you think of pay flexibility – in other words: pay related to performance?*
- Wie würden Sie sich wünschen im höheren Alter bezahlt zu werden? Genauso wie heute oder wenn anders, wie? *How would you like to be paid at a higher age? Just like today or if differently, how?*

Annex VII

Collective agreement of the German chemical industry “working lifetime and demography”:

Zwischen dem

Bundesarbeitgeberverband Chemie e.V., Wiesbaden,

und der

Industriegewerkschaft Bergbau Chemie, Energie, Hauptvorstand, Hannover

wird folgende Neufassung des Tarifvertrages

„Lebensarbeitszeit und Demografie“

vom 16. April 2008 in der Fassung vom 27. September 2008 mit Wirkung zum 1. Juni 2012 vereinbart:

Präambel

Der demografische Wandel in Deutschland wird in den kommenden Jahren als neue Einflussgröße auf den wirtschaftlichen Erfolg der Unternehmen und die Beschäftigungs-situation der Arbeitnehmer Auswirkungen haben. Indem sich die geburtenstarken Jahrgänge dem Rentenalter nähern, nimmt die Zahl der älteren Beschäftigten zu. Gleichzeitig wird sich die Anzahl junger Nachwuchskräfte allmählich verringern - eine Folge der gesunkenen Geburtenziffer.

Die Auswirkungen des demografischen Wandels müssen gestaltet werden. Gemeinsame Intention und Aufgabe der Sozialpartner der chemischen Industrie ist es, durch zukunftsfähige Rahmenregelungen eine nachhaltige und vorausschauende Personalpolitik zu ermöglichen. Diese berücksichtigt zum einen die Bedürfnisse der Unternehmen nach veränderten Personalstrukturen sowie die Interessen der Beschäftigten nach alters- und leistungsgerechten Arbeitsbedingungen sowie flexiblen Übergangsformen in den Ruhestand. Bedarfsgerechte betriebliche Lösungen tragen dazu bei, unter den sich weiter wandelnden globalen Rahmenbedingungen einen wesentlichen Beitrag zur Sicherung der Wettbewerbsfähigkeit und damit der Arbeitsplätze zu leisten. Im Rahmen des gesamten Arbeitslebens des Arbeitnehmers soll dies durch verschiedene Instrumente ermöglicht werden.

Zur Förderung einer nachhaltigen und vorausschauenden Personalpolitik in den Unternehmen der chemischen Industrie sind die Tarifvertragsparteien deshalb übereingekommen, die anstehenden Herausforderungen aufzugreifen, um dadurch einen Beitrag zur langfristigen Wettbewerbssicherung zu leisten. Dabei beabsichtigen sie, durch diesen Tarifvertrag Anreize für eine längere Beschäftigung zu setzen.

Die Elemente dieser „Chemieformel zum demografischen Wandel“ sind im Wesentlichen:

- Durchführung einer Demografieanalyse (Alters- und Qualifikationsstrukturen)
- Maßnahmen zur alters- und gesundheitsgerechten Gestaltung des Arbeitsprozesses mit dem Ziel der Verbesserung der Beschäftigungs- und Leistungsfähigkeit
- Maßnahmen zur Qualifizierung während des gesamten Arbeitslebens
- Maßnahmen der (Eigen-)Vorsorge und Nutzung verschiedener Instrumente für gleitende Übergänge zwischen Bildungs-, Arbeits- und Ruhestandsphase.

Annex VIII

Excerpts from section 5.2 of this study:

These are the requirements that the researcher used from the findings and results for developing the model referred to the first research question:

- LR 1.1: Different team processes and group dynamics are available and often cannot be prevented (Berne 1963; Grand et al. 2016; Levi 2011; Stock-Homburg 2010; Taifel & Turner 2001; Thibaut & Kelley 1959).
- LR 1.2: A team develops in different phases or stages (Levine & Moreland 1994; Tuckman and Jensen 1977).
- LR 1.3: The effects of increasing average age in work teams are represented by different indicators such as team performance, team productivity, team quality or team effectiveness. There is no clear consensus regarding the performance effects of the changing work team composition. The impacts are not uniform. They can be either positive or negative, occasionally also weak (Backes-Gellner & Veen 2008; Belbin 2010a; Belbin 2010b; Bell et al. 2011; Boersch-Supan & Weiss 2016; Cohen & Bailey 1997; Gellert & Kuipers 2008; Goebel & Zwick 2010; Horwitz & Horwitz 2007; Miliken & Martins 1996; Pelled 1996; Porter et al. 1975; Seitz & Wagner 2009).
- CS 1.1: An increase of the average age in the teams of the German building trade will have more negative consequences than positive effects because the building trade is still characterized by mostly manual work and the team performance is decreasing by a higher average age.
- CS 1.2: Team composition is a success factor for team performance and the achievement of the defined goals on the construction sites and in the workshops.
- CS 1.3: Flexible team composition is based on customer orders, type of work and workers' skills.
- CS 1.4: The teams consist of members who perform experience-based work and mainly manual work.
- CS 1.5: A team composition with mixed-aged members is an approach to solve the problem of the shortage of skilled workers and the lack of the offspring.

These are the requirements that the researcher used from the findings and results for developing the model referred to the second research question:

- LR 2.1: There is an indirect interrelation between increasing average age and pay via the summarizing term of the factor 'performance'. Whether the interrelations between performance and pay are positive or negative cannot be determined accurately because there is research supporting both. Pay impacts on the team performance by the motivation of the individual. Social group processes, the organisational context, the fulfilment of expectations, the positive reflection of self-identity and perceived compared equity influence the relationship of performance, pay and motivation (Adams 1963; Cohen & Bailey 1997; Deci & Ryan 2000; Drumm 1995; Heckhausen & Heckhausen 2006; Herzberg et al. 1959/1993; Karau & Williams 1993; Levi 2011; Pink 2009; Porter et al. 1975; Sprenger 2002; Thierry 2001; Thönneßen 2013; von Rosenstiel 2003/2006; Vroom 1964; Weibler 2004; Weißenrieder 2014).

- LR 2.2: Communication in teams is necessary to achieve the team goals and to develop a team (Festinger 1968; Levi 2011; Mentzel et al. 2006; Schulz von Thun et al. 2001; Stock-Homburg 2010).
- LR 2.3: In principle, rewards and payments can motivate higher performance if they are attractive for the individual (Adams 1963; Karau & Williams 1993; Thierry 2001; Vroom 1964).
- CS 2.1: An interrelation between performance and pay exists factually and formally because of the collective agreements and the employment contract.
- CS 2.2: Motivation is the interrelation which informally combines performance and pay and has a considerable influence on the relationship.
- CS 2.3: The combination of increasing average age, performance and related pay leads the participants into a 'moral dilemma', especially if pay flexibility is associated with a pay reduction.
- CS 2.4: Regular communication is a measure to solve conflicts at an early stage instead of avoiding talking about problems.
- CS 2.5: To obtain steady performance from the workers, the decision-maker must constantly check the level of motivation.
- CS 2.6: Reductions in pay should be avoided, especially from a motivational point of view.

These are the requirements that the researcher used from the findings and results for developing the model referred to the third research question:

- LR 3.1: It is necessary to analyse the specific changes of team structures caused by a higher average age in order to achieve information about changes in performance and team composition. A means to achieve this information is regular communication with the team members (Backes-Gellner & Veen 2008; Belbin 2010a; Belbin 2010b; Berne 1963; Boersch-Supan & Weiss 2016; Festinger 1968; Grand et al. 2016; Hall 1973; Karau & Williams 1993; Lawler & Cohen 1992; Lazear 1981; Levi 2011; Levine & Moreland 1994; Locke & Latham 1990; Mentzel et al. 2006; Miliken & Martins 1996; Pelled 1996; Porter et al. 1975; Schulz von Thun et al. 2001; Thibaut & Kelley 1959; Tuckman and Jensen 1977).
- LR 3.2: The motivation of the individual is taken into account, because it is of central importance in terms of pay flexibility (Deci & Ryan 2000; Drumm 1995; Heckhausen & Heckhausen 2006; Herzberg et al. 1959/1993; Pink 2009; von Rosenstiel 1975; Sprenger 2002; Vroom 1964).
- LR 3.3: As equity and fairness also influence motivation and performance in terms of pay, factors such as equity and fairness have to be integrated in the development of a model of pay (Adams 1963; Levi 2011; Porter et al. 1975; von Rosenstiel 2003).
- LR 3.4: The literature review carried out that – in terms of ageing, performance and pay - the individual is at the centre of investigation. The crucial factors related to age, performance and pay refer to the individual. The team is relevant to team composition but has subordinate meaning in the relationship of performance and pay. Thus, a team-based pay should not be included in the model of pay flexibility. The model has the focus on the individual (Cardoso et al. 2010; Cohen & Bailey 1997; deMatteo et al. 1998; Karau & Williams 1993; Lawler 1981/1998; Lawler & Cohen 1992; Levi 2011; Thierry 2001; Vroom 1964).
- LR 3.5: The pay system in this construction industry is characterized by collective agreements that enable only some design options for payment. The current regulations mainly provide a payment system on an hourly wage level. Elements of pay are

related to the job combined with individual skills. Performance-related elements may be paid above the collectively agreed rate. Regulations for team work or team-based pay are not included in the collective agreements investigated. The demands on the terms of collective agreements for pay flexibility have to be integrated into the model of pay flexibility because they form the contractual basis of the employment relationship in addition to the employment contract.

- LR 3.6: The external market conditions lead to specific behaviour of the employer and the employee. Negotiations about pay are influenced by the supply and demand of labour. This also determines the price of work.
- LR 3.7: Life-long learning is a means of avoiding pay reductions or adaptations which are caused by decreasing performance with increasing age (Rossnagel 2008; Staudinger 2006; Vogel 2016).
- CS 3.1: Pay flexibility is desirable, but no pay-for-performance in the traditional narrow sense.
- CS 3.2: Pay flexibility is generally desired by the decision-makers because pay dynamics has an impact on their profit. From their point of view pay flexibility should fulfil the following minimum criteria:
 - part of the collective bargaining agreements
 - basis is the minimum wage
 - measurably, uncomplicated, clearly, equitably and individual
 - low administrative and payroll expenses
 - application without negative discussions with the workers
 - no loss of motivation in the team
 - performance and pay are in an economic relationship
 - aim of increasing performance with a guaranteed quality standard
 - pay reductions should be avoided
 - competitiveness must be maintained
- CS 3.3: The workers have the following requirements for a system of pay flexibility:
 - part of the collective bargaining agreements
 - measurably, comprehensibly and equitably
 - safeguarding must be realised to maintain a standard of living
 - The aim is the maintenance of workability, for example through health care and continuous training (life-long learning)
- CS 3.4: The extent of pay flexibility is also determined by labour market conditions. A labour market characterized by skilled shortage is less elastic with respect to pay flexibility.
- CS 3.5: The moral dilemma, in which pay flexibility stalls, must be resolved.
- CS 3.6: Pay flexibility is only successful if socially acceptable and profitable. Both requirements must be fulfilled.