

Szent István University

Doctoral School of Management and Business Administration

**Ph.D. Dissertation**

WORKPLACE HEALTH MANAGEMENT AS AN EMERGING FUNCTION  
WITHIN CORPORATE HUMAN RESOURCE MANAGEMENT  
- RESULTS OF A SURVEY IN GERMANY AND HUNGARY

By

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Gödöllő, Hungary  
2017

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# CONTENTS

<b>1</b>	<b>INTRODUCTION.....</b>	<b>5</b>
1.1	Relevance of the topic.....	5
1.2	Workplace Health Management as a part of the Corporate Social Responsibility (CSR).....	10
1.3	Research Scope and Objectives.....	11
1.4	Research Questions.....	12
1.5	Structure of the dissertation.....	13
1.6	Hypotheses.....	13
<b>2</b>	<b>LITERARY REVIEW.....</b>	<b>16</b>
2.1	Development of the Human Resource Management.....	16
2.2	Definition of Workplace Health Management.....	17
2.3	Different approaches of WHM.....	18
2.3.1	Model of the Integrated Health Management.....	18
2.3.2	The 3 pillar model.....	21
2.3.3	Workplace Health Protection and Promotion by Hymel, P.A., et al.....	23
2.3.4	Health Promotion by Zimolong, B., Elke, G. & Trimpop, R.....	24
2.3.5	Commonalities of the WHM approaches.....	26
2.4	Impact of WHM measures.....	27
2.5	Methods to measure the impacts of the WHM.....	31
2.6	Expectations of older and younger employees to a WHM.....	34
2.7	Leadership / health-oriented leadership and WHM.....	34
2.8	Diversity Management and WHM.....	36
<b>3</b>	<b>MATERIAL AND METHODS.....</b>	<b>42</b>
3.1	Fundamentals of the empirical research.....	42
3.2	Data collection.....	42
3.3	Used mathematical and statistical methods.....	44
<b>4</b>	<b>RESULTS AND DISCUSSION.....</b>	<b>46</b>
4.1	Overall view.....	46
4.2	Sustainable and long-term oriented Workplace Health Management.....	49
4.3	Sustainable WHM in Hungary and in Germany.....	51
4.4	Contribution of the WHM to the overall health of the employees (Hypothesis 1).....	54
4.4.1	Comparison Hungary – Germany for Hypothesis H1.....	58
4.5	Perceived importance of the WHM for the employees (Hypothesis 2).....	60
4.5.1	Perceived importance of the WHM without deviation between companies with a WHM and without a WHM (Hypothesis 2a).....	60

4.5.2	Comparison of the perceived importance of the WHM in companies with a WHM and companies without a WHM (Hypothesis 2b).....	63
4.5.3	Comparison Hungary – Germany for Hypothesis H2a.....	65
4.6	Relationship between the WHM and the attractiveness of the workplace /employer (Hypothesis 3).....	67
4.7	Additional emotional impacts of the WHM (Hypothesis 4).....	73
4.8	Relationship between age and expected WHM activities (Hypothesis 5) .....	80
4.9	Leadership behaviour and WHM (Hypothesis 6) .....	88
4.10	Impacts of the WHM on the cooperation exchange (Hypothesis 7).....	95
4.10.1	Overall view .....	96
4.10.2	Comparison of people aged less than 41 and people aged 41 and older.....	99
4.11	New Scientific Findings.....	103
4.12	Existing scientific results supported by new examination.....	104
<b>5</b>	<b>CONCLUSIONS, RECOMMENDATIONS .....</b>	<b>104</b>
5.1	Conclusions.....	105
5.2	Recommendations.....	109
<b>6</b>	<b>SUMMARY .....</b>	<b>113</b>
	<b>REFERENCES .....</b>	<b>115</b>
	List of Tables.....	128
	List of Figures .....	130
	<b>APPENDIX 1. Research Questionnaire .....</b>	<b>132</b>
	<b>APPENDIX 2. Cluster Dendograms.....</b>	<b>148</b>

# 1 INTRODUCTION

## 1.1 Relevance of the topic

The European society is confronted with the so called “demographic change” which has huge impacts in diverse sectors (REICH & FONGER, 2012A). According to population projections the European population will decrease from 591 million in 2007 to 542 million in 2050, and in the same time the average age will increase from 38,9 in 2007 to 47,3 in 2050 and the proportion of the 65-aged and older will increase from 16 % in 2007 to 28 % in 2050 (HOBMANN, KARSCH, KLINGHOLZ ET AL. 2008). In Germany the population will also decrease from 80.8 million in 2013 to 73.1 million in 2060 (FEDERAL STATISTICAL SERVICE GERMANY 2015). This forecast also projects a declining of the working age population (20 – 64 years) from 49.2 million in 2013 to 38.0 million in 2060.

The demographic change has many consequences for the labour markets in Europe. In Hungary, Czech Republic and Slovakia there is already a lack of skilled workers (DUIHK 2017), this also applies to Rumania and Bulgaria, but not to the same extent.

In Germany currently there is no overall skills shortage, but in many professions there is a lack of skilled workers. One section in which there is a shortage of skilled works is the health and care sector. Many medical doctors, nurses, orthopaedic technicians and other qualified workers are missing (BUNDESAGENTUR FÜR ARBEIT 2015). In the technical sector not only engineers are missing, but also electricians, machine builders, metalworkers, plumbers, heating and climate technicians, ICT experts, and so on are urgently needed. The described demographic change will increase this shortage of skilled workers because of the shrinking of the work force in total.

For the companies the lack of qualified workers means that the Human Resource Management must have a high priority in the management (REICH & FONGER, 2012B). The companies have to develop strategies for finding, acquiring and retaining of talents. Considering the demographic change with a declining quantity of young employees, the companies must prepare for the predicted “war for talents” (CHAMBERS ET AL. 1998). Faced with these challenges an alignment of the HR strategy to young external employees would not be sufficient. It will be necessary to focus on keeping up the existing workforce of the company as well.

A medium-sized panel of the Federation of German Industries displayed that by the end of 2014 in 66.8 percent the difficulties in staffing are caused by the insufficient qualification of the candidates (BDI/PWC 2014). Approximately 90 percent of the participating firms applied special actions to recruit and exercise skilled workers (company-based training (64.1 %), flexible work time models (52.3 %), expansion of the occupational training (51.4 %), range of options for balancing work and family life (34.8 %) and strengthen recruitment of older workers (33.9 %))

In addition to these actions a vital component in this manner could be the Workplace Health Management (WHM). Doing WHM activities may help to

- (1) recruit external employees in a more successful way (because of the external image of the company characterized inter alia by the work environment) and
- (2) keeping the existing workforce (by helping the employees to stay healthy).

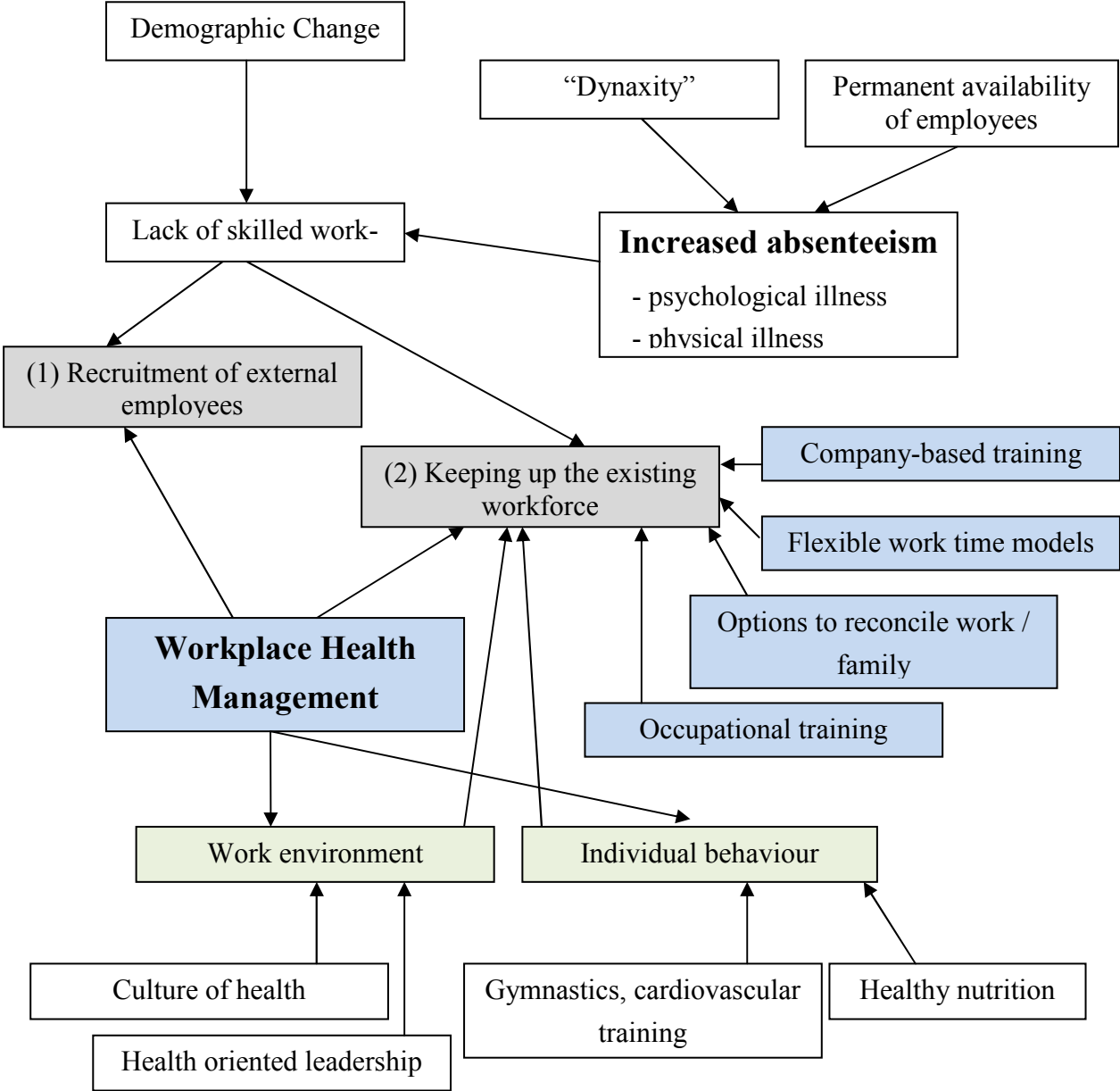


Figure 1: Selected interactions in regard to the WHM

Source: author’s work

Beside the demographic change for the companies and thus also for the employees the more becoming dynamic and complex environment is a crucial challenge. The fact that environment is becoming more dynamic and more complex at the same time has already been described by Riekmann in 1992 and termed as “dynaxity” (RIEKMANN 1992). This trend has been continued to the present and the term “dynaxity” is also still valid (KASTNER 2013,

p. 522). The reasons for this are diverse and range from the fast technological progress up to the ongoing globalisation with all its consequences. In this environment it is getting more difficult for individuals to keep the orientation and to obtain the necessary certainty for decision-making. Caused by the interplay of many forces and influences for the average employee it will be difficult to establish a stable living environment. However these elements are the basis for a long-term life-planning. For example the forming of a family is difficult if there is the possibility to be moved abroad for a longer period of time because of the operational necessity. In the same way major financial investments in the private area (such as the purchasing of a house or apartment) are strongly fraught with risk and for this reason such investments are a heavy mental burden for employees in an uncertain employment relationship. In addition to this uncertainty and nontransparency the mental requirements for employees increase. Compared to the past the spiritual knowledge is more and more quickly getting out-of-date and has to be renewed (LOHMANN-HAISLAH 2012, p 7).

Caused by the globalization and the world-wide competition the pressure continues rising. In literature frequently the so called life-long-learning is requested (e.g. EISERMANN ET AL. 2013). In today's world of work for an employee it is necessary to steadily expand the personal knowledge and skills. Furthermore the weekly work hours and the preparation time for work increases whereas the leisure time decreases. Naturally in this dynamic world especially the demands on decision-makers rise. The managers have to make far-reaching decisions for the company with deficient information and under time pressure. This in turn has the effect that the available potential of suitable employees for these jobs is getting accordingly lower with each improvement of the requirements. The general reduction of the labour force potential as a result of the demographic change (EHING & MOOG 2013) aggravates the tense situation.

The coincidence of uncertainty, high expectations of investors or superiors and for managers the responsibility for the employees lead to a high and often ill-making psychological pressure.

The result is the increase of absenteeism caused by psychological illnesses. A survey of the Techniker Krankenkasse (Insurance Corporation) estimates the increase by more than 1.8 times in comparison to the year 2000 (TECHNIKER KRANKENKASSE 2015; p. 111). As a reason for this among others the mobile communication is referred with the consequence that the employees are reachable permanently. They are hardly able to set a limit between leisure time and work.

The economic impacts are enormous. For example in Germany in the year 2012 nearly 521.6 million workdays got lost, this corresponds roughly to 1.4 million working years (BAUA 2014 p. 43). In this study of the Federal Institute of Occupational Health the costs of production losses caused by this lost workdays are figured by € 53 billion. Based on these data the loss of the gross value added can be projected. The loss of the gross value added takes into account that every employee creates values with his work. In 2012 this loss accounts for about € 92

billion which is 3.4 % of the German gross national product. These costs can be labelled as “indirect costs” of the disability.

“Direct costs” on the other hand are the costs of the therapies itself. In 2014 the health expenditures amounted to € 328 billion (FEDERAL STATISTICAL SERVICE GERMANY 2016). This is a proportion of 11.2 % of the gross domestic product. Compared to the preceding year the expenditures increased by 4.2 %. The average annual growth of the health expenditures amounted to nearly 3.5 % between 2005 and 2014. Already in a study of the company health insurance funds (BKK 2008, p. 6) in 2008 the direct costs of work-related health problems were estimated with 17.7 € billions (BKK 2008). Work-related health problems are health disorders which are in total or partly caused by working conditions or at least negatively influenced in its process. According to this survey the direct and the indirect costs of work-related health problems are almost at the same level. Therefore the damage by production losses which are caused by work-related health disorders (indirect costs) amount to about 20 € billions in 2010.

Not only the loss caused by diseased but still “active” employees is massive, but also the loss which comes up by early retirement caused by diminished earning ability. These people are not available for the labour market anymore and do not generate added value. Despite the fact that, considered by age, they are still able to work. In Germany the number of early retirements steadily increases. Noticeable for example is the number of accrual of retirements about mental and behavioural disorders. Those rose up continuous in the last years. 53.388 men and women dropped out of the labour force for this reasons in 2007. This figure enhanced to 72.972 in the year 2014 (BAUA 2016, p. 55), which is a growth of 36.7 %.

Beside the increasing number of early retirements the work legal retirement age rises, too. In Germany for example the state pension age will rise between 2012 and 2029 from 65 to 67 (§ 235 of the SGB VI/social security code book VI), meaning that in future the employees will be older, not only in average but in total age, too. But not only in Germany the standard retirement age is rising. In Hungary also the standard retirement age increases starting 2010 till 2022 from 62 to 65 years (OECD 2013). The interest of the companies is that these employees remain healthy and fit until retirement. But the common assumption that the existence of a larger number of older employees in the companies in future will lead to more and more sick days, is seen different by Ng and Feldman (NG & FELDMAN 2013). In a meta-study with more than 140.000 employees in the USA they could display that the older employees are not sick more frequently than younger employees in the topics of mental health and self-reported physical health. Only in the field of clinical indices of physical health (e.g. blood pressure, cholesterol level, etc.) a higher illness-rate could be found. Another important statement in this article is that companies are able to encourage older employees e.g. by providing them flexible working hours, sport activities and a supportive and respectful working climate.

The Workplace Health Management may be able to produce a relief in many of these sectors. Smith et al. pointed out that



*“changing organizational health in a meaningful way has the potential to have positive and broad-based influence on personal health through the mechanism of experienced stress.”*  
(SMITH ET AL. 2012, P. 205)

Furthermore the general working atmosphere might improve since the employees feel more esteemed by the proceeding of a WHM. This may not only be important for the actual working force but also for the recruitment of new employees. Especially with regard to the recruitment and retention of young immigrants it is important for a company to be able to offer a good working atmosphere for the new employees. Because very important decision-making factors for immigrants to start working for a company are the perceived working climate and the working conditions (SCHWAAB & SCHÄFER 2013). This fact is very important to Hungary and Germany, because in both countries there is a huge brain-drain. In Germany 8,8 % of the Germany university graduates live in other OECD countries, but only 5,4 % of the university graduates living in Germany are from other OECD countries (BRÜCKER 2010). Beside this a good working environment and working climate can act as a figurehead in regard to the public image of the company.

Especially the Germany economy is very important for the European economy as a whole (VBW 2016). The German economy depends to a high grade on high-qualified workers. But the existing brain drain from Europe (and Germany / Hungary) to Australia, Canada and the USA (BRÜCKER 2010) is a great challenge for the European companies and subsequently for the European economy. Among other issues the WHM may be suitable to influence the brain drain in Hungary and Germany and within whole Europe. The two societies and economies, Hungary and Germany, are economically and societal-culturally close connected. Within his European social model Sapir (SAPIR 2006) classified both, Hungary and Germany, as continental. This is in the same line with Makó et al. (MAKÓ ET AL. 2009) who stressed that regarding to the distribution of work organization classes in countries, Hungary and Germany are in the same country cluster. They also described that many sections (e.g. production, development and know how centres) are outsourced from Germany to Hungary. Another clear sign for the close link between the Hungarian and the German economies and societies is that in 2005/2006 24 % of all Hungarian emigrants were in Germany (23,1 % in the USA and 13 % in Canada) (WIDMAIER & DUMONT 2011). In addition to this, the number of respondents in the Hungarian labour force survey declaring a job in Germany increased from 11,347 in 2010 to 31,277 in 2015 and in Austria from 17,463 in 2010 to 52,684 in 2015 (BAKÓ & LAKATOS 2015). As written above both economies, the Hungarian and the German are faced with a lack of skilled workers. The well practiced cooperation of the German and the Hungarian economies for example is displayed in the fact that more than 6 % of the Hungarian GDP is created by the Germany demand for goods (VBW 2016).

In view of the displayed challenges in regard to the aging workforce it is an interesting question what does employees expect from a Workplace Health Management. This dissertation does not have the objective to compare the Hungarian situation with the German situation

because the used sample within this survey is not representative neither for Hungary nor for Germany. Because of these restrictions this examination is explorative and aims to discover if this topic is worth to be examined in further studies more deeply.

## **1.2 Workplace Health Management as a part of the Corporate Social Responsibility (CSR)**

For describing the framework of CSR various definitions are used. Bylok for example (BYLOK, 2016) uses the definition of the Working Group on Social Responsibility, Sydney, February 2007, formulated in ISO 26000: “*Social responsibility is the responsibility of an organisation for the impact of its decisions and activities on the society and the environment through transparent and ethical behaviour that is consistent with sustainable development and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behaviour; and is integrated throughout the organisation.*” (HOHNEN & POTTS, 2007). Another very important definition for CSR was done in 2011 by the European Commission (EUROPEAN COMMISSION, 2011): “*the responsibility of enterprises for their impacts on society*”.

In a more concrete approach Gajda described the CSR fields of action in the area of the human resource management and considered the CSR in the field of employment as very important. (GAJDA, 2017) “*From the point of view of positively perceived organization, a happy employee is an employee who will involve himself in promoting the company and will be motivated to increase the efficiency of his work.*” In line of this definition the Workplace Health Management is clearly placed as a part of the Corporate Social Responsibility.

In the same point of view Matten and Moon (MATTEN & MOON, 2004) distinguish between an explicit CSR which is mainly located in the USA and an implicit CSR in the European countries. Within the explicit CSR (in the USA) the role and the rights of the employees is a main issue. The implicit CSR does not contain as many elements in this field as the explicit because in Europe a lot of the employee rights and concerns are part of the legal framework. But the employee issues are also integrated within the implicit CSR.

In their article Horvath and Magda (HORVATH & MAGDA, 2017) describe that many companies only do CSR activities to “greenwash” (“*deceptive marketing behaviour of companies to appear environmentally friendly*”) their other activities. The positive examples of CSR practices are mostly done by organizations within the public sector or from the government. As a reason for this they analysed the problem, that the benefits of the CSR activities can't be monetized in a direct way. Because of this most of the commercial companies regard the CSR as a costly and negative business model. Based on these and some other reasons, for example the CSR is not common in the business activities in a multitude of Polish small and medium-sized enterprises (BYLOK, 2016). But many of the CSR activities are perceived by the customers. Kovács and Valkó (KOVÁCS & VALKÓ, 2013) have been able to analyse that there is a

positive attitude of consumers in CSR activities of companies in general. The Iamandi and Constantin study (IAMNADI & CONSTANTIN, 2012) detected importance of the CSR-Human Resource activities: fair payment, financial support for employees, equal opportunities and promotion of diversity within the corporate agendas display that many companies are on the right track. But the CSR is a very complex issue for the companies (SKOWRON-GRABOWSKA ET AL., 2016). This may be a reason why the start of CSR activities is not always voluntarily (in 2011 Dajnoki (DAJNOKI, 2011A) stated that in Hungary the organizations are not willing in employing handicapped people). As an example Dióssi (DIÓSSI, 2011) analysed that after the increase of the amount, which has to be paid for not employing people with disabilities, in Hungary in 2010 by a factor of more than five, approximately 23 % of the investigated companies reacted positively to the legislation. This is an indicator that many companies do not act social because of the intrinsic willingness, but because of the pressure of the environment. In contrary to this in their case study Dunay et al. (DUNAY, SHARMA & ILLÉS, 2016) describe the employment of disabled people in a small restaurant-café which can be defined as a voluntary CSR measurement of the company. In another study, Sharma & Dunay (SHARMA & DUNAY, 2017) examined the relations between employers and employees, employers' and disabled employees' satisfaction, which results proved that the workplace satisfaction is significantly important for the special group of employees with disabilities. In addition Dajnoki (DAJNOKI, 2011 B) stressed that for a successful employment of a disabled employee, it is necessary to pay attention to the fact that the individual handicap of the employee, the expectations of the employee to a job and the requirements of the job to the employee have to match.

Summarizing the above, the WHM can be clearly viewed as an important constituent of the system of CSR, as well. Also it can be said that WHM differs from many other CSR activities in the respect that typically it has the objective not only to be a social act, but to be a benefit for the company.

### **1.3 Research Scope and Objectives**

The objective of this dissertation is to examine in what ways the Workplace Health Management (WHM) enriches the methodology-toolkit of the Human Resource Management. Pursuing this goal I have conducted an empirical survey and analyses of the perceptions, experiences and expectations of employees in relation of to WHM. It is very important for a company to know about the expectations of the employees to a WHM because only in this situation a company is able to perform the expected actions.

At the same time it is the aim of this dissertation to examine how the WHM affects other areas e.g. the Diversity Management and Leadership Behaviour. At this time in the majority of the companies this synergy effects are not recognised and used.

## 1.4 Research Questions

Building upon the analysis of the current scientific literature and the evaluation of research reports and recent studies (see chapter 2 LITERARY REVIEW) the following research questions have been developed:

1. Is the Workplace Health Management considered essential in the eyes of the employees?
2. Do employees have expectations to a Workplace Health Management?
3. Do the expectations of older employees differ to the expectations of younger employees?
4. Does the Workplace Health Management interact with leadership behaviour?
5. Does the Workplace Health Management have further impacts in addition to the pursued objective of health improvement (e.g. to cooperation)?

Supplementing the main research direction of the most studies in this field, the research questions developed within this thesis aim to investigate the expectations of the employees.

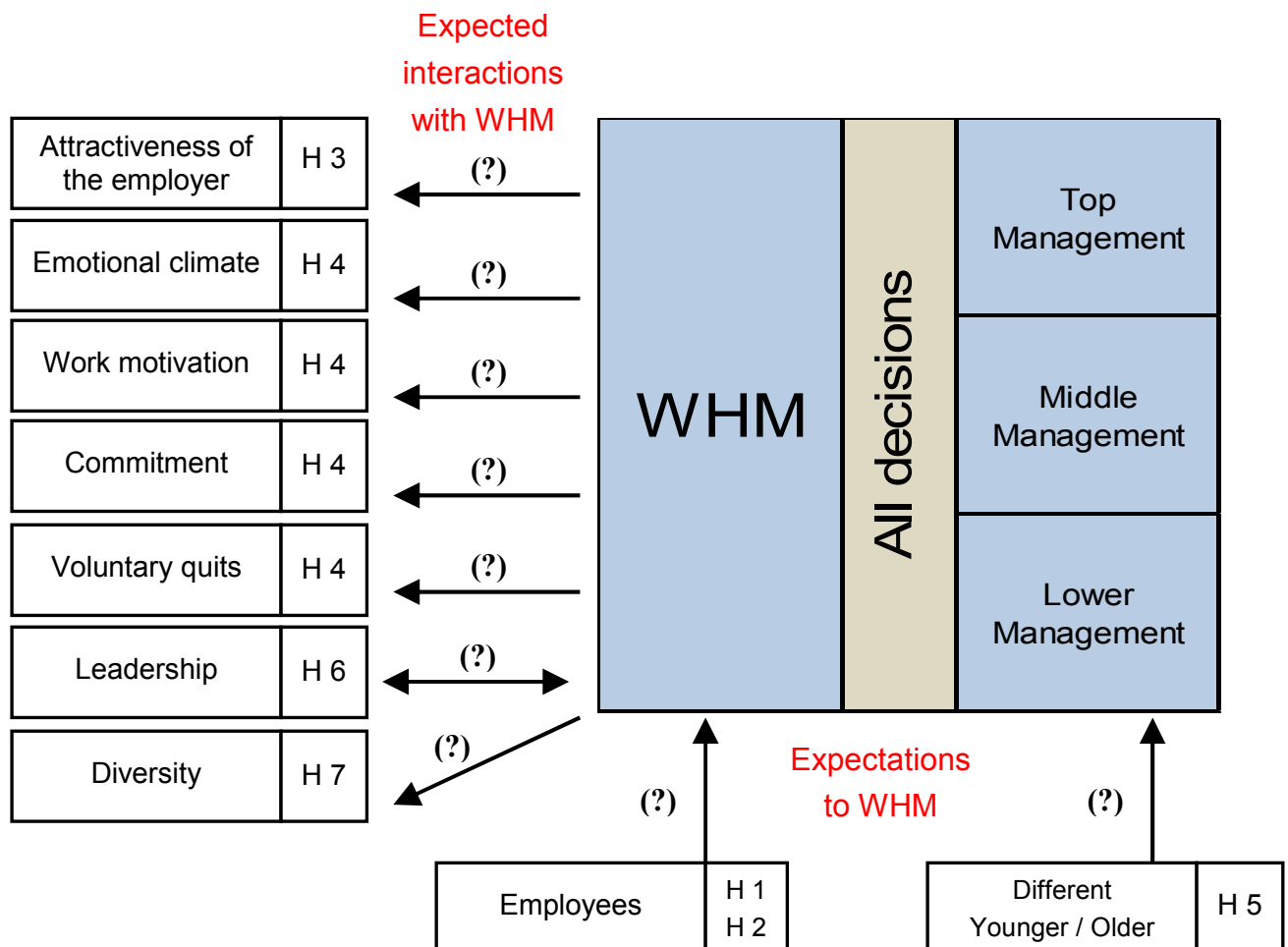


Figure 2: Research scope and objectives

Source: author's work

## 1.5 Structure of the dissertation

This dissertation consists of six chapters:

In chapter 1 the relevance of the topic, the research questions, the objectives and the hypotheses are presented.

Chapter 2 includes the literature review which displays the current status of the research in the concerned areas and which forms the basis of the formulated questions.

The research material and the used methods are described in chapter 3.

In chapter 4 the analyses of the collected data and the results are shown. These steps are followed by the display of the new scientific findings.

Chapter 5 presents the conclusions which are drawn.

The last chapter is chapter 6, which includes a summary of the thesis.

## 1.6 Hypotheses

The hypotheses which are examined in this dissertation are based upon the research questions and objectives. The examination of the hypotheses 6 and 7 in this thesis are an extension of the investigation of a former research with my co-authors (CZEGLÉDI, REICH & FONGER 2015; REICH, CZEGLÉDI & FONGER 2015; FEHÉR & REICH 2016) using a larger German-Hungarian sample.

The used hypotheses are split into two components:

Hypotheses 1 to 6 are in connection with Workplace Health Management and leadership, motivation and expectations of employees on the effects of a WHM.

The hypotheses 7a and 7b are positioned in the field of diversity management in connection with the WHM.

**Research question 1** (Is the Workplace Health Management considered as essential in the eyes of the employees?) leads to the following hypotheses 1 and 2:

**Hypothesis 1:**

In a company which performs a long-term-oriented / sustainable Workplace Health Management significantly more employees think that WHM programs contribute to a large extent to the improvement of the overall health of employees than in a company which does not perform a long-term-oriented / sustainable Workplace Health Management.

**Hypothesis 2:**

**Hypothesis 2a:**

Employees think Workplace Health Management is an important factor in caring about (preserving and promoting) their health.

**Hypothesis 2b:**

In a company which performs a long-term-oriented / sustainable Workplace Health Management employees think significantly different that WHM is an important factor in caring about (preserving and promoting) their health than employees in a company which do not perform a long-term-oriented / sustainable Workplace Health Management.

*The displayed H1 is more focusing on the perceived organization-wide effects of WHM. In contrast to H1, H2 is more targeting the place and role of WHM within the complexity of other factors affecting the health of individuals.*

**Research question 2** (Do employees have expectations to a Workplace Health Management?) is realized in hypotheses 3 and 4:

**Hypothesis 3:**

In the view of the employees Workplace Health Management is statistically positively related to the attractiveness of the workplace/employer.

**Hypothesis 4:**

The WHM has additional positive emotional impacts to the employment relationship.

- a) To the emotional climate at the workplace.
- b) To the work motivation of the employees.
- c) To the commitment of employees towards the organization.
- d) To the number of voluntary quits.

**Research question 3** (Do the expectations of older employees differ to the expectations of younger employees?) is investigated in hypothesis 5:

**Hypothesis 5:**

Older employees evaluate other actions of the Workplace Health Management as important as younger employees.

**Research question 4** (Does the Workplace Health Management interact with leadership behaviour?) is examined in the hypothesis 6:

**Hypothesis 6:**

Certain leadership behaviours are statistically significant related to the existence of long-term-oriented / sustainable Workplace Health Management practices.

*“The aim of this survey is to investigate if there is a significant difference between the existence of certain leadership behaviours*

*a) in companies which perform a sustainable and long-term-oriented Workplace Health Management and*

*b) in companies which do not perform such a WHM*

*It is not the aim of the current survey to examine the reason for the eventually existing differences.”*

(FEHÉR & REICH 2016)

**Research question 5** (Does the Workplace Health Management have further impacts in addition to the pursued objective of health improvement (e.g. to cooperation)?) is realized in hypothesis 7:

**Hypothesis 7:**

**Hypothesis 7a:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange within teams.

**Hypothesis 7b:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange between different teams.

*“The aim of this survey is to investigate if there is a positive impact of the actions of the Workplace Health Management on the cooperation between*

*a) employees within a workgroup and*

*b) between different workgroups.*

*These positive effects may be able to support the Diversity Management activities in a company. In that case the measures fulfill several functions and represent a management-tool in the area of the Diversity Management. The WHM has more to offer than only the health aspect. With the right actions, achievements in other areas (here Diversity Management) can be performed and thereby possibly costs for measures in this areas be saved.”* (CZEGLÉDI, REICH & FONGER 2015)

## 2 LITERARY REVIEW

### 2.1 Development of the Human Resource Management

The idea what is understood as the function of “Human Resource Management” has changed substantially in the recent past. In the respective regions and culture groups the development of the topics of the Human Resource Management went quite differently. As an example, Scholz displays the development in Germany as follows (SCHOLZ 2014):

till 1960 Staff administration

since 1960 Structuring of the staff

since 1970 Employee support

since 1980 HR strategy

since 1990 Interoperability of the staff

since 2000 Process integration

since 2010 Personnel division reinforcement

Since the turn of the millennium the term Human Resource Management is defined more broadly. In the view of Wucknitz (WUCKNITZ 2009) the Human Resource Management includes all processes, systems and structured ways of behaving, which are focused on the employees. A definition of Hilb (HILB 2011) describes the Human Resource Management as the entirety of all goals, strategies and instruments, which have a characteristic effect to the behaviour of employees and managerial staff.

In the actual literature, the following fields are counted to the core areas of the Human Resource Management (Scholz 2014):

- Acquisition (How can I get the right employees to my company?)
- Compensation (How do I pay the employees based on their performance?)
- Qualification (How can I continually develop my employees?)
- Retention (How can I retain the good employees in my company?)
- Motivation (How can I enthuse the good people to my company?)

Further tasks are attached to these core areas:

- Organisation of the personnel work
- Reckoning of the required employees
- Allocation of employees and jobs
- Redundancy of employees about operational and behavioural reasons
- Leadership of employees and teams.



Badura et al. (BADURA ET AL. 2010) describe avoidance of work accidents and occupational diseases as the start of the Occupational Health Policy. Caused by the changing work environment and the industrial safety measures the accidents and the “traditional” occupational illnesses decrease steadily. In the last years the avoidance and reduction of the “absenteeism” are seen as the most important issue of the Occupational Health Policy as part of the Human Resource Management actions.

As displayed, the health of the employees is getting more and more important. Within the WHM it even takes centre stage. The upcoming WHM is a special section of the Human Resource Management as a consequence of the growing relevance of the health of the employees.

## 2.2 Definition of Workplace Health Management

The Workplace Health Management (WHM) is an emerging approach within the Human Resource Management. In a study conducted in Germany in 2013 42,2% of the respondents stated that there is a WHM in their company (FOM 2013). Several definitions of the Workplace Health Management are displayed in the recent literature. For example, Weinemann defines the WHM as follows:

*“Workplace Health Management is the conscious control and integration of all business processes in order to maintain and promote the health and the wellbeing of the employees.”*

(WIENEMANN 2002; QUOTED IN KREEB 2014)

Another important definition of the WHM is within the DIN SPEC 91020 which is the preliminary step on the way to the DIN standardization (Deutsches Institut für Normung / German Institute for Standardization):

*“Workplace Health Management: systematic and sustained creation of healthy structures and processes including the qualification of the organizational members to a self-responsible and health-conscious behaviour.”*

(DIN, 2012).

Kastner (KASTNER 2010A) defines *“the productive and healthy employee in a high-performance organization”* as the aim of the WHM. This should be reached by the defences against health threats on the one hand and by strengthening of health potentials on the other hand (SLESINA & BOHLEY 2011). But despite the fact that physical and psychological health of the individual requires a high degree of personal engagement of the individual employee, to maximize the health and productivity of the individual employee activities within the companies are important as well (ZIMOLONG & ELKE G. 2010, HYMEL ET AL. 2011). This is similar to the approach that employee health is a product of the individual behaviour as well as a product of the work environment, which is used by Ljungblad et al. (LJUNGBLAD ET AL. 2014). In order to retain this objective the establishment of an organisation which provides the necessary support is essential. Wilson et al. define this “healthy work organisation” as follows: “A

*healthy organization is one characterized by intentional, systematic, and collaborative efforts to maximize employee well-being and productivity by providing well-designed and meaningful jobs, a supportive social–organizational environment, and accessible and equitable opportunities for career and work–life enhancement“ (WILSON ET AL. 2004, P. 567).*

The Ottawa-Charter of the WHO from 1986 is one important source and the international initial point for the Workplace Health Management. The Charter clearly demands that *“Work and leisure should be a source of health for people. The way society organizes work should help create a healthy society.” (WHO 1986, P. 2).*

The European foundation of the Workplace Health Management is the Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (EUROPEAN COUNCIL DIRECTIVE of 12 June 1989 (89/391/EEC)). The conception of the charter was that, as a general guideline, it has to be converted into national labour legislation. By this it should guarantee a minimum standard for Europe. In Germany the relevant statutory structure is very complicated. In specific areas it consists of law e.g. social security code IX: Corporate Integration Management, industrial safety legislation (e.g. German Occupational Safety and Health Act, workplace ordinance), the accident insurance law (e.g. SGB VII) and the health insurance law (e.g. SGB V) (BLUME 2010, P. 111).

In the time since the declaration of the Ottawa Charter various models of implementing a WHM into a company arose e.g. the (1) model of the “Integrated Health Management” by Wattendorf and Wienemann (WATTENDORF & WIENEMANN 2004), (2) the “three-pillar-model” (IPQR 2005) developed by the Institute for quality assurance and rehabilitation GmbH at the German Sport University Cologne, (3) the model of “Workplace Health Protection and Promotion” by Hymel et al. (HYMEL ET AL. 2011) and (4) the “Health Promotion” approach by Zimolong, Elke and Trimpop (ZIMOLONG, ELKE & TRIMPOP 2006). The listed approaches are described in the next chapter. It can be noted that at this stage of the research the models are displayed in a prescriptive way, because of the objectives and the boundaries of this dissertation. An empirical survey about the practiced models in detail in the companies can be part of future investigations.

## **2.3 Different approaches of WHM**

### **2.3.1 Model of the Integrated Health Management**

In the approach of Wattendorf and Wienemann (WATTENDORF & WIENEMANN 2004) the Workplace Health Management is considered as a managerial task. They demand that the aspect of health has to be integrated into the several existing management systems within a company and that the targets of all management systems have to be synchronised to the focus of the health of the employees. In the following Figure 3 the (extended) model of the “Integrated Health Management” according to Wattendorf and Wienemann (WATTENDORF &

WIENEMANN 2004) is shown. Singer and Neumann (SINGER & NEUMANN 2010) expanded this model by the legally required integration management which is an important component of an idealistic Workplace Health Management (ALLES & FLACH 2011, P. 13). In this expanded model the areas occupational safety and health protection, Corporate Integration Management (CIM), as well as the fields health promotion and prevention, addiction counselling and consultation of employees are brought together systematically.

At the top centre the figure shows the corporate principle and corporate culture, which should be a guideline for the corporate management and the works council in the daily work and for the taken decisions. Connected with and located within the top management there is the “Steering group health”. This steering group acts through working committees and working tables. Members of the committees and working tables can for example be the representative body for disabled employees, the company doctor, the women’s representative, the safety experts and the addiction counsellor. On the bottom of the figure there are the four pillars of the Workplace Health Management within this model. Starting on the left there are

(1) the occupational safety and health protection and

(2) the integration management.

Both are prescribed by law and are executed inter alia by the European network for workplace health promotion, the trade unions, the health insurance organizations, the accident insurance and the labour inspection. On the bottom right the two pillars

(3) health promotion and

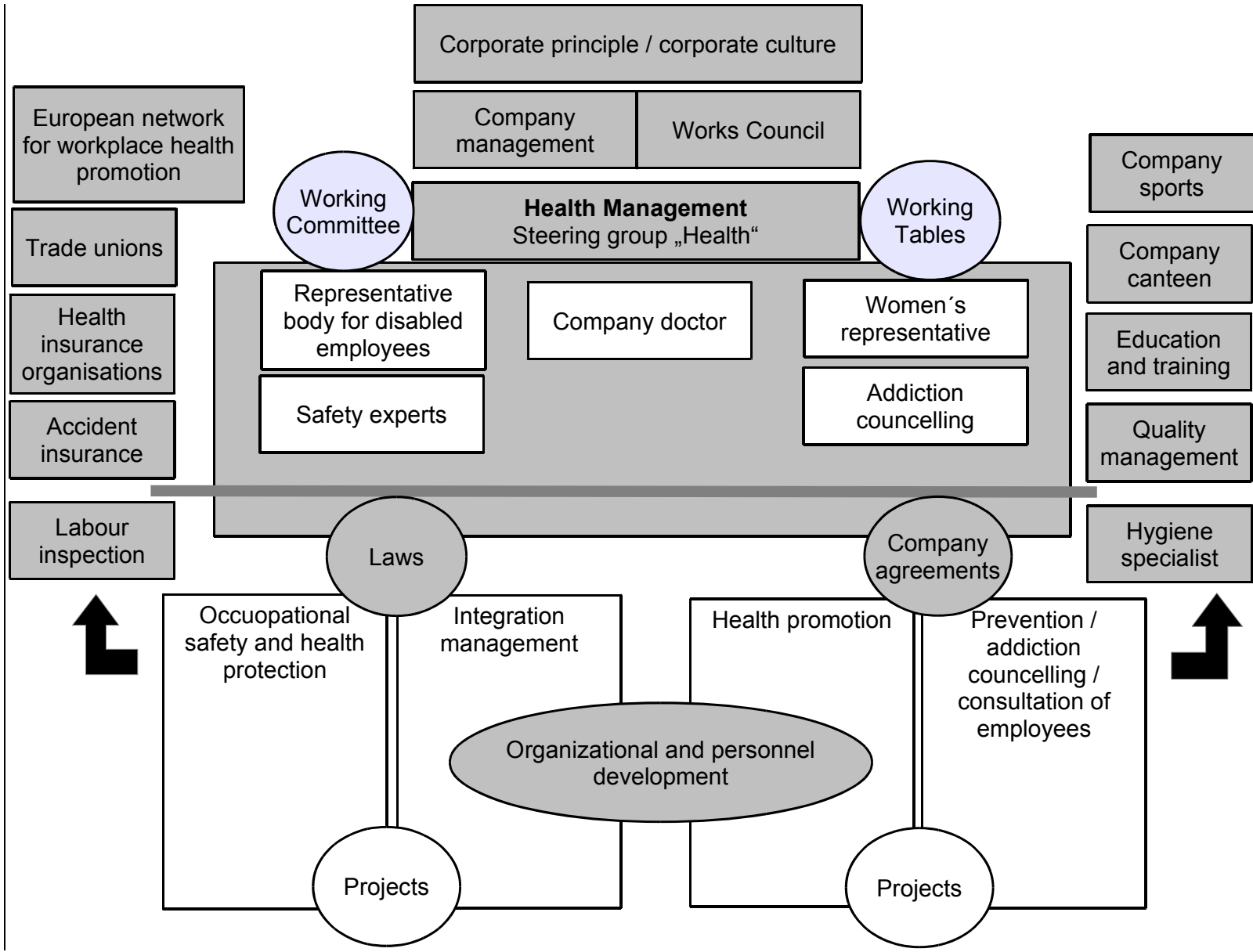
(4) prevention / addiction counselling / consultation of employees

are located. These two are based on company agreements and are executed for example by company sports, the company canteen, education and training, the quality management and the hygiene specialist.

The anchoring of the Workplace Health Management in the top management is essential (ESSLINGER & EMERT 2010, P. 251). Only then the Workplace Health Management can be successful. The institutionalization and advancement of the different areas in the company are supervised and monitored by a steer group “health”. For example the steering group can be organized as working committees or working tables. It is important to involve the representatives (Representative body for disabled employees, women’s representative) and specialists (Company Doctor, safety experts) which act within the company. Supplementary the company can consult external partners e.g. health insurance organisations or trade unions. Within the company the Workplace Health Management is realized by means of various activities and arrangements (e.g. company sports, education and training, hygiene specialist). It is the aim to focus on the Workplace Health Management beside the current field of action in all strategic decisions. In all management areas it should be acted corresponding to the intended results of the Workplace Health Management.

Source: (extended in line with WATTENDORF & WIENEMANN 2004, p. 29, by SINGER & NEUMANN 2010, p. 56).

Figure 3: Model of an integrated health management



### 2.3.2 The 3 pillar model

Another very important approach is the “three-pillar-model” (IPQR 2005) which is divided into the three segments workplace health promotion / prevention, occupational safety and the corporate integration management (see Figure 4).

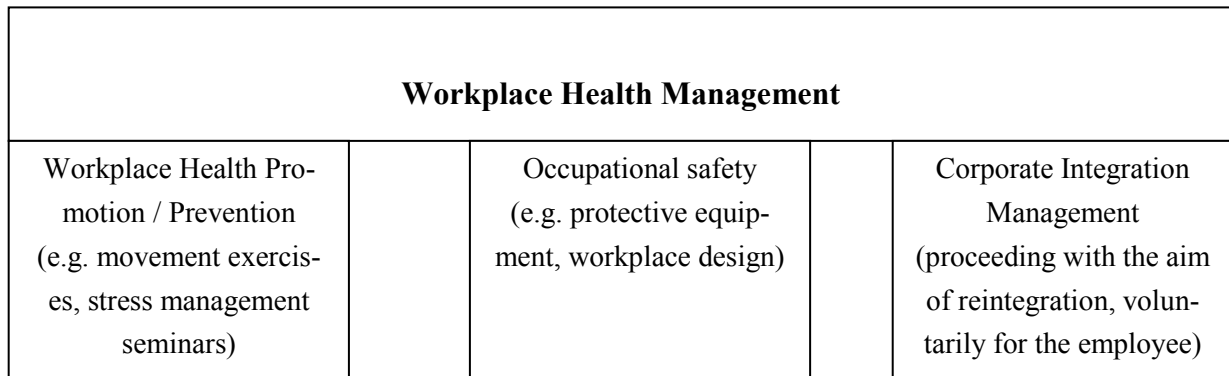


Figure 4: The “three-pillar-model” of the Workplace Health Management;

Source: author’s illustration based on IPQR 2005 (see also REICH & FONGER 2016)

1.) The first pillar is the Workplace Health Promotion with the aim of prevention. The measures in the field of prevention are divided into actions

- (1) which take influence on the behaviour of the individual employee (behavioural measures) and measures
- (2) which shall improve the working conditions (situational prevention). For Kaiser (KAISER 2011, P. 11) a very important target of the WHM is to improve the occupational health.

The behavioural actions shall achieve a change of the behaviour of the employees toward a “healthier lifestyle”. This “healthier lifestyle” is supposed to have positive impacts on the health of the individual employee. In this field among other movement exercises like sport groups, information events (e.g. nutrition), eye examinations, preventive medical check-up, vaccinations (e.g. flu vaccination) and stress management seminars or seminars for personal further development come into consideration (BAUMANN & MÜNCH 2010). In the area of the situational prevention ergonomics at the workplace, management of working time, the organization of workflow, nutrition-related measures and health promoting constructional measures are realized.

2.) The second pillar the occupational safety has the aim to create and preserve healthy and proper working conditions. This safety and health protection is supplemented by the accident prevention and accident avoidance. The legal foundations are primarily the Working Conditions Act and the Occupational Safety Law. The occupational safety itself is subdivided into the general and the social occupational safety (KAISER 2011, P. 10). Whereby the general occupational safety aims to protect and maintain the health and the life of the employees, to preserve their manpower and to shape the work human-oriented. The social occupational safety includes fields like protection against dismissal and the organisation of working times. The

occupational safety is designed by the organization of work processes, the working environment, working tools and equipment, the organization of work and of the employment relationship itself.

In specific terms this means among other things the ergonomic and health promoting design of the occupational daily routines. Elements may be the acquisition of more suitable monitors, the provision of height-adjustable desks which can be used sitting or standing for employees with bad backs and the examination of the room air for contaminations. The workplace design is closely related to the accident avoidance. Due to the high costs caused by accidents at the workplace (costs of medical service, but also indirect costs like loss of work and in the worst case early retirement) this is an important area for the companies. In a further stage it's the aim to develop a safety management system in the company which will be able to implement a good safety culture in an organization (GULDENMUND 2010).

3.) The Corporate Integration Management (CIM) forms the last of the three pillars. In Germany it was established by law in the year 2004 (§ 83 and § 84 SGB IX/social security code book IX). The short-term goal of the CIM is to support the employee to get over his actual disability and to prevent a renewed incapacity and by this, in the long term to retain his workplace (ADLHOCH 2005). The last big objective of the CIM is to develop a systematic proceeding which is transparent to all involved participants and which supports the application in the individual case. If an employee is ill for more than six weeks within one year (uninterrupted or in sum) the employer has to offer him the CIM proceeding. To start the proceeding the employer has to provide an integration dialogue to the employee. It is important to point out, that this procedure is not only compulsory for handicapped employees, but for every employee in every company in Germany. Because of the fact, that there is no particular procedure fixed by law, the companies are able to adapt the proceeding to their individual situation. About this many different courses of action arose. For example in their action guideline Giesert and Wendt-Danigel (GIESERT & WENDT-DANIGEL 2007) propose to sub-divide the procedure into 10 steps. For the employee the CIM proceeding is completely voluntarily and the employee can finish the procedure at any time. The employee also is able to freely choose the participants which shall support him (e.g. the disability manager, the superior, the commissioner for data protection, the corporate social counseling, the equal opportunities officer, the quality management manager, representatives of the health insurance funds and the social security benefits offices). Within the procedure the goals of the proceeding are defined in consultation (e.g. changes at the workplace, changes in the work-team or any other necessary measure). The procedure ends, if all fixed measures have been successful or if it's not possible to achieve the adopted objectives. Especially for SME the CIM is not only a statutory provision and strain, but also a chance (REICH & FONGER, 2013).

**2.3.3 Workplace Health Protection and Promotion by Hymel, P.A., et al.**

An approach similar to the 3-pillar-model (without the third pillar “CIM”) was developed in the USA by Hymel et al. (HYMEL ET AL. 2011). They identify the so far existing separation of workplace health protection programs (with the contents safety and work environment) and the workplace health promotion (WHP) programs (which include wellness and disease management) as the fundamental problem. They even note that the two functions often are located in different organizations units. In their approach they call for the systematic integration of the two important functions. Their model of the “Workplace Health Protection and Promotion” shall combine the two functions “personal health” and “personal safety” and as a result be more effective as the sum of the individual function. They themselves define their approach as following:

*“Stated simply, workplace health protection and promotion is the strategic and systematic integration of distinct environmental, health and safety policies and programs into a continuum of activities that enhances the overall health and well-being of the workforce and prevents work-related injuries and illnesses.” (HYMEL ET AL 2011, P. 695).*

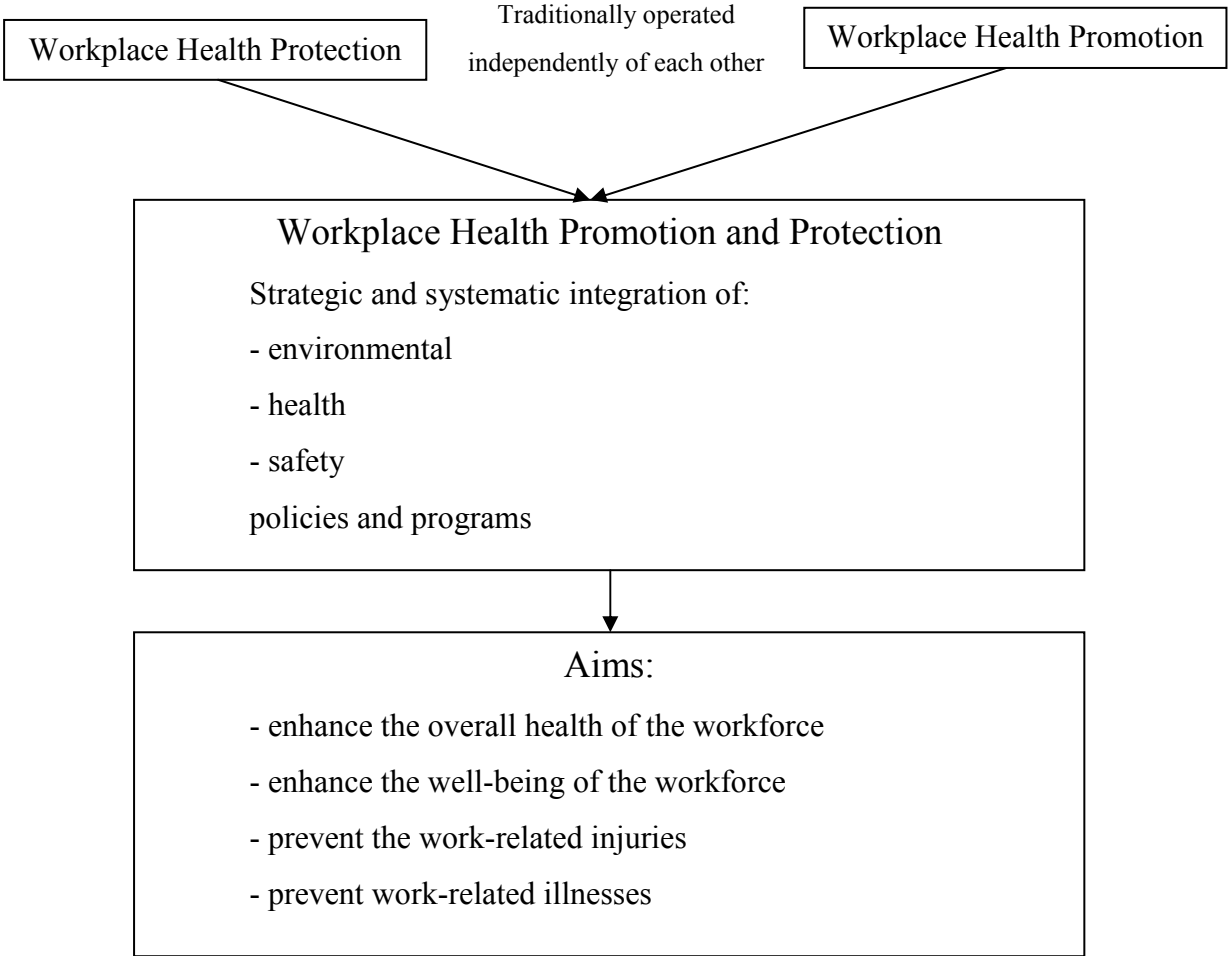


Figure 5: The “Workplace Health Protection and Promotion”;

Source: author’s illustration

### **2.3.4 Health Promotion by Zimolong, B., Elke, G. & Trimpop, R.**

In their article “Health-management” for the encyclopaedia of psychology in 2006 Zimolong, Elke and Trimpop (ZIMOLONG, ELKE & TRIMPOP 2006) stressed that the Workplace Health Management needs two strategic approaches in comparison to the classical occupational safety management system to comply with the requirements prevention and health promotion:

- (1) the monitoring of work-related health-threats and
- (2) the reinforcement of the resources of the employees.

According to Zimolong et al. in order to implement the monitoring of the work-related health-threats, the proven practices of the classical occupational safety should be extended by new methods of analysing and evaluating in the areas of psychological stress, poor ergonomics and types of radiation. The implementation of the health promotion has to be realized by strengthening the individual health-competence, by encouragement of active employee participation and the improvement of the working organization and working environment. On this issue Zimolong et al. appeal to Lenhardt & Rosenbrock (LENHARDT & ROSENBRÖCK 1998; QUOTED IN ZIMOLONG, ELKE & TRIMPOP 2006). To visualize the subsystems, structures and processes of a Workplace Health Management (see Figure 6) they use a British guideline (HSE 1997) which Zimolong extended in 2001 by the health promotion (ZIMOLONG 2001). The figure displays the four important elements of a successful health and safety management. On the top it starts with (1) policy. The social responsibility to people and the environment shall be anchored in the corporate policy and the corporate strategy and be included into all business functions. The next element is (2) organizing. In this element the competences, responsibilities and participations are displayed. They include the leadership and personnel systems, the information and communication and the health culture. The third element is (3) planning and implementing. It includes risk control (identifying and assessing of health risks, prevention measures) and health promotion (promotion of health competence, participation, life-long learning). The last element is (4) measuring and reviewing performance which consist of the risk- and resource management (proactive and reactive indicators and monitoring).

It is essential for Zimolong et al. that all corporate functions must contribute to one strategic aim: the health and the integration of health into the operational processes.

*“Health protection is not just a task of the relevant company personnel (safety specialist, company doctor, environmental protection officer), but also of leaders and employees of all sections and levels”* (ZIMOLONG, ELKE & TRIMPOP 2006; P. 4).

Already in 2001 Elke and Zimolong (ZIMOLONG & ELKE 2001) defined the development of a positive health culture as the targeted goal, which should be achieved by the structural embedding of the health promotion within personnel systems. Promotion of personnel and assistance of external resources shall support the self-responsible acting of the employees and strengthen the health competence and the capacity to act, and by this represent the declared



goal of the health promotion. As means to achieve these objectives they call information, participation, development of a positive health culture and the control of periodical effectiveness.

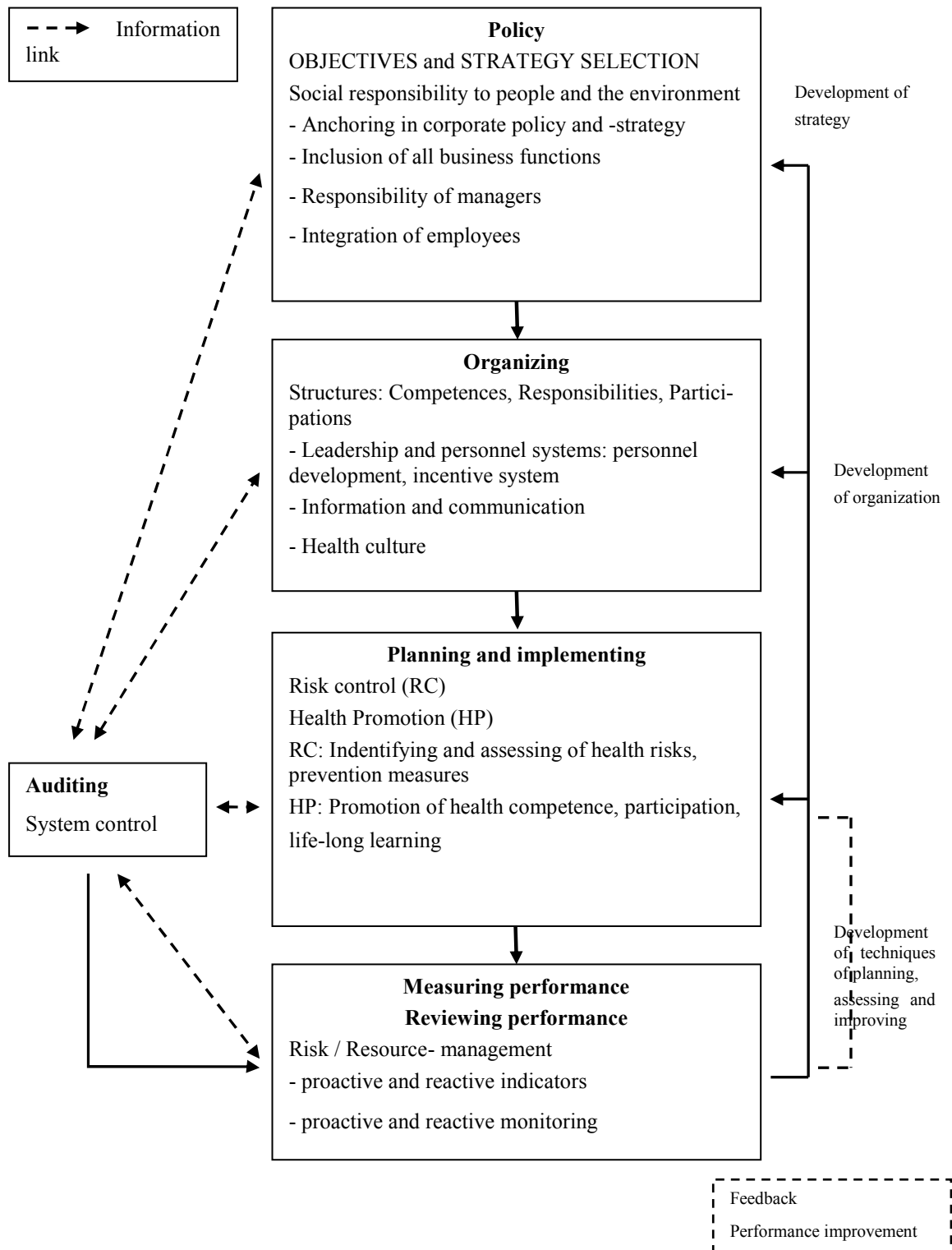


Figure 6: Key elements of successful health and safety management, extended by health promotion

Source: ZIMOLONG, B., ELKE, G. & TRIMPOP, R.; 2006.

### 2.3.5 Commonalities of the WHM approaches

Common for all displayed approaches is that they stress the fact, if an organization is implementing a Workplace Health Management it must be understood as a holistic strategy (SINGER & NEUMANN 2010, P. 55; HYMEL ET AL. 2011, P. 695; SKOVGAARD ET AL. 2015). The Workplace Health Management shall retain and promote health of the individual employee (thus also its motivation and potential). At the same time an organization should be developed which increases the well-being of the employees. This shall be realized with special working conditions and communication structures, as well as the existence of development and unfolding potentials. The empirical study of Dickson-Swift et al. (DICKSON-SWIFT ET AL. 2014) strengthens the demand for an organisational embedding of the WHM into the management:

*“This includes a range of multi-strategy interventions but the most important component is management support and integration of WHP into the organisational structure. In the cases reported here it was clearly evident that when WHP is embedded into the culture of a workplace and supported by management on all levels that real health gains are possible.”*

In their article about an empirical study conducted in Denmark Bendix-Justesen et al. (BENDIX-JUSTESEN ET AL. 2017) emphasizes the key role of the middle management for implementing a WHM into a company. Nöhammer et al. pointed out that even if the management backs the WHM measures: *“On the individual level, participation depends especially on personal interest, positive expectations, trends and convenience issues.”*

(NÖHAMMER, SCHUSTERSCHITZ & STUMMER 2010).

In addition to this in a study conducted in the time between April 2010 and August 2011 Osterspey and Thom (OSTERSPEY & THOM 2013, P. 43) were able to display, that a WHM which only consists of single projects and discontinuous measures has no sustainable success. In alignment with this all the displayed approaches take the view that the WHM has to be strategically implemented into the organization. In all management areas (in all decisions) the intention of the responding WM needs to be taken into account. What does this mean? A leader who is telling his employees that the WHM activities are important and that they should participate in these actions, should join in, too. If he works instead in his office during the activities he clearly shows that work is more important for him than the WHM activities. Another negative example is when by means of the actions of the WHM the top management aims to improve the cooperation and the teambuilding, but because of the facility costs the administration decides that employees with an additional home office will lose their office within the company. This measure of the administration thwarts the effort in regard to the improvement of teambuilding, because when employees have to work at home for the most time instead of only using the home office when family reasons require the presence at home, the interpersonal relationship will suffer as a result.

## 2.4 Impact of WHM measures

The impact of the WHM measures differs: In the first place the participating employees are affected but there are effects in other areas as well. For example in many cases the companies are able to improve their public image, because the WHM is perceived as an indication that the management takes care of their employees. But not only employees which have participated in actions of the WHM are influenced, but also the employees who haven't (yet) participated: These employees also recognise that there is some interest of the company for the needs of the employees. The positive impact of the Workplace Health Management for both, the employers and the employees has already been described in 2002 by Ozminkowski et. al. (OZMINKOWSKI, LING ET AL. 2002): *“This study demonstrates that a well-conceived health and wellness program that focuses on prevention, self-care, risk factor reduction, and disease management can produce substantial benefits for employers and their employees.”* This is also confirmed by other studies. For example in 2009 in their study in the USA Loeppke et al. (LOEPPKE ET AL. 2009) noted that by investing 1 dollar on worker medical or pharmacy costs, it is possible for a company to save 2 till 4 dollars by reduction of health-related productivity losses.

How should a WHM be organized to gain such results? As the two key success elements of employer-sponsored health promotion (wellness) programs Kent et al. (KENT ET AL. 2016) identified

- (1) establishing a culture of health and
- (2) using strategic communications.

The culture of health itself is supported by the elements leadership commitment, social and physical environmental support and by employee involvement. The use of strategic communications is important to increase the awareness of health issues, to inspire the employees to improve their health and build trust onto the health promotion program.

Analysing the question what organisational values support health, safety and well-being at work, Zwetsloot et al. (Zwetsloot 2013) identified three clusters of core values (“basic value assumptions”). These core values are able to underline a prevention culture of health, safety and well-being at work. The three clusters are called “being”, “doing” and “becoming”. In the first cluster “being” the values interconnectedness, participation and trust are combined. The second cluster “doing” contains the values justice and responsibility. The third cluster consists of development and growth and resilience.

To create an organisation which supports the ideas and impulses of a WHM is crucial for a company.

One important aim of this thesis is to examine the by employees expected additional emotional impacts of the WHM to different topics. How does the WHM influence the work atmos-

where? How does it influence the work motivation and the commitment? Is there an expected influence to the number of voluntary quits or the attractiveness of the workplace at all?

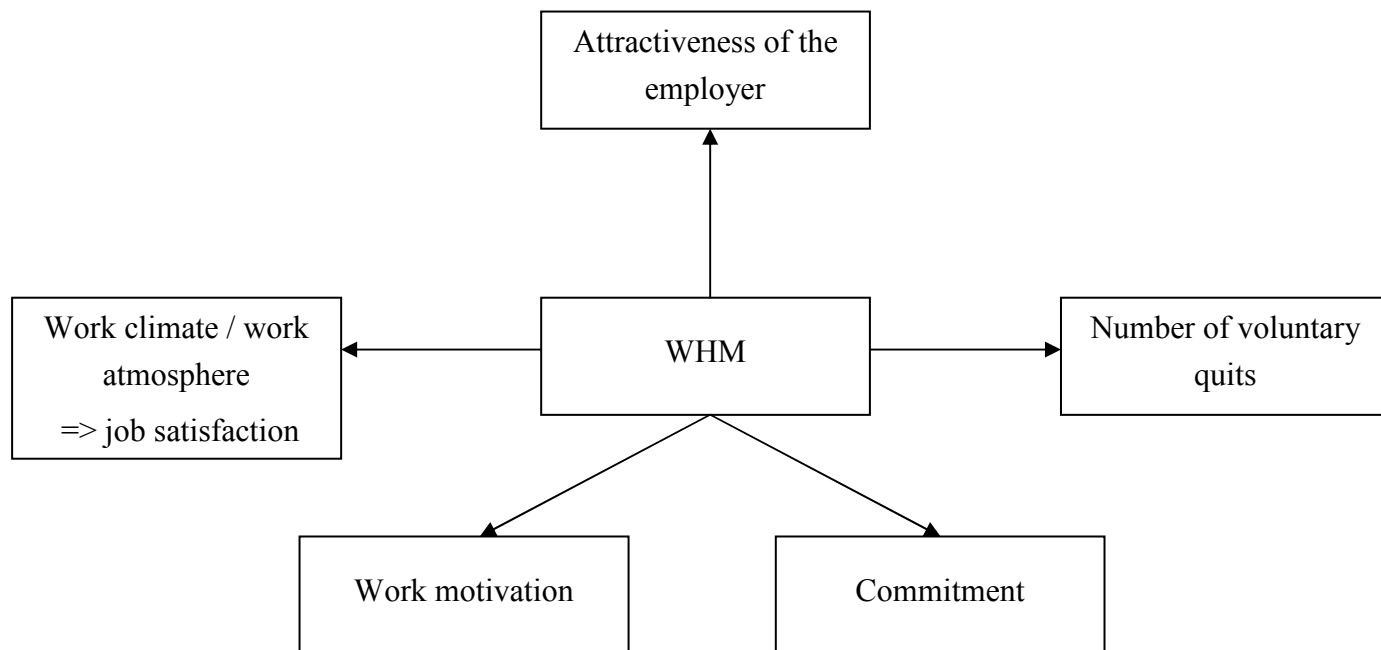


Figure 7: Additional employment effects

Source: author's work.

Dickson-Swift et al. (DICKSON-SWIFT ET AL. 2014) found some interesting connections of WHM and employee reactions in Australia:

*“Employees report improvements in happiness, confidence, job satisfaction, physical health, work ethic, healthy behaviours such as increasing fruit and vegetable consumption and decreasing alcohol intake, and a gain in enthusiasm for healthy choices which is often shared with family members resulting in healthy meal options for example. When employers make an effort to do something for the good of the employees, such as offer flexible time, run a health information session or have a staff BBQ at lunchtime, employees feel willing to repay this through extra hard work. Employees often reported a perception of being cared for by employers through the programmes on offer...”*

In other literature the relationship between work climate and job satisfaction was found strong (SELLGREN ET AL. 2008). In some articles the working atmosphere is even classified as a subscale of the job satisfaction (e.g. TZENG 2002). In this case the working atmosphere is defined as:

*“The work units’ atmosphere, communication and the collaborative relationship with physicians and other colleagues working in the same unit, caring and support from their colleagues, and interaction with the colleagues working in other units.” (TZENG 2002, P. 877).*

A positive connection was found for the relationship of working climate and job performance, too. For example Suliman & Al Harethi (SULIMAN & AL HARETHI 2013, p. 420) have been able to display a significant relationship between overall work climate and job performance.

Beside the work climate the connection of job satisfaction and job performance was frequently investigated. In this context Elci & Alpkán defined job satisfaction as

*“the pleasurable or positive emotional state resulting from overall evaluation of one’s job or job experiences”* (ELCI & ALPKAN 2009, p. 299).

In their study they were able to display the influence of several ethical climates on job satisfaction. A climate of self-interest showed a negative relation to job satisfaction, while a climate of team interest and a climate of social responsibility were connected in a positive relation. They also pointed out that job satisfaction is positively related to productivity and performance and negative related to intention to leave, absenteeism and staff turnover and in addition that job satisfaction increases the level of organizational commitment. Within another study Riggle et al. pointed out that the perceived organizational support (POS) (e.g. providing employees gourmet meals, use of swimming and spa facilities at no cost, providing of health care, providing discounts at childcare centres, etc.) for employees is significant strong positive related with job satisfaction and organizational commitment, moderate positive connected with employee performance and the effects on the intention of an employee to leave the company is also strongly affected (in this case negative) (RIGGLE ET AL. 2009). To enlighten organizational commitment Meyer and Allen (MEYER & ALLEN 1991) differ between 3 general themes of commitment:

1. Affective commitment:

Reflects a desire to maintain membership in the organization

2. Continuance commitment:

Reflects a need to remain and results from recognition of costs associated with leaving

3. Normative commitment:

Reflects an obligation to remain resulting from internalization of a loyalty norm and / or the receipt of favours that require repayment

Empirical data show that job satisfaction and organizational commitment, as well as the management, the work design and the relationships to others are strong predictors for an employee to stay or to leave a company (ALLEN ET AL. 2010, p. 49). Allen et al. also pointed out that many of these predictors can be influenced by the managers with the right actions. Another important issue to stay at a company is the reconciliation of work and family. A survey conducted in Hungary shows that towards the end of their 20s the family is getting more impor-

tant for employees, while before that age they typically favour their career (CZEGLÉDI & JUHÁSZ, 2013). Other studies display that the appreciation is a very important part in the relationship of job satisfaction and performance. Riketta found that pure job attitude (e.g. job satisfaction or organizational commitment) without appreciation has only a weak correlation with the performance of the employees (RIKETTA M. 2008) and the other way around there is no significant effect. Within a field study with more than 300 employees Bradler et al. (BRADLER ET AL. 2013) were able to display that appreciation for the employee has positive effect on the productivity of the employees.

In this connection the performance of WHM measures by a company is a sign that the employer appreciates his employees.

Job satisfaction in its turn has positive impacts to the subjective well-being of the individual. In their meta-analysis of longitudinal studies Bowling et al. (BOWLING ET AL. 2010) were able to find a significant relationship between job satisfaction and the subjective well-being of an employee. But not only the well-being of the individual employee is affected by job satisfaction, the more important point is the impact for the health of the employees. In 2005 Faragher, Cass and Cooper published a meta-analysis about the relationship between job satisfaction and health (FARAGHER ET AL. 2005). Within this analysis they were able to work out that there is a very strong correlation between job satisfaction and mental health (e.g. burnout, self-esteem, depression). The correlation with physical health was significant, too, but not as strong as the correlation with mental health. They suggest that organizations should implement stress management policies to identify work practices that cause most job dissatisfaction. The findings of Faragher et al. are strengthened by an investigation of Nadinloyi, Sadeghi and Hajloo which come to the conclusion, that there is a positive relationship between job dissatisfaction of employees and mental health (NADINLOYI ET AL. 2013).

Summarizing the above it can be concluded, that job satisfaction and a good working atmosphere itself are indeed not only directly important for the level of productivity, but indirect they are also vital for the health of the employees and about that for the productivity (in regard to illness-times and downtimes).

My goal of the literature review in relation to the Hypotheses 3 and 4 was to identify terms being operational in the survey construction for the following issues:

- attractiveness of a workplace
- work motivation
- emotional climate at the workplace
- commitment to the organization

The displayed issues are very complex. For sake of this dissertation I did not make special definitions of the terms, but I used them directly in the questionnaire. By this a pragmatic solution was achieved to use the terms for questions. Every employee will have another detailed

thinking about the meaning of each special term. But the general direction of the definitions will be similar.

Considering the described effects the achievement of a good working climate, job satisfaction and organizational commitment should be a very important aim for the companies. About this importance it is the aim of this thesis to examine the by employees expected additional impacts of the WHM to the

- (1) emotional climate at the workplace, (see hypothesis 4)
- (2) the work motivation of the employees, (see hypothesis 4)
- (3) the commitment of the employees towards the organization and (see hypothesis 4)
- (4) the voluntary quits of employees (see hypothesis 4).

It is also aim of this study to examine if the performance of a WHM leads to an increased attractiveness of an employer (see hypothesis 3). In a study of the FOM in 2013 (FOM 2013) 20,0 % of the respondents answered that the WHM is an important reason for them to work for their company, 52,4 % denied this statement.

Beside the other effects, the Workplace Health Management is also considered as a helpful tool to evaluate health-related productivity losses and to identify possible reasons for presenteeism using special analyses of the work-absence-data, preventive medical checkups and health offers (WILKE ET AL. 2015). In their study Wilke et al. found production losses caused by presenteeism with 4 %.

In the light of these results the survey of Goldgruber and Ahrens (GOLDGRUBER & AHRENS 2010) is very interesting. At the end of their review Goldgruber and Ahrens stress that it is possible in every organization to perform actions of a Workplace Health Promotion program. They also emphasize that it is important to adapt the actions to the needs of the respective company and that in this case the Workplace Health Promotion interventions are effective. The positive results of a WHM can be supported by the use of ICT. A study, conducted in Finland showed, that the possibilities of a primary prevention program can be increased by the consequent use of ICT to analyse and visualize the health data of the individual employee and as a result to motivate the employee to improve his health level (NIKAYIN ET AL. 2014).

## **2.5 Methods to measure the impacts of the WHM**

Being a managerial task it must be possible to monitor and control the WHM activities. For this reason, different methods are used by companies. But many of the described and used key-figures are difficult to determine or even require a survey within the company. Such a procedure is very time consuming. To measure the effectiveness of the program less expenditure key-figures are necessary which can be examined without a survey. In their article Aust

and Ducki (AUST & DUCKI 2004) analysed 11 studies which presented the results of 81 health circles. In 7 of the 11 studies the effects of health circles had been evaluated on sickness absenteeism only. The used data of the sickness absenteeism was based on company or health insurance data on sickness absence. This data is not difficult to obtain, but the informative value is not very good. Other authors like Shain and Kramer (SHAIN & KRAMER 2004, p. 645) identified some objective ratios to measure the success of the impact of health promotion programmes (HPPs) on health and productivity (e.g. the lowering of the diastolic blood pressure by a specific rate of participants, etc). But the only objective ratio described within the article, which is possible for a company to collect data for, without asking the employees, is to measure the absenteeism, too. In a study performed in 2008 with 15,871 addressed employees by the Regional Ethics Review Board of Linköping (LJUNGBLAD ET AL. 2014) among other aspects eight specific WHP measures were evaluated:

- (1) work environment education,
- (2) employee questionnaire,
- (3) fitness activities,
- (4) individual work / workplace adjustment,
- (5) stress counselling,
- (6) health profile / fitness test,
- (7) medical health control and
- (8) lifestyle guidance.

The alternatives to respond for the questioned people were: not offered, offered but not utilized, offered and utilized. In addition to these items they asked for organisational climate, leadership, participation, possibilities to change work, sickness presence, work capacity, and attitudes to sickness absence (absence culture). The only objective and hard factor ratio which displays the success of a WHP in this context was the measure of the sickness absence. It is based on the data of the Swedish Social Insurance Agency. All the other ratios had to be determined by questionnaires.

Some more objective ratios are discussed by Wellmann and Überle (WELLMANN & ÜBERLE 2007, p. 54). They argue that frequently used ratios are:

- (1) absence times,
- (2) costs of an undisturbed working hour,
- (3) labour turnover rate,
- (4) employee and customer satisfaction,
- (5) motivation,
- (6) performance,
- (7) productivity and
- (8) utilization of WHP activities.



But also in this pool of figures only the absence times, the labour turnover rate and the productivity are hard factor ratios and can be used without questioning the employees.

Another interesting approach is the procedure of Baumanns and Münch (BAUMANNS & MÜNCH 2010). Beside the presence at the workplace as an indicator they use the manufacturing cost rate as an operational key number. In this case the manufacturing cost rate is defined as the quotient of the dividend costs by the divisor productive work hours. The costs of the company are influenced by absence times, labour turnover, accidents at the workplace as well as improvements of products and processes. The productive work hour displays the productive performance within a certain period. In this way, the employee activities and behaviour influences the dividend as well as the divisor.

Kaminski (KAMINSKI 2013) suggests performing an “analysis-audit”, but this audit is very complex and must be done by a specialist. In addition to the analysis-audit he proposes the following indices:

- voluntary fluctuation
- conflict-, mobbing- and burnout- cases
- visits at psychological consultants
- visits at the occupational medical institution and the participation in voluntary preventative health care proposals
- bill of health and statistical analyses of the occupational medical service
- frequency of accidents
- suggestions system
- audit findings
- employee satisfaction
- participation in business events
- staff restaurant: share of “Feel-Fit”-meals
- CIM (corporate integration management): share of claims (%), reasons for diseases

Some of the data is relatively easy to evaluate (voluntary fluctuation, frequency of accidents) but some are difficult to gather (audit findings, employee satisfaction, visits at psychological consultants). About this the approach of Kaminski is only partially practicable. In addition to the presented problems for finding the right key figures, Uhle and Treier (UHLE & TREIER, 2015 P. 197) claim that a one-sided orientation on individual parameters and key figures like costs or absences times do not allow an efficient and effective management of WHM measures in the spirit of sustainability. In their meta-analyses Atzler et al. (ATZLER ET AL. 2011) conclude, that the results of a WHM measurement must be seen in the context of a holistic evaluation. Among other reasons owing to the separation of the costs in one year and the benefits of the activities in following years, they recommend that the decision to continue

WHM activities or to stop them should never be taken on basis of an economic evaluation alone.

As displayed it is very difficult to measure the performance of a WHM in an objective way. If data is available at all, then the data is sensible because of that, difficult to evaluate. This might be a reason that in their study in 2010 Zwetsloot et al. found, that existing data sources in companies are only rarely evaluated (ZWETSLOOT ET AL. 2010). And it is important to stress, that the aim is not to measure illness (absence times), but the health of employees.

## **2.6 Expectations of older and younger employees to a WHM**

An investigation with 21.000 English employees displayed that the connection between maintenance HR practices and well-being in the job (e.g. job satisfaction, organisational commitment) strengthen with age, while the connection between development HR practices and well-being decreases with age (KOOIJ ET AL. 2013). These results allow the conclusion that HR practices should be adapted to the age structure of the individual company. This is not only right for HR practices but also for the work equipment. In companies, which have adapted the work demands to the needs of older employees and which provide special work equipment for older workers, a significant higher productivity could be achieved, not only for older, but also for younger employees (GOEBEL & ZWICK 2010). But it is important not only to consider the real age of an employee, but also to look for the individual perceived age of the distinct employee, because a 50 year old may feel younger when he is healthy and fit (KUNZE ET AL. 2015). It is a part of this thesis to investigate what does employees expect of WHM measures so that a company is able to perform the most effective actions. The written above shows the necessity to segment the staff into different groups. As subject of this investigation the employees are parted by age. The differences in the expectations of older and younger employees to a WHM are examined with the Hypothesis 5.

## **2.7 Leadership / health-oriented leadership and WHM**

In the past decades many different leadership conceptions like the trait, the behavioural and the situational leadership approaches have been created. In 1985 Bernhard Bass (BASS 1985) published a new leadership concept: the transformational leadership approach. Bass was inspired to develop this concept by the book “Leadership” of James M. Burns (BURNS 1978, BASS 1999). Pundt and Nerdinger (PUNDT & NERDINGER 2012) pointed out, that one important precursor for the idea of the transformational leadership was the idea of the “charismatic authority” by Max Weber (WEBER 1921 QUOTED IN PUNDT & NERDINGER 2012). Because of the large overlap between charismatic and transformational leadership these two terms are often used synonymously (SHAMIR ET AL. 1993). The described transformational leadership approach aims to transform the values and attitudes of the employees and as a result to increase the intrinsic motivation and the performance of the employees (BASS 1996). Following

Bass the behaviour within the transformational leadership is divided into the four “I”-dimensions: (1) Idealized Influence / Charisma, (2) Inspirational Motivation, (3) Intellectual Stimulation and (4) Individualized Consideration. The transformational leadership is being considered as a further development of the transactional leadership which is based on extrinsic motivation. The transactional leadership aims to exchange job performance versus reward (transaction). As a reward a higher salary, a promotion or simply to compliment the employees come in consideration. The reward is normally bound to a condition. In 1994 Bass and Avolio presented the framework of the “Full Range of Leadership model” (BASS & AVOLIO 1994). Within this framework the leaders are advised not to limit themselves only to one leadership behaviour, but also to use a good mixture (PUNDT & NERDINGER 2012).

The transformational leadership behaviour is also favoured by Kouzes and Posner. In their “Leadership Challenge” (KOUZES & POSNER 1987) they display five fundamental leadership behavioural categories which they identified in their enormous empirical studies. These five main categories are (1) challenging the process, (2) inspiring a shared vision, (3) enabling others to act, (4) modelling the way and (5) encouraging the heart. The heart of their empirical data collection is the LPI-Questionnaire (Leadership Practices Inventory). There are two variants of the questionnaire: the LPI-Self-Assessment and the LPI-Observer. Purpose of the LPI-Self-Assessment questionnaire is to be a tool which enables the leader to estimate the own behaviour. In contrast the LPI-Observer questionnaire is used by the employees to evaluate the behaviour of the leader.

The emerging WHM added the model of health-oriented leadership behaviour to the leadership approaches. Various studies show the impact of leadership behaviour to the health of the employees. In 2011 Gregersen et al. (GREGERSEN ET AL. 2011) published an article about the connection between leadership behaviour and health or well-being of the employees. Analyzing 42 publications about the subject they were able to find indications which verify this connection. A positive correlation between “good leadership behaviour” and the health and performance of the employees is displayed by Schneider et al. (SCHNEIDER ET AL. 2014). An important issue of their studies is that within a systematic WHM it is possible to support the leaders by specific training. The training of the executives leads to a different behaviour of the leaders and as a result it improves the health of the employees. Other empirical studies were able to show that it is possible to affect health and performance simultaneously in a positive manner (e.g. NETTA 2011). Badura et al. (BADURA ET AL. 2010, p. 52) not only emphasize that the direct leader carries special responsibility for the health of his subordinates, they also underline that the leader’s own behaviour and his handling with his own health is important, as well as how good or bad he is qualified in this field. These results allow the conclusion that health-orientation in leadership is a very important and powerful subject. There is no common definition of health-oriented leadership, but Schmid (SCHMID 2011, p. 161) offers a short and accurate approach: leadership behaviour is health-oriented when the leader observes the long-term accurate fit of needs and resources of the employees. He stresses (SCHMID 2011, p. 55)

that a successful performance and health-oriented leadership behaviour includes the consideration of:

- (1) the free will of the employees (no compulsion), while avoiding self-exploitation,
- (2) sense, scope of action and feedback (praise),
- (3) the sense of coherence with regard to the activities,
- (4) the sensitization for the relation of requirements and resources and the required equilibrium.

In this line he points out what Kastner (KASTNER 2010B) displays as the most important things a leader should avoid, e.g.:

- (1) set a negative example,
- (2) to speak badly about employees (behind their backs),
- (3) not admitting own weaknesses and mistakes,
- (4) not fulfil promises,
- (5) shirking away from decisions,
- (6) to replace trust with control.

Felfe (FELFE 2016) explains that health-oriented leadership enables the company to explore and analyse health-promoting and health-threatening behaviour of a leader. As a result the company is able to develop measures in this subject, because the behaviour of a leader must be adapted to the particular situation, task and the individual employee, and Felfe stresses that this competence of leadership can be learned. His research also shows that it is not possible to use one style of leadership universally.

As written above a WHM needs to be embedded in the culture of the company to be successful in the long run. In their article after analysing comprehensive data material, Osterspey and Thom (OSTERSPEY & THOM 2013, P. 43) came to the conclusion that the managers and leaders have to make the essential contribution for the success of a cultural-based WHM. Or in the words of Ben Waber:

*“Cultural change won’t happen unless people at the top do it first.”*

(WABER 2013, P. 198).

Following these statements and research the question if there are differences in the leadership behaviour in companies with a long-term sustainable WHM and companies without such a WHM is examined with the hypothesis 6.

## **2.8 Diversity Management and WHM**

The definitions of “Diversity” are as varied as the attributes that differentiate the people in organizations. For example in 1999 Fleury (FLEURY 1999, P. 110) defined diversity as follows:

*“Diversity is a mixture of people with different group identities within the same social system.”*

Wagner and Sepehri (WAGNER & SEPEHRI 1999, p. 18) defined diversity in a different way:

*“Diversity relates to everything in which people may differ from each other, both externally noticeable as well as subjective differences. Races, gender, age or physical disabilities belong to the first category; education, religion and lifestyle to the second.”*

But also the dimensions of diversity are very different. A frequently used differentiation was developed by West, Tjosvold and Smith (WEST & TJOSVOLD & SMITH 2003, P. 279). They differ between the following types of Work Team Diversity:

Table 1: Types of Work Team Diversity

<b>1. Diversity on relationship-oriented attributes:</b>	<b>2. Diversity on task-oriented attributes:</b>
- Gender	- Department / unit membership
- Age	- Organizational tenure
- Ethnicity	- Formal credentials and titles
- Nationality	- Education level
- Religion	- Membership in professional associations
- Personality	- Task knowledge
- Attitudes	- Organizational knowledge
- Values	-Experience
- Racial / ethnic identity	- Cognitive abilities
- Sexual identity	- Communication skills
- Other social identities	- Mental models

Source: (WEST M.A., TJOSVOLD & SMITH 2003, P. 279)

Other approaches for example like the “Four Layers of Diversity Model” by Gardenswartz and Rowe differ between

- (1) personality,
- (2) internal dimensions,
- (3) external dimensions and
- (4) organizational dimensions

(GARDENSWARTZ & ROWE 1994) or between observable or readily detectable attributes and less visible or underlying attributes (MILLIKEN & MARTINS 1996, p. 403). The main objective of the Diversity Management is to improve the company culture and by this the performance of the whole company (PULLEN, KOLL & SCHRAMM 2010, p. 8). The actions within the Diversity Management aim to remove barriers between employees which belong to different

groups. For the companies it is interesting to know if a diverse workforce is more valuable for a company than a unique one. It seems logical that a heterogenic workforce creates a potential for better performance because diversity includes a wider portfolio of diverse human capabilities (MKOJI & SIKALIEH 2012, P. 184). But this is not generally the case. Diversity has its pros and cons. On the one hand it provides a potential for improved company outcomes but on the other hand the misunderstandings and mistrust within workgroups may enhance as well (WILLIAMS & O'REILLY 1998). In their article in 2004 Van Knippenberg et al. (VAN KNIPPENBERG, DE DREU & HOMAN 2004; P. 1019) postulated that „*all dimensions of diversity can, in principle, have both positive and negative effects, processes cannot be assumed on the basis of the dimension of diversity studied.*“ The effect of diversity depends on various factors. In 2002 Richard, Kochan and McMillan-Capehart (RICHARD, KOCHAN, T.A. & MCMILLAN-CAPEHART 2002; P. 280) have been able to identify that it is important how organizational leaders and participants react to diversity and the diversity management. A further study of Kochan et al. (KOCHAN ET AL. 2003; PP. 17 - 18) demonstrated that the expected positive effects of diversity, at least in the area racial and gender, could not be achieved. They also ascertained that to be successful in working with diversity and gaining value from it requires a sustained, systematic approach and long-term commitment. To achieve these goals they recommend three activities for the managers:

1. Adopt a more analytical approach
2. Support experimentation and evaluation
3. Train for group-process skills.

These various results in research of diversity caused Van Knippenberg and Schippers in 2007 (VAN KNIPPENBERG & SCHIPPERS 2007, P. 534) to postulate that research should go beyond the single dimension of diversity. It rather should take more than one dimension into account and be open to nonlinear effects. This is supported by many other studies. For example in his research Kunze (KUNZE 2013) designated the increasing age-diversity as a central challenge for many companies. He pointed out, that contrary to the popular opinion that age-diversity itself leads to better results within teams, it is important to actively manage the age-diversity to avoid a decline in the performance, not only for teams, but also for the company as a whole and that only a passive approach to this field is not sufficient. But not only active management of diversity is vital. In her article in 2013 Roberge (ROBERGE 2013, P. 129) stresses the importance of empathy at an individual and a group level for the relationship between diversity and group performance. She shows that the power of emotions (in this case the power of the individual and the group empathy) and their effects to the decision to work with other diverse employees is often forgotten in research. To manage diversity effective in practice Roberge et al. (ROBERGE ET AL. 2011, P. 3) suggest five managerial practices:

- Using symbolic management

- Training programs and activities
- Stimulating communication flow
- Implementing cross-cutting groups
- Promoting fair and just HR practices

The topic “training programs and activities” includes the subtopic “teambuilding” which has the purpose “...to establish trust and communication among different people. Team building activities help employees to become acquainted with one another on a personal level.” (ROBERGE ET AL. 2011, P. 9). For employees with disabilities the group as a direct work community is even more important (DAJNOKI, 2015). The effectiveness of teambuilding activities and the improved efficiency of a team are empirically proven (KLEIN ET AL. 2009). Vital in this relation are also the actions to enhance the interpersonal relations of the team members, who can be realized in practice e.g. through games and adventures. Similar results are shown in the meta-analysis of Delise et al. (DELISE ET AL. 2010). They come to the result, that team training is effective overall and for each outcome category. Regular team building exercises are not only important for the collaboration of the colleagues among one another but also for the relationship leader – employee (WHITELEY ET AL. 2012). Within the team events it is possible for the leader to become more familiar with the employee and to have a better basis to assess the employee. Whiteley et al. also stress that this is also a possibility to improve the relationship by positive feedback which may lead to performance increasing Pygmalion effects.

The other very important topic of the five managerial practices in relation to this thesis is “stimulating the communication flow”. Roberge et al. (ROBERGE ET AL. 2011, P. 10) argue that communication can enhance not only the performance within a group but on group level as well. This for example can be achieved through social events. For Bell and Smith (BELL & SMITH 2006) communication is the most important activity between individuals which is holding an organization together. A statement which is well-based in scientific research, not only in older research literature (E.G. PETTIT, GORIS & VAUGHT 1997; ROGERS, ROGERS & AGARWALA-ROGERS 1976), but also in current studies (HEDMAN & VALO 2016). In his book “People Analytics” Ben Waber examines the communication culture of numerous firms and concludes that companies which promote the communication between the employees (e.g. by common lunch breaks, coffee corners, etc.) are able to gain a very big benefit out of this:

*“This is why we form organizations and why hundreds of thousands of years ago we began to develop more and more complex groups: to learn from each other, to make ourselves stronger than the sum of our parts.” (WABER 2013, P. 200)*

The measures “Teambuilding” and “Communication”, which are elaborated above and considered important for companies, are flanked, supplemented and strengthened by actions in the framework of the WHM. Many actions executed in connection with the WHM are very

similar to the measures of the Diversity Management (DICKSON-SWIFT ET AL. 2014), some are actually the same (e.g. high rope courses). In this relation the subareas Occupational Safety and Corporate Integration Management are not affected, because these sections only execute actions which concern individual employees (e.g. computer screens, protective goggles, safety boots or CIM-talks). In the subarea of the Workplace Health Prevention many actions aim at the entire workforce. For example permanent sport programs (running-groups, walking-groups, company sports group), joint participation in sport events (city runs, dragon boat races), special actions (high rope courses, herbal excursions, self-defence courses) and lectures (nutrition, memorizing techniques, stress management) and the performance of health days. The measures of the WHP are provided to all employees of the company beyond the group and team burdens. In this way all employees of the whole company are able to come into contact and communicate with each other.

So far in the literature about Diversity and WHM the main focus was to examine the challenges of a diverse workforce for the performance of WHM activities. The purpose of research was to find out how WHM measures must be organised and performed to be successful with very diverse employees (UHLE & TREIER 2015, p. 64; MISCH & KOALL 2010). In this thesis the approach is reversed: It is examined which chances the WHM offers to the Diversity Management.

As a result of the coincidence of Diversity and WHM interesting questions arise:

Is the WHM able to contribute to influence the Diversity-Performance-Relationship in a positive manner?

Is it possible, using actions of the WHP, to improve the information exchange within organizations and by this use the potential of a diverse workforce and influence the Diversity-Performance-Relationship in a positive manner?

Within this thesis it is the aim to investigate if there is a positive impact of the actions of the Workplace Health Management on the cooperation between

- a) employees within a workgroup and
- b) between different workgroups.

To investigate these questions the hypotheses 7a and 7b have been defined. These hypotheses have been subject of former research with my co-authors (CZEGLÉDI, REICH & FONGER 2015) as well. For purpose of this thesis I use a larger German-Hungarian sample.

**Hypothesis 7a:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange within teams.

**Hypothesis 7b:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange between different teams.



These possible positive effects of the WHM may be able to support the activities of the Diversity Management in a company. In that case some of the measures of the WHM represent a management-tool in the area of the Diversity Management. The WHM may have more to offer than only the health aspect. With the right actions, in other areas (here Diversity Management) objectives may be achieved as well and thereby possibly saved costs by not doing actions in the other field. So the companies may be able to pursue two aims with one investment at the same time.

## **3 MATERIAL AND METHODS**

### **3.1 Fundamentals of the empirical research**

As described in the initial chapters the Hungarian and the German societies and economies are close connected and both face huge challenges like the demographic change, the lack of skilled workers and the brain drain to other countries. There many differences between the economies, as well, but because of the position within central Europe and the strong commonalities these two countries are interesting objects of a research project. On basis of the special framework caused by the participating researches, within this primary survey we were able to get data from these two important and interesting central European labour markets.

The sampling for testing the hypotheses was done in Hungary and in Germany in the time between 03/2014 and 12/2015. For this purpose as a quantitative research method a standardized questionnaire was developed. This kind of questionnaire has the advantage that working with large numbers, it ensures the information value, instead of different respondent groups and different date of questioning (TÖPFER 2010). In Hungary the survey was divided into two parts. In the period from 10/2014 to 12/2014 the section “general information” and the section “F (Diversity)” of the attached questionnaire were used as an online questionnaire. This online questionnaire led to 224 evaluable responses. The second part of the data collection in Hungary was performed in the period between 03/2014 and 12/2015 using all sections of the questionnaire excluding section “F (Diversity)” as a paper-based version. In this case 151 usable answers could be received. The survey respondents in Hungary were part-time university students with work experience. In Germany the research was done between 06/2014 and 12/2015 using the attached questionnaire with all sections (including section “F Diversity”) as a paper-based format. The German part resulted in 107 usable questionnaires. Respondents of the questionnaire in Germany were employees attending courses of the Chamber of Industry and Commerce.

In all cases (Hungary and Germany) the questionnaire itself was anonymous. About the described sample the research is not representative. But it is able to show a rough direction and to identify tendencies. For purposes of this thesis I use designations of the 3 pillar model (displayed in 2.3.2).

### **3.2 Data collection**

The used questionnaire was divided into three parts. The numbering of all parts was based on technical needs and has no content-related meaning. In the first part anonymised personal information and general data (i.e. gender, age, position within the company, profile of the organization, number of people working for the organization) were gathered.

Among other questions the second part contained questions in relation to the structure, the long-term-orientation and sustainability of a possible existing Workplace Health Management

and the perceived behaviour of the direct leader of the questioned employee. This part starts with the questions BG1 and BG2 (“BG” is the acronym for the German term: “Betriebliches Gesundheitsmanagement” (“Corporate Health Management”)) which examine the importance of the WHM for the employees. This is followed by the 14 questions A1 - A13 and WHP 1 which could be used with kind permission of the BKK Dachverband e.V. (BKK 2012). These questions were part of the “Best Practice Questionnaire 2012” of the BKK. This special part dealt with the long-term orientation and the sustainability of the Workplace Health Management. The variables in case of the questions regarding the WHM were nominal and metric variables (4 point Likert scale for the questions 1, 2 and 6 and for the other questions the alternatives “Yes”, “No” and “Don’t know”). For purpose of exploitation of the data not all of these questions were used, but all questions were necessary to convey an impression what is meant with WHM in regard to this survey.

Following to these questions within the part “WHP 2” (Workplace Health Promotion) the respondents were asked which listed health improvement and related solutions are operated in their company and how they assess it. For these questions the alternatives “Yes”, “No” and “Don’t know” and for the questions of importance a 5 point Likert scale were used. To analyse the data this scale is used as an interval-scale (UNIVERSITÄT ZÜRICH 2016A). The next questions (B1, C1, C2, D1, D2, D3 and D4) in this part dealt with promotion of health, the attractiveness of the employer, the emotional climate at the workplace and if the motivation and commitment of the employees are increased by actions of a WHM and to which extent. The answer options for these questions were “Yes”, “No” and “Don’t know” and for the expected extent “To a large extent”, “To a certain extent” and “To a small extent”.

To examine the leadership behaviour in part “E” of the questionnaire 12 questions of the LPI-Observer (Leadership Practices Inventory Observer by James M. Kouzes and Barry Z. Posner) were used (by courtesy of John Wiley & Sons Inc., San Francisco). Normally with 30 questions the LPI measures the five leadership practices according to the Leadership Challenge approach (Kouzes, J. & Posner 1987). For purpose of this thesis only 12 questions which are in special connection to the superior and employee relationship were used. The original LPI of Kouzes and Posner uses a 10 point Likert scale for these questions (the spectrum ranges from “1” which is specified as “almost never” till “10” specified as “almost always”). For this survey a 10 point Likert scale was used, too.

The third and last part of the questionnaire covers the field of diversity (questions “F1 – F16”). In this part at first the respondents were asked about the existing diversity in their company overall and for the diversity in their own team. After that questions about the information exchange and the cooperation in their company and within their team follow. They were combined with questions about expected and perceived improvements in these areas by actions of a WHM. These questions use a 5 point Likert scale with the options “Fully agree”, “Somewhat agree”, “Don’t know”, “Rather disagree” and “Fully disagree”. These questions were complemented by a question about the change of the personal attitude to another person

in a specific case. Aim of this section of the questionnaire was to become an idea about the indirect effects of the WHM activities. The question about the change of the personal attitude to another person in a specific case pursued to activate the memories of the respondent and prevent him from answering on instinct.

### 3.3 Used mathematical and statistical methods

The gathered data were prepared with the help of **Microsoft Excel** and the software **“R”**.

It is important to stress, that only the employee's expectations towards the impacts of different actions in the field of WHM are evaluated with this questionnaire. Because of this fact, it is not necessary that every respondent knows all measurements by own experience. But there is some indication which action is expected and satisfies the employees. Many of the employees would never participate in some actions of the WHM, but even to have the possibility to take part will influence their thinking. Implementing a WHM into a company these estimations of the employees can be very important information for the Management because the Management will be able to meet the expectations of the employees from the outset.

For analysing the hypotheses in this thesis amongst others methods the **t-test** is used. The t-test is a test to examine if two samples significantly differ in regard to one attribute. For this purpose the mean values of the two samples are compared and it is investigated if possible differences are random or systematic. The t-test can be performed as a one-sample t-test and as a two-sample t-test (either for dependent or for independent samples).

The academic literature demands two minimum requirements for a t-test (MANDERSCHIED 2012, p. 145):

1. Interval scale: fulfilled (Likert scale)
2. Sample-size > 30: fulfilled

The two criteria are fulfilled and about the sample size a t-test is possible without testing the normal distribution.

In addition to the t-test the non-parametric method **Mann-Whitney-U-test / Wilcoxon rank-sum test** is used. The **Mann-Whitney-U-test / Wilcoxon rank-sum test** is a homogeneity test with the aim to examine the significance of the conformity of two distributions. This test is used when the requirements of the t-test are not met. Within this dissertation the **Mann-Whitney-U-test / Wilcoxon rank-sum test** is used to strengthen the results of the t-test.

The restrictions for this method are

1. Ordinal scale (minimum): fulfilled
2. One independent variable, which forms the two groups to be compared: fulfilled

(UNIVERSITÄT ZÜRICH 2016B). The criteria for this method are fulfilled as well.

Another test used within this thesis is the **Pearson's Chi-squared test**. The Pearson's Chi-squared test investigates if two variables are independent of one another. As well as the Mann-Whitney-U-test / Wilcoxon rank-sum test within this dissertation the Chi-squared test is used to strengthen the results of the t-test. The restrictions which are to be fulfilled for the Chi-squared test are the following (UNIVERSITÄT ZÜRICH 2016C):

1. Nominal or ordinal scale: fulfilled
2. Sample-size > 50: fulfilled
3. Expected frequencies > 5 fulfilled
4. d.f. > 1: fulfilled

Furthermore analyzing the collected data for the hypotheses 5 the **Cluster Analysis** is executed. The Cluster Analysis is an interdependence analysis with the following restrictions (BACKHAUS ET AL. 2016):

1. Sufficiently large sample-size fulfilled
2. Clearing of missing values fulfilled
3. The same scale for all values fulfilled

The Cluster Analysis is used to explore a dataset and to create groups (cluster) which internally are homogeneous as possible, but externally in comparison to the other groups highly heterogeneous.

## 4 RESULTS AND DISCUSSION

### 4.1 Overall view

The questionnaire led to 482 evaluable answers. With a total of 223 46 % of the respondents were men and 54 % women (total 259). The youngest was 17 years old and the oldest counted 72 years.

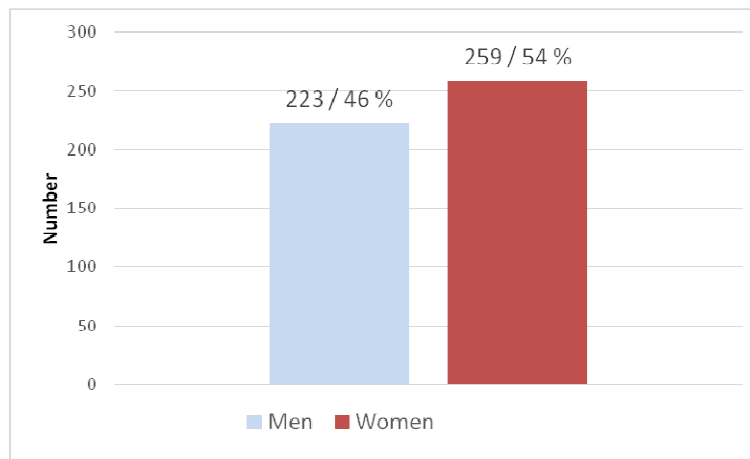


Figure 8: Respondents by gender overall (including respondents for section F “Diversity”)

Source: author’s work.

With 45 % of the survey participants aged between 21 and 30 this was the largest group. Second largest group was the group between 31 and 40 with 28 % and 136 respondents in total.

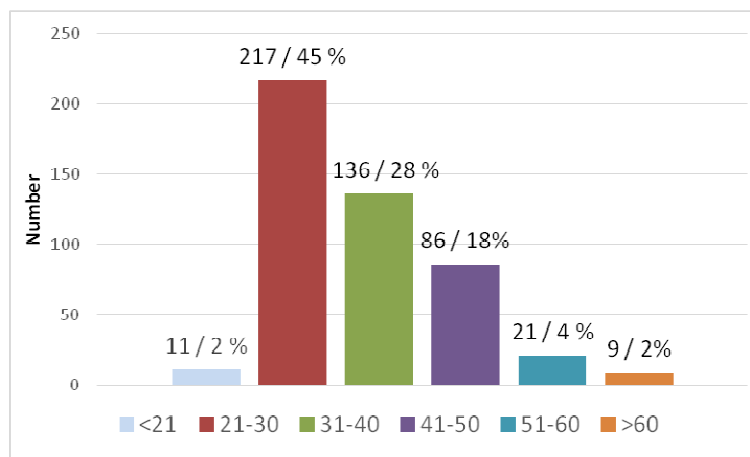


Figure 9: Respondents by age overall (including respondents for section F “Diversity”)

Source: author’s work.

Subdividing the survey into two parts in Hungary (excluding the online questionnaire for the section F “Diversity”) in total 259 respondents in Hungary (151) and Germany (108) answered the questionnaire. 152 (59 %) of them were male and 106 female (41 %) and one without specification.

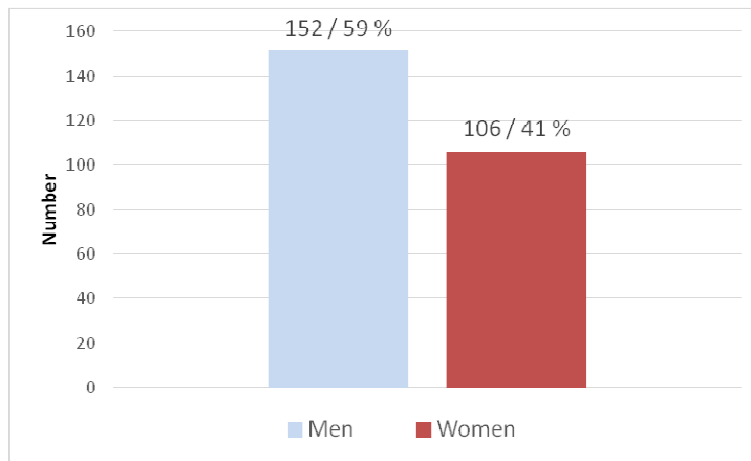


Figure 10: Respondents by gender (excluding respondents for section F “Diversity”)

Source: author’s work.

In this part of the survey the youngest was 19 years old and the oldest 68 years. As in the survey results in total the group aged between 21 and 30 was the largest group (40 %), followed by the group between 31 and 40 with 36 %.

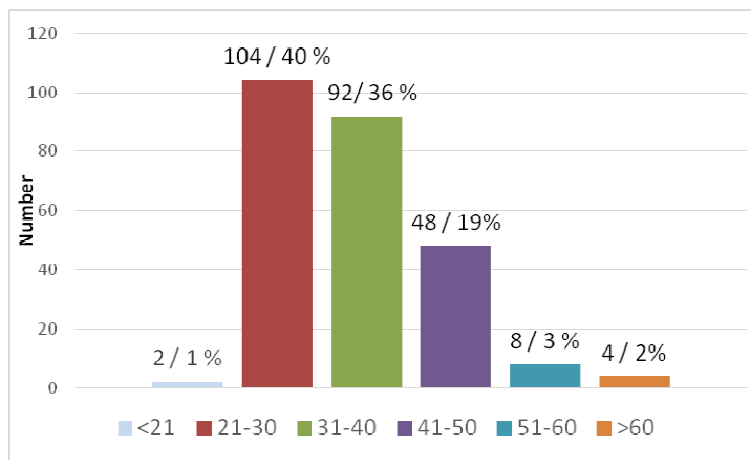


Figure 11: Respondents by age (excluding respondents for section F “Diversity”)

Source: author’s work.

Because of the reduced questionnaire in the online version the presented following general data of the respondents consists only of the German part and the Hungarian part excluding the online questionnaire data.

In the first section of the questionnaire (general information) among other things the type of ownership of the concerned organization was surveyed. For this purpose the participants had four options to choose: 1. “Fully or to a larger part state ownership”, 2. “Multinational company ownership”, 3. “Private ownership with headquarters in this country” and 4. “Other”.

As shown in Figure 12 the largest group was working in companies with private ownership (42 %), followed by multinational ownership (37 %) and state ownership with 17 %.

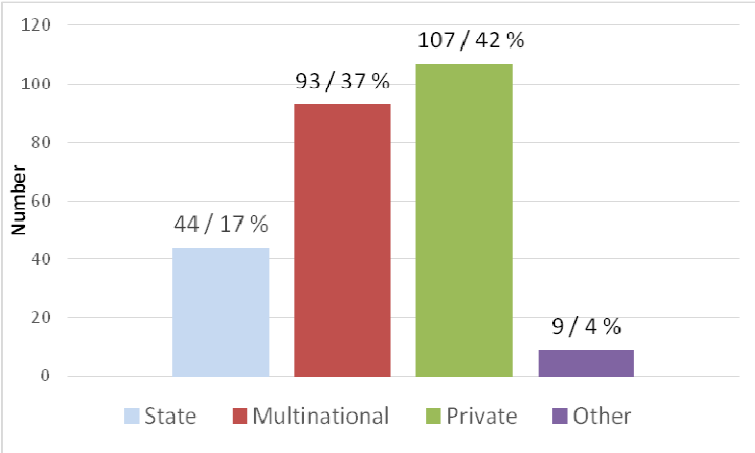


Figure 12: Respondents by ownership structure (excluding respondents for section F “Diversity”)

Source: author’s work.

The most respondents (48 %) work for medium-sized companies with 20-499 employees (by definition of the IfM Bonn; IFM BONN 2016). The second largest group of the respondents with 41 % work for big companies (500 or more employees) and 10 % work for small firms (less than 20 employees).

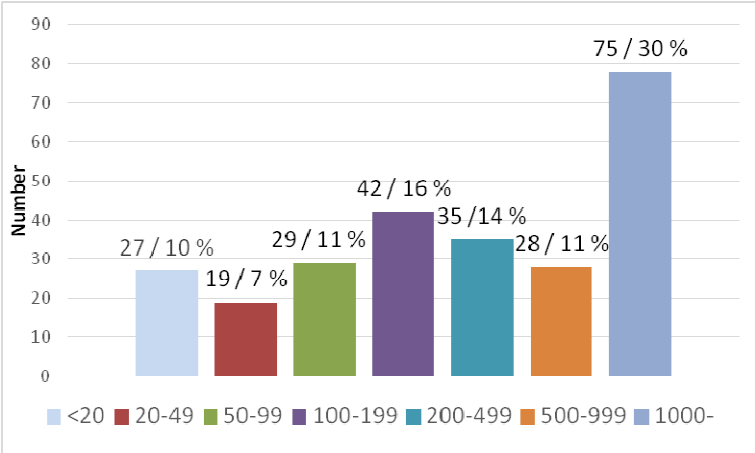


Figure 13: Respondents by number of people working for the organization (excluding respondents for section F “Diversity”)

Source: author’s work.



## 4.2 Sustainable and long-term oriented Workplace Health Management

To check the hypothesis the responses are divided into two groups. One of the two groups contains all responses of employees of companies which have not established a sustainable and long-term-oriented Workplace Health Management and the other group contains the responses of employees of companies which have established such a WHM. In order to examine if there is a sustainable and long-term-oriented WHM in the company they work for, 14 questions had to be answered by the respondents within the questionnaire. The first part of the questions (A1 – A13) queried specific characteristics of a possible existing WHM. The last question (WHP 1) asks the assessment of the employee: *“In summary how do you think does your company have a workplace health management with the aim of preventive health care and an improvement of generic health state?”* (“Yes”, “No” and “Don’t know”). If the answer was “Yes” in the next step the attributes “sustainable and long-term oriented” had to be examined. In this relation some combinations of the answers to the following questions are crucial:

A2: *“To what extent is there an agreement or a concept for how the Workplace Health Promotion (WHP) should be or how a WHP would be wishful in your company?”*, A3: *“Is there a clear responsibility for the Workplace Health Management in your company? (this means is there a job description with WHP-tasks, and/or is there a person / group in your company which is displayed in the organizational chart?)”*, A5: *“Is there a WHP-steering-group in which all health-related positions are represented (e.g. working group / steering group health)?”*, A7: *“Is there an opportunity for the employees to participate direct in solving health problems or to contribute to health-related strategic decisions (e.g. working group health, health circle, employee suggestion system, employee attitude survey, staff appraisal)?”*, A10: *“Is there a systematic internal public relations work in the case of WHP (e.g. communication concept, media use like intranet, flyer, booklets, postings)?”* and A12: *“Is there a regular evaluation of the offers and measures in your company (e.g. staff appraisal, amount of holding, cost / benefits sheet) and is there a documentation of the results?”*.

For purpose of this thesis a WHM is defined as sustainable and long-term oriented when the items A5, A7 or A12 in combination with A13 are responded with “yes”. The same conclusions can be drawn when the items A3 and A10 are responded with “yes” and the item A2 minimum with “To a certain extent”.

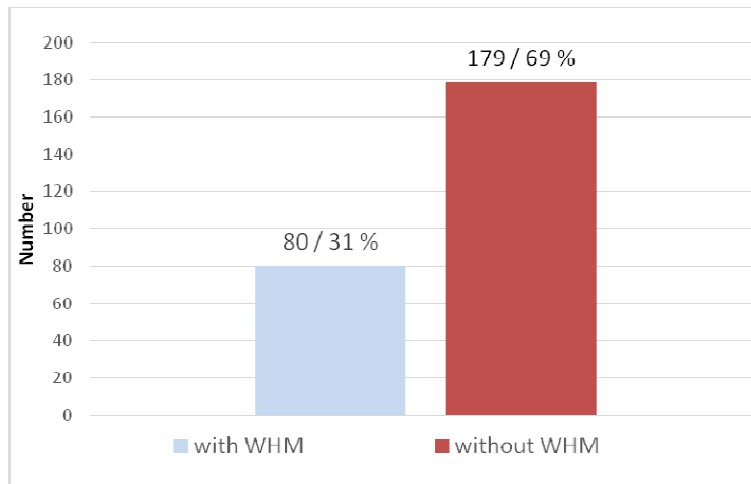


Figure 14: Companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

The results reveal that in 80 cases of the 259 answers the performed Workplace Health Management can be categorized as “long-term-oriented and sustainable”. Some of the companies may run actions in the field of a WHM but these activities are not strategically coordinated.

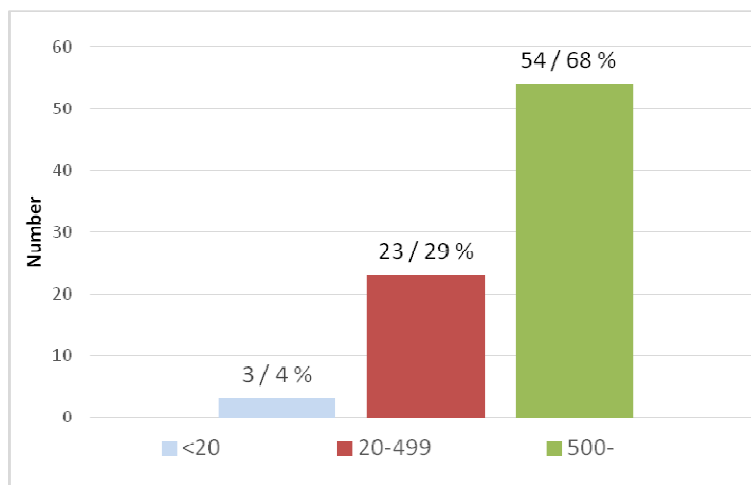


Figure 15: Respondents by number of people working for organization **with** a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

As shown in Figure 15 the majority (68 %) of the employees who work in a company with a WHM come from big companies with 500 and more employees. This fact also displays that to perform a sustainable and long-term oriented WHM is more common in big companies than in medium-sized or small companies.

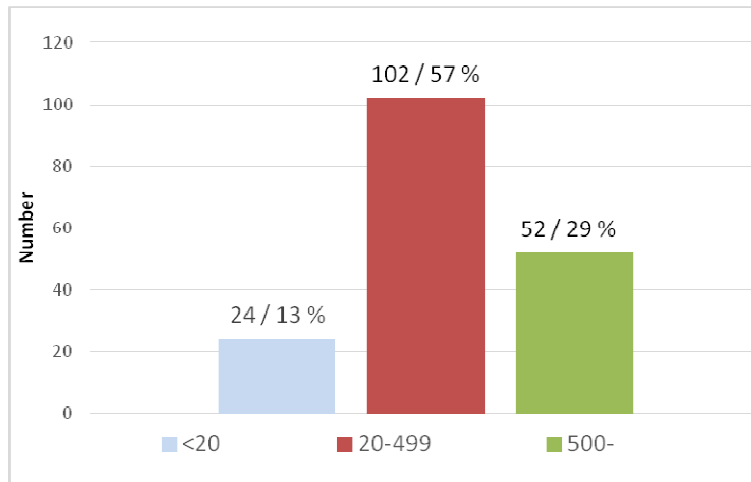


Figure 16: Respondents by number of people working for organization **without** a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

### 4.3 Sustainable WHM in Hungary and in Germany

It is not the aim of this dissertation to perform a detailed comparison of the WHM in the two countries Hungary and Germany. Within this dissertation the European companies shall be seen as a whole. The basic question in this survey is more generic, but in future it will be interesting to investigate the differences of the WHM in Hungary and in Germany more detailed. At this point, only a comparison about the existence of a sustainable WHM in Hungary and in Germany is done. **Because of the small sample size the result is not representative neither for Hungary nor for Germany.**

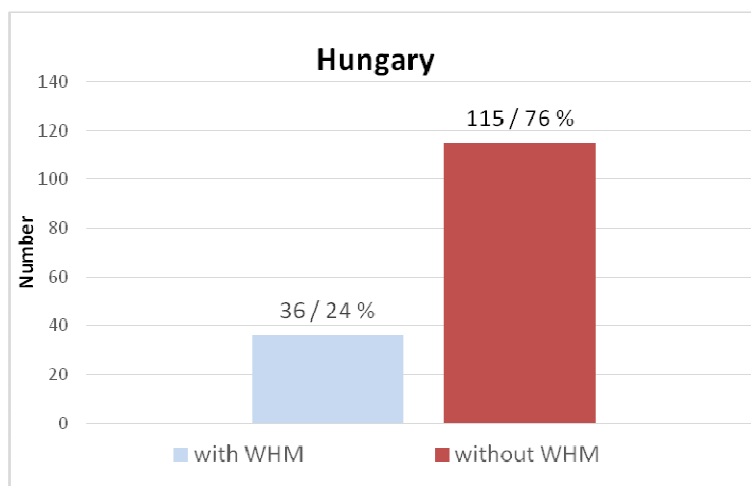


Figure 17: Hungarian companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

While overall in nearly 31 % of the answers the employees stated a sustainable WHM in their company, in Hungary only in 24 % this is the case. This may be because the topic is not present in the companies for the same time like in Germany.

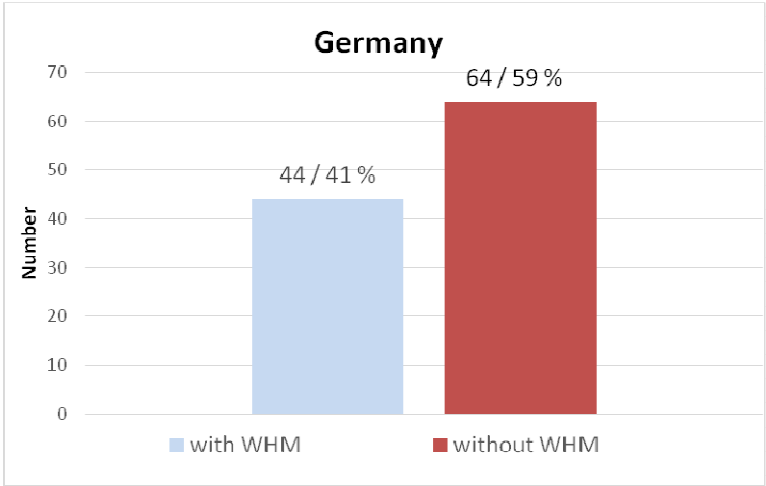


Figure 18: German companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

41 % of the German respondents confirm the existence of a sustainable WHM in their company. This is nearly the same percentage as in the study of the FOM from 2013 (FOM 2013) with 42,2%.

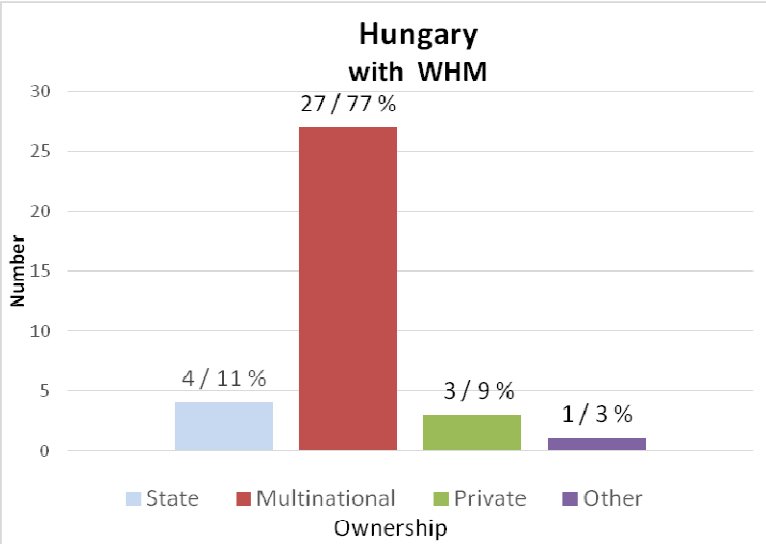


Figure 19: Hungarian respondents by ownership structure with a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

77 % of all companies performing a sustainable WHM in Hungary are multinational companies. This may be an indicator that, at this time, the WHM in Hungary is not as

common as in Germany and that the multinational companies help to take this approach to Hungary.

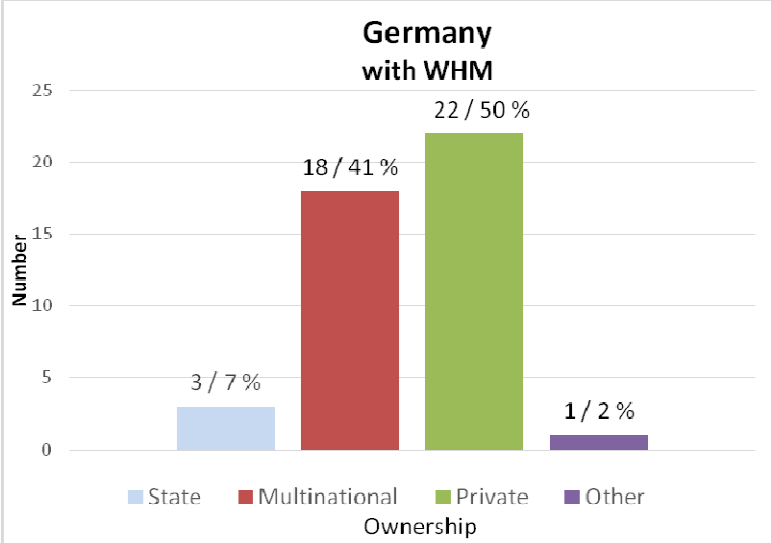


Figure 20: German respondents by ownership structure **with** a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

In Germany the private companies (with 50 %) and the multinational companies (with 41 %) are the largest groups. This displays that the WHM is distributed not only in international companies, but it is also common in other companies.

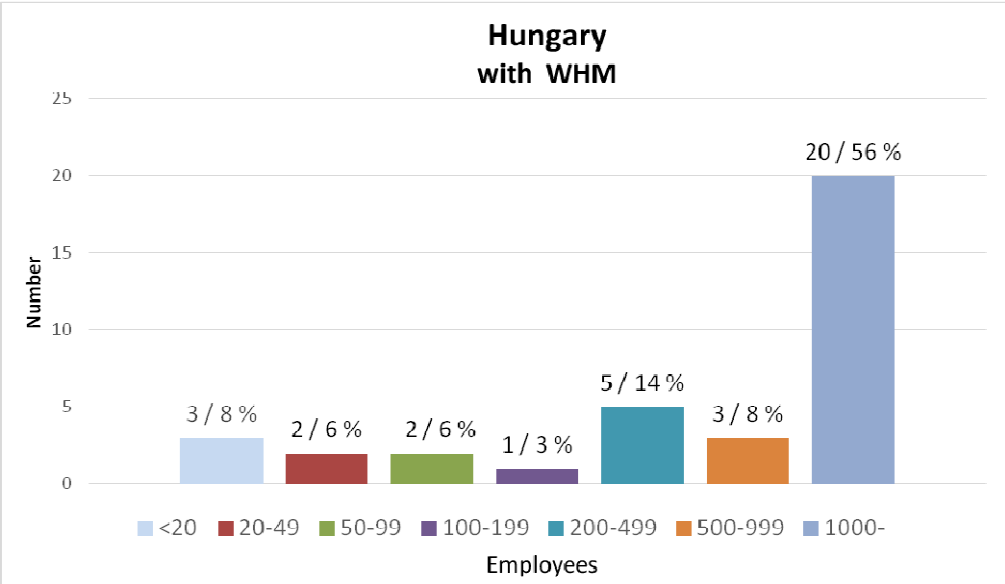


Figure 21: Hungarian respondents by number of people working for organization **with** a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

In Hungary in 56 % the WHM is located in companies with more than 1000 employees, which displays the fact, that the WHM is mostly performed in multinational companies.

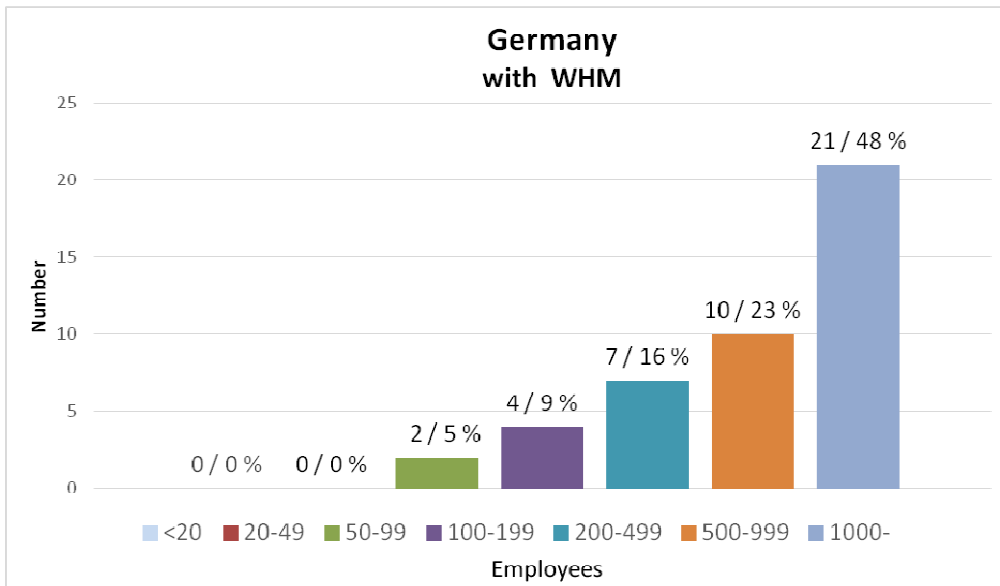


Figure 22: German respondents by number of people working for organization **with** a WHM (excluding respondents for section F “Diversity”)

Source: author’s work.

In Germany the picture is a bit different. The very large companies only form a group of 48 %. The next group is companies with 500-999 employees (23 %), followed by companies with 200-499 employees (16 %). This shows, that the larger the company, the more frequent the existence of a sustainable WHM is.

#### 4.4 Contribution of the WHM to the overall health of the employees (Hypothesis 1)

##### **Hypothesis 1:**

In a company which performs a long-term-oriented / sustainable Workplace Health Management significant more employees think that WHM programs contribute to a large extent to the improvement of the overall health of employees than in a company which do not perform a long-term-oriented / sustainable Workplace Health Management.

The question used in the questionnaire to evaluate this hypothesis was the following:

***B1. To what extent do WHP programs contribute to the improvement of the overall health of employees?***

The item is measured with an interval scale (Likert-scale):

To a large extent	To a certain extent	To a small extent
3	2	1

Table 2 contains the results for the item B1. In total 254 responses were received (see the 1<sup>st</sup> column). The minimum is 1 and the maximum 3, with a mean of 2,1. The mean of the re-

sponses of employees who work in a company which do not perform a long-term oriented and sustainable Workplace Health Management is only 2,01 in comparison to the responses in companies with a WHM with a mean of 2,3.

Table 2: (Hypothesis 1) Results for B1 (contribution to the overall health)

<b>B1</b>	<b>Total</b>	<b>without WHM</b>	<b>with WHM</b>
Number of datasets	254,00	174,00	80,00
Minimum	1,00	1,00	1,00
1. Quartile	2,00	2,00	2,00
Median	2,00	2,00	2,00
Mean	2,10	2,01	2,30
3. Quartile	2,00	2,00	3,00
Modus	2,00	2,00	2,00
Maximum	3,00	3,00	3,00
Spread	2,00	2,00	2,00
Variance	0,38	0,39	0,29
Standard deviation	0,61	0,63	0,54

Source: author’s work.

The boxplots of the reactions are displayed in Figure 23. The results for “total” and “without WHM” are similar in the boxplot, but the results for “with WHM” are different.

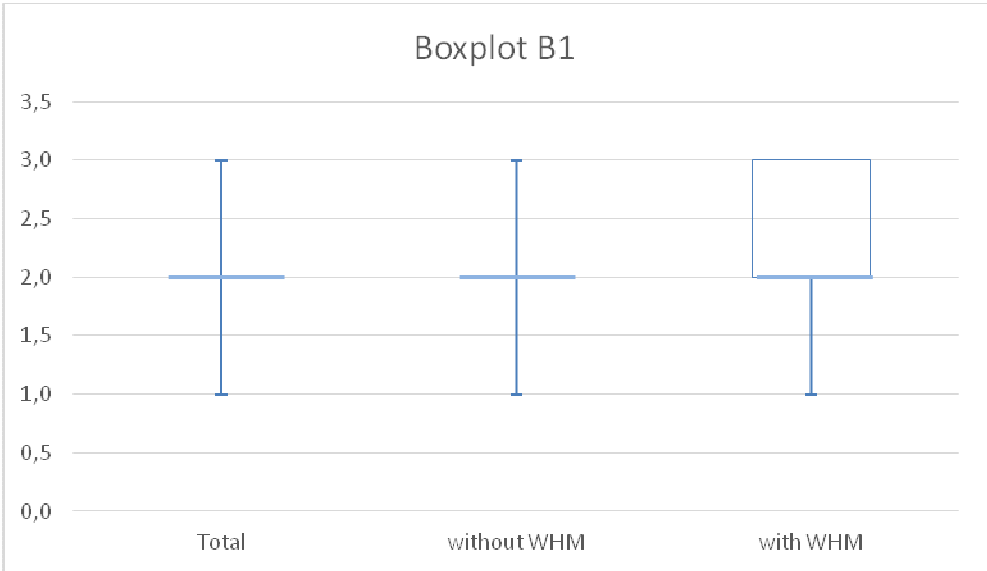


Figure 23: (Hypothesis 1) Boxplot for B1 (contribution to the overall health) total, B1 without WHM and B1 with WHM

Source: author’s work.

The mentioned differences in the boxplots are because of the different 3. quartile (3,0) of the results “with WHM” in comparison to the two other columns (2,0).

Table 3: (Hypothesis 1) Distribution for B1 (contribution to the overall health)

	B1 total		B1 without WHM		B1 with WHM	
1	36	14,2%	33	19,0%	3	3,8%
2	156	61,4%	106	60,9%	50	62,5%
3	62	24,4%	35	20,1%	27	33,8%
	254	100,0%	174	100,0%	80	100,0%

Source: author’s work.

The distribution of the item B1 is displayed in Table 3 and the Figure 24, the Figure 25 and the Figure 26. In all 3 cases the most common number is the number 2, with a spread of 60,9% to 62,5 %. This shows how closely the results are located together. But for the number 3 the results are very different. In case of B1 total 24,4 % of the employees think that the WHP programs contribute to a large extent to the improvement of the overall health of employees. Divided into subgroups only 20,1 % of the employees from firms without a WHM think that way, but 33,8 % of the employees of companies with a WHM!

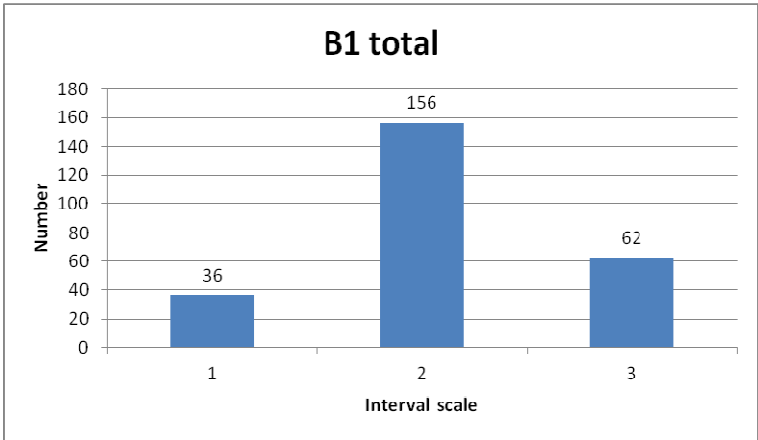


Figure 24: (Hypothesis 1) Histogram for B1 (contribution to the overall health) total (with and without a WHM)

Source: author’s work.

The discussed differences for the item B1 are shown in the histograms as well.



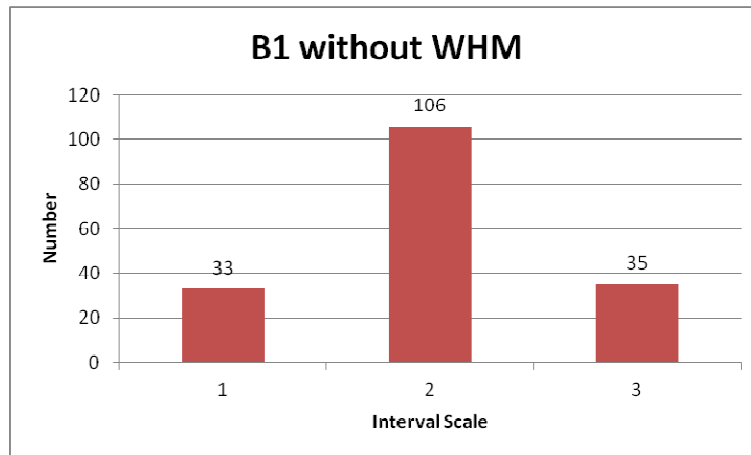


Figure 25: (Hypothesis 1) Histogram for B1 (contribution to the overall health) without WHM

Source: author's work.

Only 3,8 % of the employees of firms with a WHM think that the WHP programs do contribute to a small extent to the overall health of employees. This means that 96,2 % think that the contribution is to a certain or large extent.

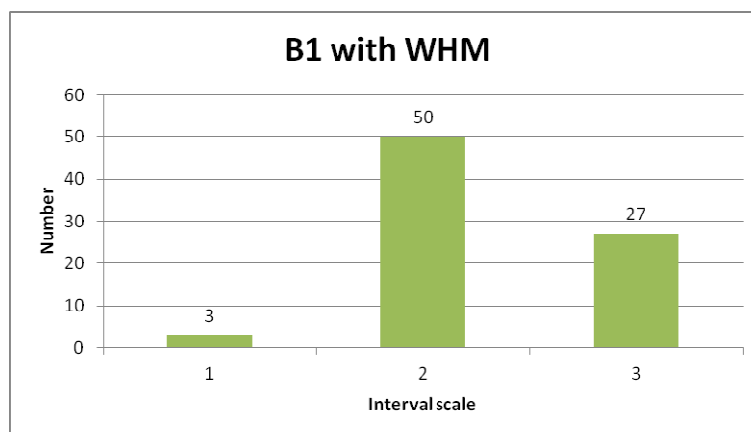


Figure 26: (Hypothesis 1) Histogram for B1 (contribution to the overall health) with WHM

Source: author's work.

To verify if the displayed difference is statistically significant the independent samples t-test (assuming unequal variances) is used (see Table 4).

Table 4: (Hypothesis 1) Independent samples t-test for B1 (contribution to the overall health)

	without long-term, sustainable WHM (174 cases)		with long-term, sustainable WHM (80 cases)					
	Mean	Variance.	Mean	Variance.	t-value	df	P(T<=t) two-tail	critical t-value two-tail
<b>B1</b>	2,01	0,39	2,30	0,29	3,76695	177	0,00022	1,97346

Source: author's work.

On the basis that the absolute value of t-value (3,76695) is larger than the critical t-value for the two-tailed test (1,97346) it can be stated with 95% certainty that there really is a difference between the companies without WHM and with a WHM.

In addition the difference of the mean of 0,29 between the group without a WHM and the group with a WHM tends into the same direction. Summarizing the results, it can be stated that in a company which performs a long-term-oriented / sustainable Workplace Health Management significantly more employees think that WHM programs contribute to a large extent to the improvement of the overall health of employees than in a company which is not performing a long-term-oriented / sustainable Workplace Health Management.

**Summarising the described results it can be stated that the hypothesis 1 is confirmed.**

#### 4.4.1 Comparison Hungary – Germany for Hypothesis H1

Is there a difference between B1 total in Hungary and in Germany?

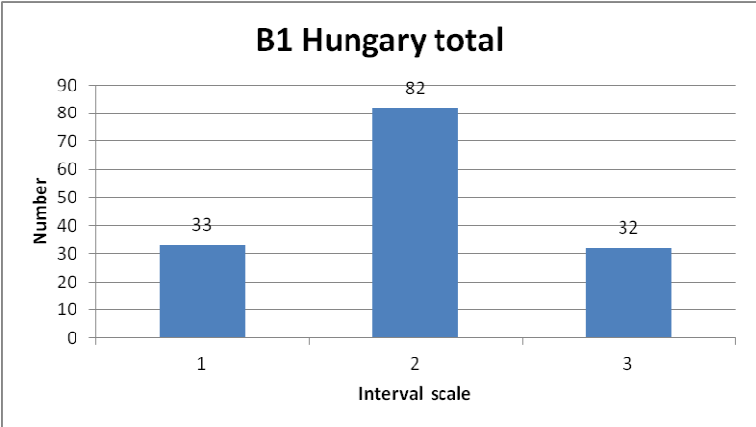


Figure 27: (Hypothesis 1) Histogram for B1 Hungary total (with and without a WHM)  
Source: author’s work.

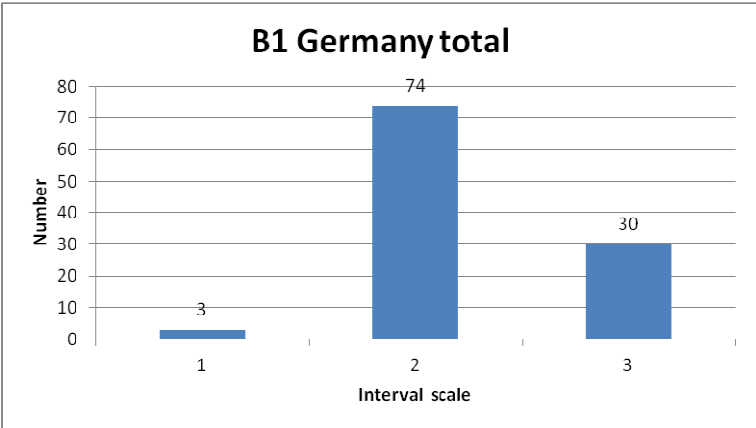


Figure 28: (Hypothesis 1) Histogram for B1 Germany total (with and without a WHM)  
Source: author’s work.

Table 5: (Hypothesis 1) Distribution for B1 for Hungary and Germany (contribution to the overall health)

	B1 Hungary total		B1 Germany total	
1	33	22,4%	3	2,8%
2	82	55,8%	74	69,2%
3	32	21,8%	30	28,0%
	147	100,0%	107	100,0%

Source: author's work.

In Hungary 21,8 % think that WHP programs contribute to a large extent to the improvement of the overall health of employees , while in Germany 28 % think that way. The largest difference is displayed for item 1: 22,4 % in Hungary answered “to a small extent” while only 2,8 % in Germany responded this.

With an independent sample t-test it is tested if the differences between the Hungarian the German answers are statistically significant.

Table 6: (Comparison Hungary – Germany) Independent samples t-test for B1

	B1 Hungary total (147 cases)		B1 Germany total (107 cases)					
	Mean	Variance.	Mean	Variance.	t-value	df	P(T<=t) two-tail	critical t-value two-tail
B1	1,993	0,445	2,252	0,247	3,547	252	0,00046	1,96942

Source: author's work.

Because of the absolute t-value (3,5471448) is larger than the critical t-value for the two-tailed test (1,9694223) it can be stated with 95% certainty that there really is a difference between the Hungarian and the German responses.

Because of the described non-representativeness of the sample, especially in case of the comparison of Hungarian and German answers, no further conclusion will be done. This could be an interesting part of future research with more participants.

## 4.5 Perceived importance of the WHM for the employees (Hypothesis 2)

### 4.5.1 Perceived importance of the WHM without deviation between companies with a WHM and without a WHM (Hypothesis 2a)

#### **Hypothesis 2a:**

Employees think Workplace Health Management is an important factor in caring about (preserving and promoting) their health.

While H2 is targeting the place and the role of WHM within the complexity of other factors affecting the health of individuals, the hypothesis H1 focuses on the perceived organization wide effects of WHM.

The question used in the questionnaire to evaluate this hypothesis was the following:

***BG2.** According to your workplace or other experiences and knowledge/information how important is the role of workplace health promotion programs (a promotion of „well-being“, of healthy lifestyle; a sustaining of health; an offering of prevention programs; ensuring leverages, methods for improving physical condition, state of health, and mental status; etc. supported by the employer) among other factors of preserving and improving of health?*

The item is measured with an interval scale (Likert-scale):

Very important	Important	Of medium importance	Moderately important	Less important
5	4	3	2	1

In addition to the testing of the hypothesis 2a it is interesting to compare the results of the two groups (without and with a long-term oriented WHM). Do employees in a company with a WHM think different than employees in a company without a WHM? This question is examined with hypothesis 2b.

Table 7: (Hypothesis 2a) Results for BG2

<b>BG2</b>	<b>Total</b>	<b>without WHM</b>	<b>with WHM</b>
Number of datasets	259,00	179,00	80,00
Minimum	1,00	1,00	2,00
1. Quartile	3,00	3,00	4,00
Median	4,00	4,00	4,00
Mean	3,62	3,46	3,99
3. Quartile	4,00	4,00	4,00
Modus	4,00	4,00	4,00
Maximum	5,00	5,00	5,00
Spread	4,00	4,00	3,00
Variance	0,96	1,10	0,44
Standard deviation	0,98	1,05	0,67

Source: author's work.

In Table 7 the results for the item BG2 are displayed; in the first column the results for the total cases and in the columns two and three for the companies without and with a WHM.

For the item BG2 in total on average the questioned employees think with a value of 3,62 that the WHM is important for them. The range of the data reaches from a minimum of 1 to a maximum of 5 and covers all possible items. But the median is located at the item 4 as well as the modus.

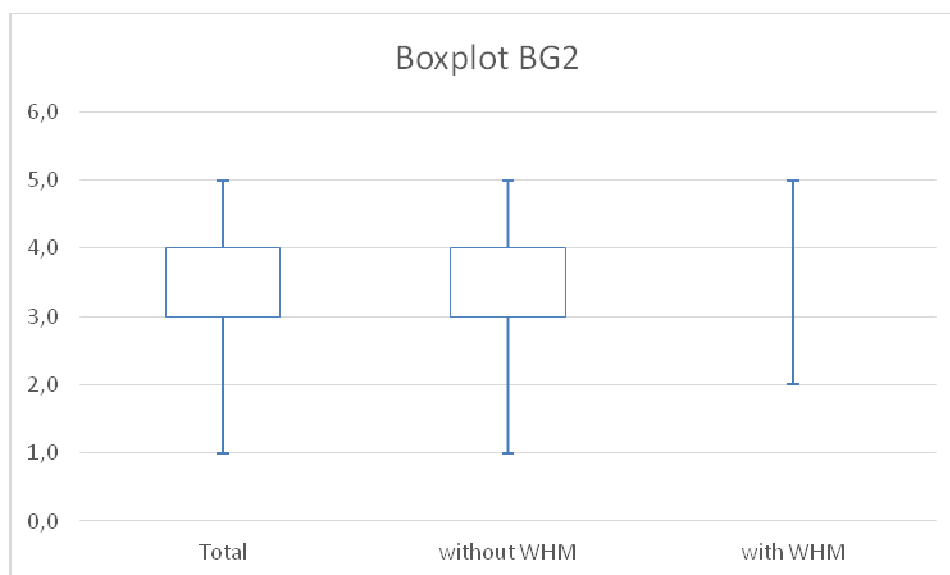


Figure 29: (Hypothesis 2a) Boxplot for BG2 total, BG2 without WHM and BG2 with WHM

Source: author's work.

Table 8: (Hypothesis 2a) Distribution for BG2

Item	BG2 total		BG2 without WHM		BG2 with WHM	
1	12	4,6%	12	6,7%	0	0,0%
2	18	6,9%	16	8,9%	2	2,5%
3	65	25,1%	53	29,6%	12	15,0%
4	125	48,3%	74	41,3%	51	63,8%
5	39	15,1%	24	13,4%	15	18,8%
	259	100,0%	179	100,0%	80	100,0%

Source: author's work

The histogram for BG2 total (see Figure 30) displays the distribution of the values. The most- chosen alternative was 4 “Important” with 125 counts. The second was 3 “Of medium importance” with 65 counts. The items 2 “Moderately important” and 1 “Less important” were chosen only for 30 times altogether.

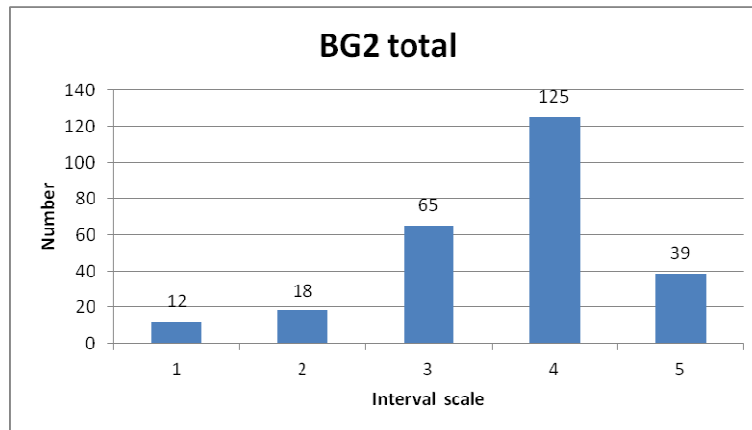


Figure 30: (Hypothesis 2a) Histogram for BG2 total (with and without a WHM)

Source: author's work.

Summarizing the results for the items 5, 4 and 3 (very important, important, medium important) 88,4 % of the answers are accounted for them.

All in all this shows that the employees for the most part think that Workplace Health Management is a very important factor, an important or at least a medium important factor in caring about (preserving and promoting) their health.

**In view of the above described results it can be stated that the employees think that the WHM is an important factor in caring about their health and thus the hypothesis 2a is confirmed.**

#### 4.5.2 Comparison of the perceived importance of the WHM in companies with a WHM and companies without a WHM (Hypothesis 2b)

##### **Hypothesis 2b:**

In a company which performs a long-term-oriented / sustainable Workplace Health Management employees think significantly different that WHM is an important factor in caring about (preserving and promoting) their health than employees in a company which do not perform a long-term-oriented / sustainable Workplace Health Management.

Comparing the results of the two groups it is striking to see that there are some differences between the group without a WHM and with a WHM (see Table 7). Within the group with a WHM there was no 1 as an answer, while in the group without a WHM the 1 was answered twelve times. It can be followed that none of the employees of the group with a WHM thinks that the WHM is unimportant. The next distinction is best to recognize in the boxplots: the spread in the group with a WHM is not as great as the spread in the group without a WHM. In all cases the median and the modus is 4. In the group with a WHM in 97,5 % the answer was 3 or higher (see Table 8). While for the same items in the group without a WHM only 84,4 % can be numbered.

Table 7 also displays that the mean for the companies without a WHM is 3,46 and the mean for the companies with a WHM is 3,99. To test whether this difference is statistically significant the independent samples t-test (assuming unequal variances) is used (see Table 9).

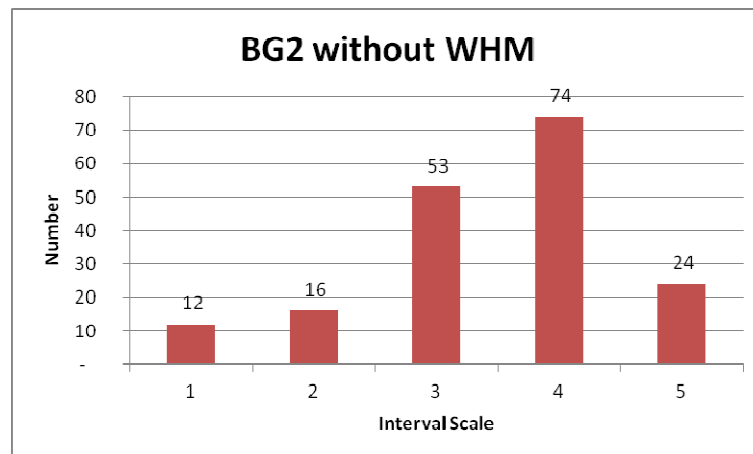


Figure 31: (Hypothesis 2b) Histogram for BG2 without WHM

Source: author's work.

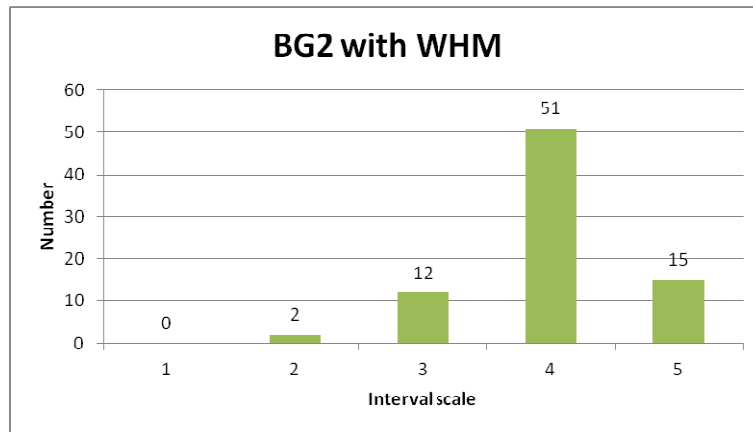


Figure 32: (Hypothesis 2b) Histogram for BG2 with WHM

Source: author's work.

Table 9: (Hypothesis 2b) Independent samples t-test for BG2

	without long-term, sustainable WHM (179 cases)		with long-term, sustainable WHM (80 cases)		t-value	df	P(T<=t) two-tail	critical t-value two-tail
	Mean	Variance.	Mean	Variance.				
BG 2	3,46	1,104	3,99	0,443	4,89405	228	0,00000	1,97042

Source: author's work.

Because of the absolute t-value (4,89405) is larger than the critical t-value for the two-tailed test (1,97042) it can be stated with 95% certainty that there really is a difference between the companies without WHM and with a WHM.

Table 10: (Hypothesis 2) Mann-Withney-U-test / Wilcoxon rank-sum test

	BG2
Zpos	3,69
Zcrit (95%)	1,96
Deviation	significant

Source: author's work.

The t-test is strengthened by the the **non-parametric Mann-Whitney-U-test / Wilcoxon rank-sum test** (UNIVERSITÄT ZÜRICH 2016B) displayed in Table 10. The z-value is higher than the critical z-value of 1,96. This indicates that for BG2 there is a statistically significant difference between the two groups.



The higher mean of 3,99 for the group with a WHM proves that for these employees a WHM is more important than for the group without a WHM. The reason for this difference may be caused by the contact with methods and actions of a WHM and the resulting experience what a WHM is able to provide.

**Considering the examination it displays that employees in a company with a sustainable WHM think significant different that WHM is an important factor in caring about their health, than employees in a company without a WHM. About the described results the hypothesis 2b is confirmed.**

**4.5.3 Comparison Hungary – Germany for Hypothesis H2a**

Is there a difference between BG2 total in Hungary and in Germany?

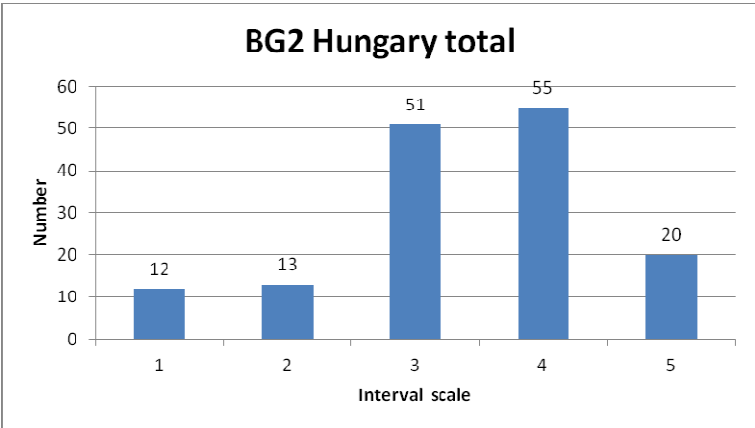


Figure 33: (Hypothesis 2a) Histogram for BG2 Hungary total (with and without a WHM)

Source: author’s work.

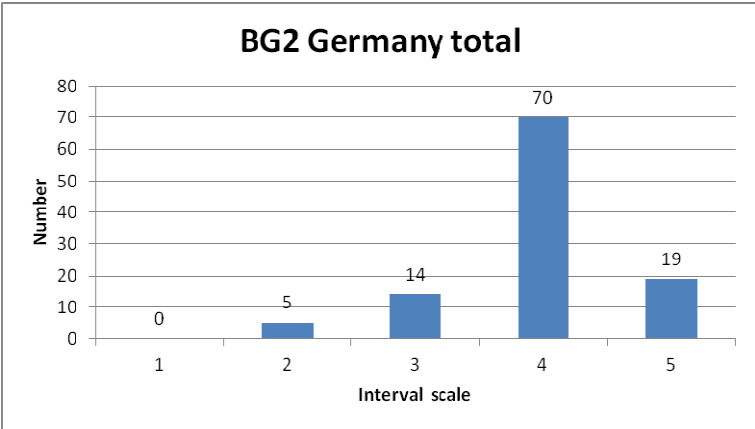


Figure 34: (Hypothesis 2a) Histogram for BG2 Germany total (with and without a WHM)

Source: author’s work.

Table 11: (Hypothesis 2a) Distribution for BG2 for Hungary and Germany

Item	BG2 Hungary total		BG2 Germany total	
1	12	7,9%	0	0,0%
2	13	8,6%	5	4,6%
3	51	33,8%	14	13,0%
4	55	36,4%	70	64,8%
5	20	13,2%	19	17,6%
	151	100,0%	108	100,0%

Source: author's work

In Germany 82,4 % of the respondents think that the Workplace Health Management is an important or very important factor in caring about (preserving and promoting) their health. In Hungary only 49,7 % think that way. Performing an independent sample t-test the differences of the answers in Hungary and in Germany are examined in detail.

Table 12: (Comparison Hungary – Germany) Independent samples t-test for BG2

	BG2 Hungary total (151 cases)		BG2 Germany total (108 cases)		t-value	df	P(T<=t) two-tail	critical t-value two-tail
	Mean	Variance.	Mean	Variance.				
BG2	3,38	1,158	3,95	0,493	5,149	255	0,00000	1,96931

Source: author's work.

Because of the absolute t-value (5,149268) is larger than the critical t-value for the two-tailed test (1,96931) it can be stated with 95% certainty that there really is a difference between the Hungarian and the German responses.

#### 4.6 Relationship between the WHM and the attractiveness of the workplace /employer (Hypothesis 3)

**Hypothesis 3:**

In employees view Workplace Health Management is statistically positively related to the attractiveness of the workplace/employer.

The questions used in the questionnaire to evaluate this hypothesis were the following:

*C1. Do WHP programs make a workplace / employer more attractive for employees?*

*and*

*C2. Do WHP programs make a workplace / employer more attractive on the labour market?*

The items C1 and C2 are measured with an nominal scale:

Yes	No	Don't know, not applicable
3	1	2

If the answer was “Yes”, the extent is measured with an interval scale (Likert-scale):

*If you have answered „yes” to #C1., please, rate the extent to which they make it more attractive!*

*If you have answered „yes” to #C2., please, rate the extent to which they make it more attractive!*

To a large extent	To a certain extent	To a small extent
3	2	1

The results for the items “C1” and “C2” are displayed in Table 13. There are 252 datasets for the item “C1” and 253 for the item “C2”. The mean for “C1” is 2,69 and for “C2” 2,57.

Table 13: (Hypothesis 3) Results for C1 (attractive for employees) and C2 (attractive on labour market)

C1 and C2	C1	If C1 "Yes" then	C2	If C2 "Yes" then
Number of data-sets	252,00	207,00	253,00	182,00
Minimum	1,00	0,00	1,00	0,00
1. quartile	3,00	2,00	2,00	2,00
Median	3,00	2,00	3,00	2,00
Mean	2,69	2,28	2,57	2,22
3. quartile	3,00	3,00	3,00	3,00
Modus	3,00	2,00	3,00	2,00
Maximum	3,00	3,00	3,00	3,00
Spread	2,00	3,00	2,00	3,00
Variance	0,48	0,31	0,56	0,35
Standard deviation	0,69	1,04	0,75	1,13

Source: author's work.

Table 13 shows a standard deviation of 0,69 for "C1" and of 0,75 for "C2". In both cases the responses range from 1 to 3. The mean for the responses when "C1" was answered with "Yes" is 2,28 and in the case of the answer "Yes" for "C2" the mean is 2,22. As for "C1" and "C2" the spread of the answers is over the full possible spectrum.

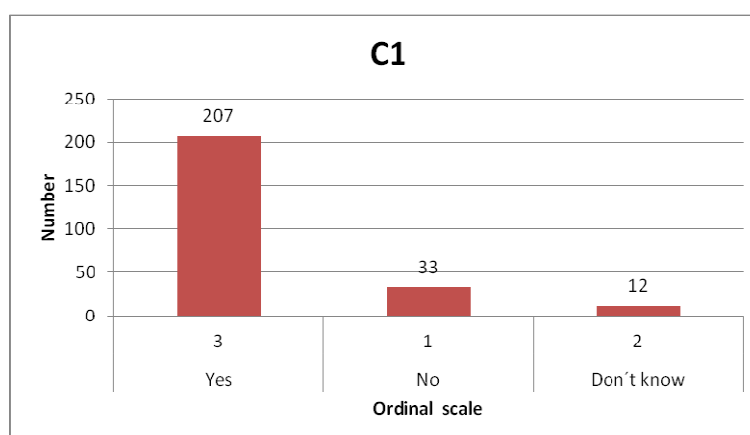


Figure 35: (Hypothesis 3) Histogram for C1 (attractive for employees)

Source: author's work.

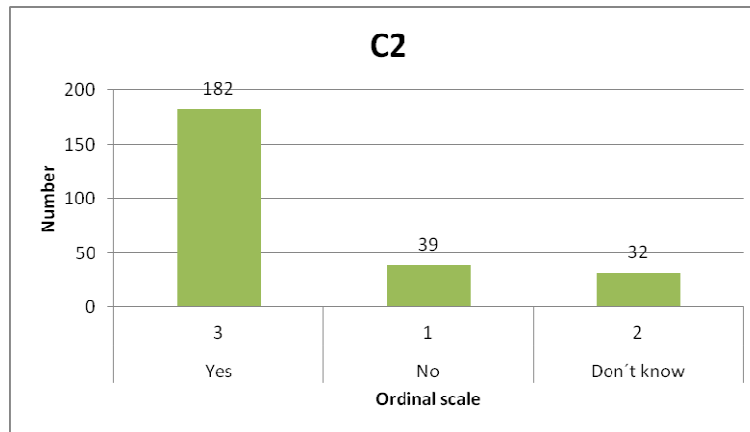


Figure 36: (Hypothesis 3) Histogram for C2 (attractive on labour market)

Source: author's work.

For 82 % of the asked persons the WHM increases the employer's attractiveness for employees which are already working for the company (see Table 14). But only 72 % think that the WHM increases the attractiveness for the whole labour market. This may reflect that the respondents think their appreciation for the performance of WHM actions is higher than the appreciation of the average employee on the labour market.

Table 14: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (total)

More attractive? (Total)		C1		C2	
	Item	Total	Percent	Total	Percent
Yes	3	207	82%	182	72%
No	1	33	13%	39	15%
Don't know	2	12	5%	32	13%
		252	100%	253	100%
<b>To which extent?</b>					
Large	3	67	33%	54	30%
Certain	2	133	65%	116	64%
Small	1	5	2%	10	6%
		205	100%	180	100%

Source: author's work

One third of the people who answered "Yes" in "C1" stated that the WHM contributes to a large extent to the attractiveness of the employer. A very interesting fact is that only 2 % of them think that the extent is small, while 65 % attribute a certain extent. The results for the extent in item "C2" are a bit behind the results for the extent in item "C1" like the results for

“C1” and “C2”. Again for themselves the employees think a WHM is more attractive than for other employees. Dividing the responses into two groups, one without a WHM (see Table 15) and one with a WHM (see Table 16), 79 % in the group without a WHM think that the WHM increases the attractiveness of the employer for them and 89 % in the group with a WHM think that way (this is a difference of 10 %). The results for the item “C2” are even further apart: with 67 % (without WHM) and 83 % (with WHM) the difference between the two groups is 16 %.

Table 15: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (without WHM)

More attractive? (without WHM)		C1		C2	
	Item	Total	Percent	Total	Percent
Yes	2	136	79%	116	67%
No	1	25	15%	31	18%
Don't know	0	11	6%	26	15%
		172	100%	173	100%
To which extent?					
Large	3	35	26%	33	29%
Certain	2	94	70%	76	66%
Small	1	5	4%	6	5%
		134	100%	115	100%

Source: author's work

In the group without a WHM 4 % of the “Yes” respondents for item “C1” think that the extent is only small while 0 % in the group with a WHM think like that.

Table 16: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (with WHM)

More attractive? (with WHM)		C1		C2	
	Item	Total	Percent	Total	Percent
Yes	2	71	89%	66	83%
No	1	8	10%	8	10%
Don't know	0	1	1%	6	8%
		80	100%	80	100%
<b>To which extent?</b>					
Large	3	32	24%	21	18%
Certain	2	39	29%	40	35%
Small	1	0	0%	4	3%
		71	53%	65	57%

Source: author's work

### Connection between C1 and C2:

Do employees think in general an employer with a WHM is more attractive than an employer without a WHM, but for themselves it is different?

Table 17: (Hypothesis 3) Combined answers for C1 (attractive for employees) and C2 (attractive on labour market)

Answer C1 and C2								
C1/C2			C1/C2			C1/C2		
3/3	173	68,65%	1/3	5	1,98%	2/3	4	1,59%
3/1	16	6,35%	1/1	20	7,94%	2/1	2	0,79%
3/2	18	7,14%	1/2	8	3,17%	2/2	6	2,38%
	207	82,14%		33	13,10%		12	4,76%
Total	252	100,00%						

Source: author's work

To analyse this fact the combination of the answers “C1” and “C2” is evaluated.

Table 17 displays the combination of the answer for “C1” and “C2”. In 68,65 % the respondents answered “Yes” in both cases. But 6,35 % of the questioned employees answered that

for the employees already working in the company the WHM increases the attractiveness of an employer, but they don't think it increases the attractiveness of the company for the labour market. Only in 1,98 % of the cases the answer for "C1" was "No" and for "C2" "Yes" and therefore the above asked question can be answered negatively.

Table 18: (Hypothesis 3) One sample t-Test for the item C1 (attractive for employees) and C2 (attractive on labour market)

One Sample t-test					
	mean of x	95% CI Lower	95% CI Upper	t	df
C1	2.690476	2.618609		Inf 15.861651	251
C2	2.565217	2.487807		Inf 12.054313	252
	HA: greater				
	H0: mean <= 2				

Source: author's work.

In addition to the so far discussed results for the items "C1" and "C2" the one sample t-test is used. The null hypothesis for the two items is that there is no positive correlation between the WHM and the attractiveness of the employer which is a mean equal to or less than 2. Because of the t-value is higher than the critical value the null hypothesis can be rejected. This means that with 95 % certainty there is a positive correlation.

Summarizing the displayed answers a great majority of the respondents think that a WHM increases the attractiveness of an employer.

In employees view Workplace Health Management is statistically positively related to the attractiveness of the workplace/employer.

**Viewing the results of the statistics and the t-test it can be concluded that in employees view the WHM is statistically positively related to the attractiveness of the workplace / employer and therefore the hypothesis 3 is confirmed.**



#### 4.7 Additional emotional impacts of the WHM (Hypothesis 4)

**Hypothesis 4:**

The WHM has additional positively emotional impacts to the employment relationship.

- a) To the emotional climate at the workplace.
- b) To the work motivation of the employees.
- c) To the commitment of the employees towards the organization.
- d) To the number of voluntary quits.

The questions used in the questionnaire to evaluate this hypothesis were the following:

*D1 “Do WHP programs contribute to the improvement of the emotional climate at the workplace?”*

*D2 “Do WHP programs increase the work motivation of the employees?”*

*D3 “Do WHP programs increase the commitment of the employees toward the organization?”*

*D4 “Do WHP programs decrease the number of voluntary quits (turnover) of the employees?”*

The items are measured with nominal scales:

Yes	No	Do not know, not applicable
3	1	2

If the answer is yes there is a second question about the extent (interval scale / Likert-scale):

*If you have answered „yes” to #D1., please, rate the extent to which they improve it!*

*If you have answered „yes” to #D2., please, rate the extent to which they increase it!*

*If you have answered „yes” to #D3., please, rate the extent to which they increase it!*

*If you have answered „yes” to #D4., please, rate the extent to which they decrease it!*

To a large extent	To a certain extent	To a small extent
3	2	1

Table 19: (Hypothesis 4) Results for D1 (emotional climate) and D2 (work motivation)

D1 and D2	D1	If D1 "Yes"then	D2	If D2 "Yes"then
Number of data-bases	253	193	254	182
Minimum	253	193	254	182
1. Quartile	3	2	2	2
Median	3	2	3	2
Mean	2,64	2,36	2,55	2,25
3. Quartile	3	3	3	3
Modus	3	2	3	2
Maximum	3	3	3	3
Spread	2	2	2	2
Variance	0,49	0,30	0,58	0,40
Standard deviation	0,70	1,13	0,76	1,16

Source: author's work.

The mean of D1 is 2,64 (see Table 19) this seems to be going in the direction of a clear positive relation of WHM and a good emotional climate at the workplace. In fact 76 % of the 253 respondents answered with "Yes" and only 13 % with "No". From the 193 respondents with "Yes" 39 % think that the WHM increases the emotional climate to a large extent (see Table 20) while only 5 % think that the increase is only to a small extent. The results for the item D2 are quite similar, but not as clear as for the item D1. The mean for D2 counts 2,55 and 34 % of the 182 positive respondents answered that they think the WHM increases the work motivation to a large extent.

Table 20: (Hypothesis 4) Distribution for D1 (emotional climate) and D2 (work motivation)

		D1		D2		
	Item	Total	Percent	Total	Percent	
	Yes	3	193	76%	182	72%
	No	1	32	13%	42	17%
	Don't know	2	28	11%	30	12%
			253	100%	254	100%
<b>To which extent?</b>						
	Large	3	77	39%	65	34%
	Certain	2	110	56%	102	53%
	Small	1	10	5%	24	13%
			197	100%	191	100%

Source: author's work.

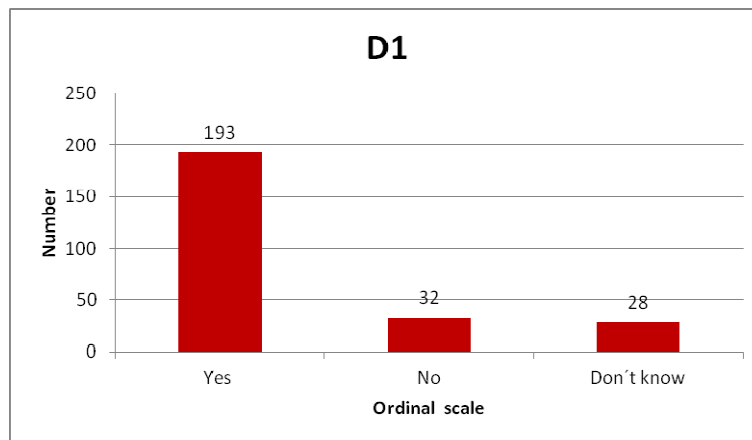


Figure 37: (Hypothesis 4) Histogram for D1 (improvement of emotional climate)

Source: author's work.

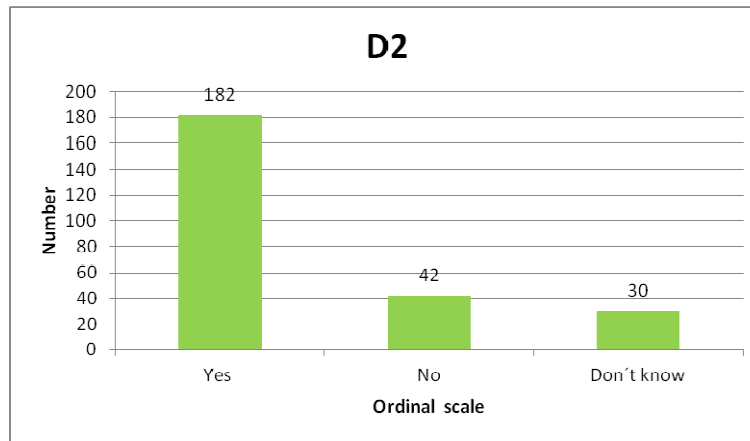


Figure 38: (Hypothesis 4) Histogram for D2 (increase of work motivation)

Source: author's work.

Table 21: (Hypothesis 4) Results for D3 (increase commitment) and D4 (decrease turnovers)

D3 and D4	D3	If D3 "Yes"then	D4	If D4 "Yes"then
Number of data-bases	253	166	250	91
Minimum	253	166	250	91
1. Quartile	2	2	1	2
Median	3	2	2	2
Mean	2,45	2,13	2,04	2,02
3. Quartile	3	3	3	3
Modus	3	2	3	2
Maximum	3	3	3	3
Spread	2	3	2	3
Variance	0,67	0,52	0,68	0,56
Standard deviation	0,82	0,73	0,83	0,76

Source: author's work.

In case of item D3 there are 253 respondents in total, with a mean of 2,45. 166 (65 %) of the 253 employees answered that they think the WHM increase the commitment of the employees toward the organization. And 32 % of them declared that the improvement is to a large extent.

Table 22: (Hypothesis 4) Distribution for D3 (increase commitment) and D4 (decrease turnovers)

		D3		D4	
	Item	Total	Percent	Total	Percent
	Yes	166	65%	91	36%
	No	53	21%	80	31%
	Don't know	34	13%	79	31%
		253	100%	250	98%
<b>To which extent?</b>					
	Large	56	32%	24	24%
	Certain	82	47%	49	49%
	Small	35	20%	28	28%
		173	100%	101	100%

Source: author's work.

The results for the item D4 are very different. The mean for D4 is only 2,04 and only 36 % of the respondents think that WHP programs decrease the number of voluntary quits of the employees. 31 % stated with a clear “No”. Even of the respondents who answered with “Yes” only 24 % think that the extent of the decrease is large.

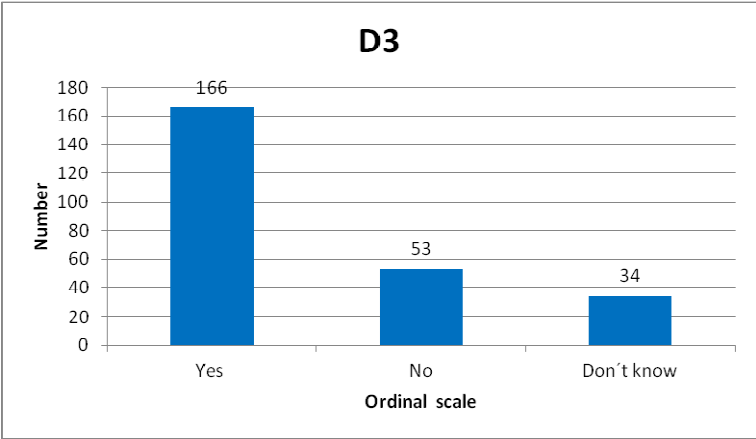


Figure 39: (Hypothesis 4) Histogram for D3 (increase commitment)

Source: author's work.

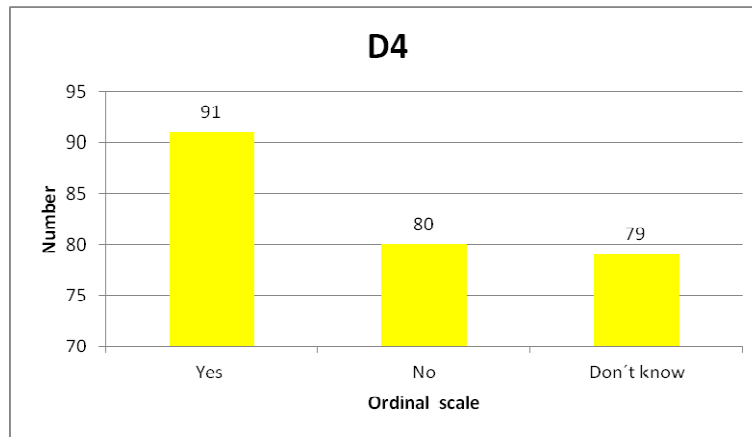


Figure 40: (Hypothesis 4) Histogram for D4 (decrease turnovers)

Source: author's work.

In this first step a positive correlation of the WHM and the diverse items can only be seen for the item D1, D2 and D3.

To strengthen the conclusions drawn in the first step, second step is to perform a one sample t-test. The null hypothesis for the four items is that there is no positive correlation between the WHM and each of the four items. To validate this statement the null hypothesis is defined as a mean equal to or less than 2.

Table 23: (Hypothesis 4) One sample t-Test for the item D1, D2, D3 and D4

One Sample t-test					
	mean of x	95% CI Lower	95% CI Upper	t	df
D1	2.637795	2.565664		Inf 14.5974350	253
D2	2.551181	2.472266		Inf 11.5307397	253
D3	2.446640	2.361761		Inf 8.6872096	252
D4	2.047809	1.961517		Inf 0.9146937	250
	HA: greater				
	H0: mean <= 2				

Source: author's work.

The results for the items are the following:

D1 (emotional climate): Because of the t-value is higher than the critical value the null hypothesis can be rejected. This means that with 95 % certainty there is a positive correlation.

D2 (work motivation): Because of the t-value is higher than the critical value the null hypothesis can be rejected. This means that with 95 % certainty there is a positive correlation.

D3 (increase commitment): Because of the t-value is higher than the critical value the null hypothesis can be rejected. This means that with 95 % certainty there is a positive correlation.

D4 (decrease turnovers): Because of the t-value is lower than the critical value the null hypothesis can't be rejected. This means that with 95 % certainty there is no positive correlation.

The results of the t-test are the same as the results of the first step: D1, D2 and D3 seem to be in a positive correlation with the WHM, while D4 is not positive correlated with the WHM.

**Combining the results of the statistics and the t-test described in this chapter, the hypothesis 4 is only confirmed partly (D1, D2 and D3). The part D4 is not confirmed.**

## 4.8 Relationship between age and expected WHM activities (Hypothesis 5)

### **Hypothesis 5:**

Older employees evaluate other actions of the Workplace Health Management as important as younger employees.

The questions used in the questionnaire to evaluate this hypothesis were the questions of part WHP 2.

*WHP 2. Which of the below listed health improvement and related solutions are operated at your company?*

For example the health improvement:

The items are measured with a nominal scale:

Health awareness days	Yes	No	Do not know, not applicable
	2	1	0

The items about the importance of each action are measured with an interval scale:

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important				
5	4	3	2	1

To evaluate this hypothesis all answers are divided into four age groups. The groups are: 30 and younger, 31-40, 41-50 and 51 and older. First step is to examine which age group prefers which action.



Table 24: (Hypothesis 5) Mean of 2.1 – 2.16 in total and classified by age groups

Mean of the answers		Age group				
Action		X-30	31-40	41-50	51-X	all
	Group size (from XX up to XX)	87-106	68-91	29-48	7-12	191 -257
<b>2.1</b>	Health awareness days	3.32	3.65	3.72	2.88	3.50
<b>2.2</b>	Health screening	3.75	4.09	4.30	3.91	3.98
<b>2.3</b>	Exercise / moving breaks	3.22	3.64	3.36	4.11	3.44
<b>2.4</b>	Back schools	3.49	3.77	4.40	4.30	3.72
<b>2.5</b>	Consultation	3.07	3.42	3.28	2.80	3.23
<b>2.6</b>	Cooking courses	2.39	2.48	2.16	2.00	2.36
<b>2.7</b>	Availability of modern food	4.08	4.30	4.16	4.00	4.17
<b>2.8</b>	Sport groups	3.42	3.58	3.78	3.10	3.53
<b>2.9</b>	Massage at the workplace	3.12	3.22	3.35	3.73	3.22
<b>2.10</b>	Entrance fee for fitness-studios	3.75	3.61	3.49	3.18	3.63
<b>2.11</b>	Quit smoking programs	2.67	2.85	2.91	2.40	2.77
<b>2.12</b>	Stress, time, etc management training	3.91	4.03	3.91	3.91	3.96
<b>2.13a</b>	Coaching (Sport)	3.00	3.19	3.43	3.45	3.17
<b>2.13b</b>	Coaching (Life)	3.28	3.47	3.52	3.86	3.40
<b>2.14</b>	Psychological counselling	3.13	3.71	3.50	2.50	3.39
<b>2.15</b>	Involvement into work process improvement	4.40	4.39	4.30	4.00	4.36
<b>2.16</b>	Involvement into work conditions improvement	4.18	4.31	4.24	4.45	4.25

Source: author's work.

In Table 24 the mean of diverse WHM actions are displayed. The group size for all answers without dividing into age groups differs between 191 for the action 13b and 257 for the action 2.3. In the age group X-30 there are from 87 up to 106 results, in the group 31-40 there are 68 up to 91 respondents and in the group 41-50 from 29 up to 48 while the group 51-X is the smallest with only 7 up to 12 answers.

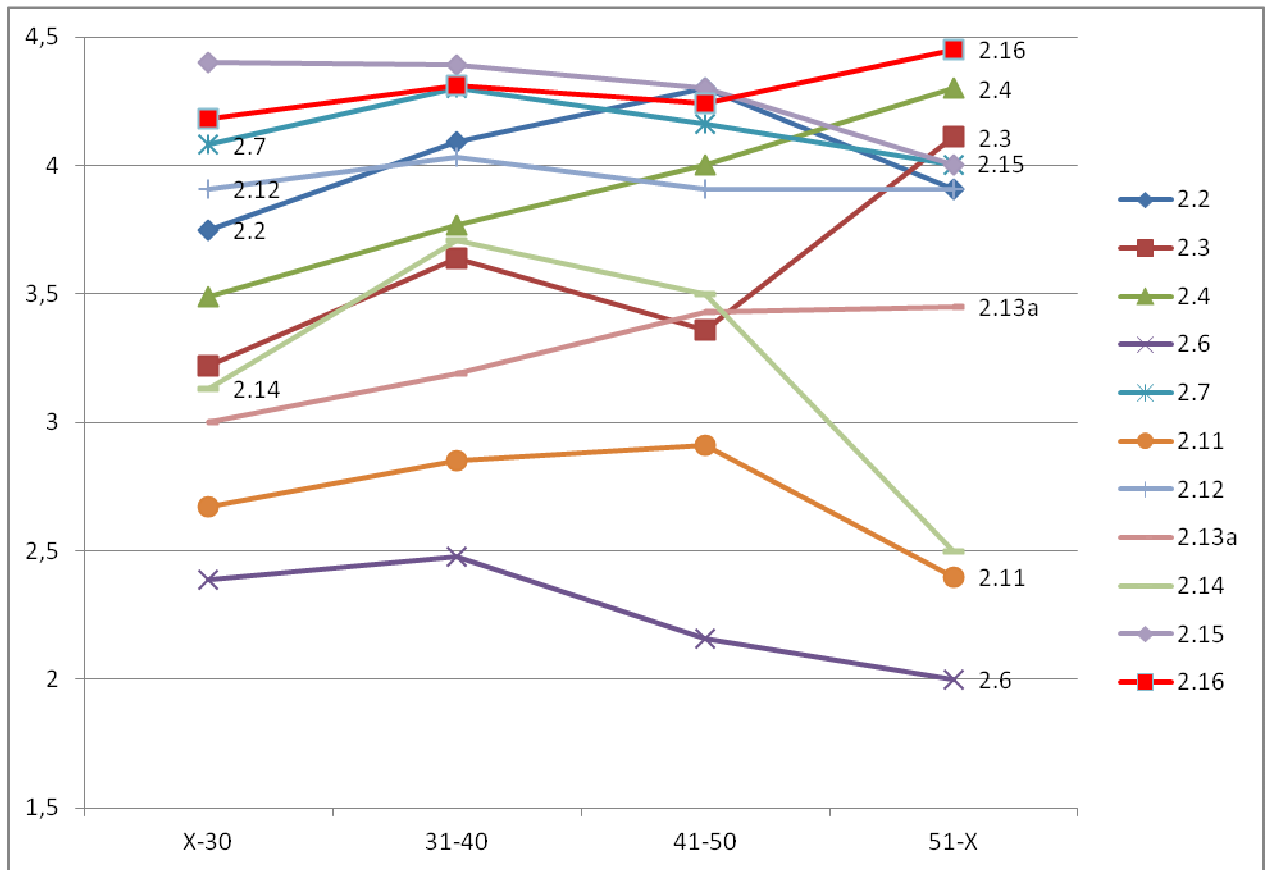


Figure 41: (Hypothesis 5) Mean selected measures parted by groups

Source: author's work

Are there groups of actions which can be combined together? For this analysis a cluster analysis is done:

Table 25: (Hypothesis 5) Distance matrix for actions of a WHM (all age groups)

	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13a	2.13b	2.14	2.15
2.2	0.48															
2.3	0.06	0.54														
2.4	0.22	0.26	0.28													
2.5	0.27	0.75	0.21	0.49												
2.6	1.14	1.62	1.08	1.36	0.87											
2.7	0.67	0.19	0.73	0.45	0.94	1.81										
2.8	0.03	0.45	0.09	0.19	0.30	1.17	0.64									
2.9	0.28	0.76	0.22	0.50	0.01	0.86	0.95	0.31								
2.10	0.13	0.35	0.19	0.09	0.40	1.27	0.54	0.10	0.41							
2.11	0.73	1.21	0.67	0.95	0.46	0.41	1.40	0.76	0.45	0.86						
2.12	0.46	0.02	0.52	0.24	0.73	1.60	0.21	0.43	0.74	0.33	1.19					
2.13a	0.33	0.81	0.27	0.55	0.06	0.81	1.00	0.36	0.05	0.46	0.40	0.79				
2.13b	0.10	0.58	0.04	0.32	0.17	1.04	0.77	0.13	0.18	0.23	0.63	0.56	0.23			
2.14	0.11	0.59	0.05	0.33	0.16	1.03	0.78	0.14	0.17	0.24	0.62	0.57	0.22	0.01		
2.15	0.86	0.38	0.92	0.64	1.13	2.00	0.19	0.83	1.14	0.73	1.59	0.40	1.19	0.96	0.97	
2.16	0.75	0.27	0.81	0.53	1.02	1.89	0.08	0.72	1.03	0.62	1.48	0.29	1.08	0.85	0.86	0.11

Source: author's work.

As analysed above the dendrogram shows the same results:

Here the Cluster for the analysis without dividing into age groups: (best results in group 1 and lowest in group 6).

Table 26: (Hypothesis 5) Result Cluster Analysis (all age groups)

Group 1:	2.07	Availability of modern food
	2.15	Involvement into work process improvement
	2.16	Involvement into work conditions improvement
Group 2:	2.2	Health screening
	2.12	Stress, time, etc management training
Group 3:	2.10	Entrance fee for fitness-studios
	2.4	Back schools
Group 4:	2.1	Health awareness days
	2.3	Exercise / moving breaks
	2.8	Sport groups
	2.13b	Coaching (Life)
	2.14	Psychological counselling
Group 5:	2.5	Consultation
	2.9	Massage at the workplace
	2.13b	Coaching (Life)
Group 6:	2.6	Cooking courses
	2.11	Quit smoking programs

Source: author's work.

Table 27: (Hypothesis 5) Allocation to groups (Aggregation of the Cluster Dendograms)

	Age group	X-30		Age group	31-40		Age group	41-50		Age group	51-X		Age group	all	
	Group size	106		Group size	91		Group size	48		Group size	12		Group size	256	
Group 1	2.15	4,4	Group 1	2.15	4,39	Group 1	2.15	4,3	Group 1	2.16	4,45	Group 1	2.15	4,36	
	2.16	4,18		2.16	4,31		2.2	4,3		2.4	4,3		2.16	4,25	
	2.7	4,08		2.7	4,3		2.16	4,24		2.3	4,11		2.7	4,17	
Group 2	2.12	3,91	Group 2	2.2	4,09	Group 2	2.7	4,16	Group 2	2.15	4	Group 2	2.2	3,98	
	2.2	3,75		2.12	4,03		2.4	4		2.7	4		2.12	3,96	
	2.10	3,75		2.4	3,77		2.12	3,91		2.2	3,91		2.4	3,72	
Group 3	2.4	3,49	Group 2	2.14	3,71	Group 2	2.8	3,78	Group 3	2.12	3,91	Group 3	2.10	3,63	
	2.8	3,42		2.1	3,65		2.1	3,72		2.13b	3,86		2.8	3,53	
	2.1	3,32		2.3	3,64	2.13b	3,52	2.9		3,73	2.1		3,5		
	2.13b	3,28		2.10	3,61	Group 3	2.14	3,5	2.13a	3,45	2.3	3,44			
	2.3	3,22		2.8	3,58		2.10	3,49	2.10	3,18	2.13b	3,4			
Group 4	2.14	3,13	Group 3	2.13b	3,47	Group 4	2.13a	3,43	Group 4	2.8	3,1	Group 4	2.14	3,39	
	2.9	3,12		2.5	3,42		2.3	3,36		2.1	2,88		2.5	3,23	
	2.5	3,07	Group 4	2.9	3,22	Group 4	2.9	3,35	Group 5	2.5	2,8		Group 5	2.9	3,22
	2.13a	3		2.13a	3,19		2.5	3,28		2.14	2,5			2.13a	3,17
Group 5	2.11	2,67	Group 5	2.11	2,85	Group 5	2.11	2,91	Group 6	2.11	2,4	Group 6	2.11	2,77	
	2.6	2,39		2.6	2,48		2.6	2,16		2.6	2		2.6	2,36	

Source: author's work.

The results of the cluster analysis display that the action 2.16 (Involvement into work conditions improvement) is located in the first group over all age groups. Nearly the same conclusion can be drawn for item 2.15 (Involvement into work process improvement), only in the age group **51-X** the action is located in group 2 and not in group 1.

The lowest positions in the ranking in every age group are the item 2.11 (Quit smoking programs) followed by the item 2.6 (Cooking courses).

The positions of the other items vary slightly (see Figure 41 and Table 27), but not only the items 2.3 (Exercise / moving breaks), 2.4 (Back schools), 2.13a (Coaching (Sport)) and 2.14 (Psychological counselling) show wider variations.

Table 28: (Hypothesis 5) Independent samples t-test for X-40 and 41-X

	X-40		41-X		t-value	df	P(T<=t) two-tail	critical t-value two-tail	Deviation
	Mean	Variance	Mean	Variance					
2.1	3,478	1,067	3,593	1,076	-0,714	87	0,477	1,988	not significant
2.2	3,908	0,801	4,228	0,608	-2,613	105	0,010	1,983	Significant
2.3	3,422	1,147	3,482	1,491	-0,334	82	0,739	1,989	not significant
2.4	3,619	1,226	4,056	0,997	-2,750	95	0,007	1,985	Significant
2.5	3,235	1,202	3,196	1,470	0,215	84	0,830	1,989	not significant
2.6	2,429	1,394	2,127	1,076	1,843	98	0,068	1,984	not significant
2.7	4,186	0,987	4,127	0,780	0,423	98	0,674	1,984	not significant
2.8	3,497	1,124	3,655	0,934	-1,038	95	0,302	1,985	not significant
2.9	3,165	1,443	3,421	1,141	-1,539	103	0,127	1,983	not significant
2.10	3,684	1,328	3,431	1,513	1,392	90	0,167	1,987	not significant
2.11	2,758	1,806	2,825	2,504	-0,287	82	0,775	1,989	not significant
2.12	3,968	1,105	3,912	0,796	0,398	107	0,692	1,982	not significant
2.13a	3,090	1,274	3,439	1,179	-2,105	95	0,038	1,985	Significant
2.13b	3,361	1,349	3,583	0,936	-1,192	61	0,238	2,000	not significant
2.14	3,404	1,590	3,321	1,458	0,446	94	0,657	1,986	not significant
2.15	4,396	0,445	4,246	0,510	1,410	88	0,162	1,987	not significant
2.16	4,243	0,557	4,281	0,420	-0,367	105	0,714	1,983	not significant

Source: author's work

Because of the fact that there are only 7-12 respondents within the age group **51-X**, the validity of this comparison is limited. In order to ensure greater significance the data is summarized in two age groups. The first group **X-40** consists of all the respondents aged 40 and younger and the second group **41-X** is formed by the aged 41 and older. Group 2 now contains from 54 up to 58 respondents (except action 2.13b with only 36 respondents) and about this **the independent samples t-test (assuming unequal variances)** can be used to compare the two groups. The results of the t-tests are displayed in Table 28. Only deviation of the ac-

tions 2.2 (Health screening), 2.4 (Back schools) and 2.13a (Coaching (Sport)) is statistically significant. The differences of the results of the t-tests and the described analyses based on Figure 41 and Table 27 are because for the t-tests only two groups are used and for the prior analyses four age groups are compared.

The results of the t-test are strengthened by the **non-parametric Mann-Whitney-U-test / Wilcoxon rank-sum test** (UNIVERSITÄT ZÜRICH 2016B) displayed in Table 29.

Table 29: (Hypothesis 5) Mann-Withney-U-test / Wilcoxon rank-sum test

	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12
Zpos	0,67	2,31	0,40	2,59	0,002	1,52	0,84	0,63	1,43	1,36	0,15	0,83
Zcrit (95%)	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96
Deviation	not significant	significant	not significant	significant	not significant	not significant	not significant	not significant	not significant	not significant	not significant	not significant
	2.13a	2.13b	2.14	2.15	2.16							
Zpos	2,02	0,95	0,53	1,30	0,08							
Zcrit (95%)	1,96	1,96	1,96	1,96	1,96							
Deviation	significant	not significant	not significant	not significant	not significant							

Source: author's work.

The results for the Mann-Withney-U-test / Wilcoxon rank-sum test confirm t-test. For the three items 2.2, 2.4 and 2.13a the z-value is higher than the critical z-value of 1,96. This indicates that for these items there is a statistical significant difference between the two groups. For all the other items the z-value is lower than the critical z-value, which indicates that there is no significant difference between the groups.

Overall the findings are quite similar: Item 2.4 and 2.13a show different results for the diverse age groups. But the vast majority of the results are quite similar in the different groups.

On this account the hypotheses: “*Older employees evaluate other actions of the Workplace Health Management as important as younger employees.*” is not verified.

**Summarizing the results of the Cluster Analyses, the t-test and the Mann-Whitney-U-test / Wilcoxon rank-sum test it cannot be concluded that older employees evaluate other actions of the WHM as important as younger employees. About these findings the hypothesis 5 is not confirmed.**

## 4.9 Leadership behaviour and WHM (Hypothesis 6)

### **Hypothesis 6:**

Certain leadership behaviours are statistically significant related to the existence of long-term-oriented / sustainable Workplace Health Management practices.

*The aim of this survey is to investigate if there is a significant difference between the existence of certain leadership behaviours*

*a) in companies which perform a sustainable and long-term-oriented Workplace Health Management and*

*b) in companies which do not perform such a WHM*

*It is not the aim of the current survey to examine the reason for the eventually existing differences.*

The questions used to evaluate this hypothesis were located in part E of the questionnaire:

In the following section you have to rate how often your supervisor shows the behaviours expressed in the statements listed below during his work. You can answer by marking the frequency of these behaviours in a scale of 1 through 10. 1=NEVER - 10=ALWAYS

The items are measured with an interval scale from 1 to 10.

The examination of this hypothesis is an extension of the analyses of a former examination with my co-author Prof. Dr. Fehér (FEHÉR & REICH 2016) using a larger German –Hungarian sample and additional analyses methods.

In Table 30 the mean and the standard deviation for all 12 questions of the LPI in total are shown. The number of responses differs between 249 and 251. The range of the answers spreads in all items between 1 and 10. The highest mean with 7,13 is achieved for the item **E5**: “Treats others with dignity and respect.” followed by the item **E10**: “Gives people a great deal of freedom and choice in deciding how to do their work.” with a mean of 7,11. In contrast the lowest mean (5,26) is obtained by the item **E7**: “Shows others how their long-term interests can be realized by enlisting in a common vision.”. Second lowest with a mean of 5,36 is the item **E6**: “Makes sure that people are creatively rewarded for their contributions to the success of projects.”



Table 30: (Hypothesis 6) Mean and Standard deviation of E1 – E.12 all answers (with and without WHM)

	All answers (with and without long-term, sustainable WHM)				
	Min	Max	Number	Mean	Std. Dev.
E1. Develops cooperate relationships among the people he/she works with.	1	10	251	5,98	2,42
E2. Praises people for the job well done.	1	10	251	6,12	2,65
E3. Makes it a point to let people know about his / her confidence in their abilities.	1	10	251	6,42	2,47
E4. Follows through on promises and commitments he/she makes.	1	10	249	6,70	2,31
E5. Treats others with dignity and respect.	1	10	249	7,13	2,50
E6. Makes sure that people are creatively rewarded for their contributions to the success of projects.	1	10	250	5,36	2,57
E7. Shows others how their long-term interests can be realized by enlisting in a common vision.	1	10	249	5,26	2,45
E8. Builds consensus around a common set of values for running our organization.	1	10	251	5,44	2,41
E9. Makes certain that we set achievable goals, make concrete plans and establish measurable milestones for the projects and programs that we work on.	1	10	250	6,41	2,60
E10. Gives people a great deal of freedom and choice in deciding how to do their work.	1	10	250	7,11	2,38
E11. Finds ways to celebrate accomplishments.	1	10	250	5,44	2,67
E12. Gives the members of the team lots of appreciation and support for their contributions.	1	10	250	6,04	2,55

Source: author's work.

In order to test the hypothesis the responses are divided into two groups. The first group consists of employees of companies which have not established a sustainable and long-term-oriented Workplace Health Management and the second group consists of employees of companies which have established such a WHM.

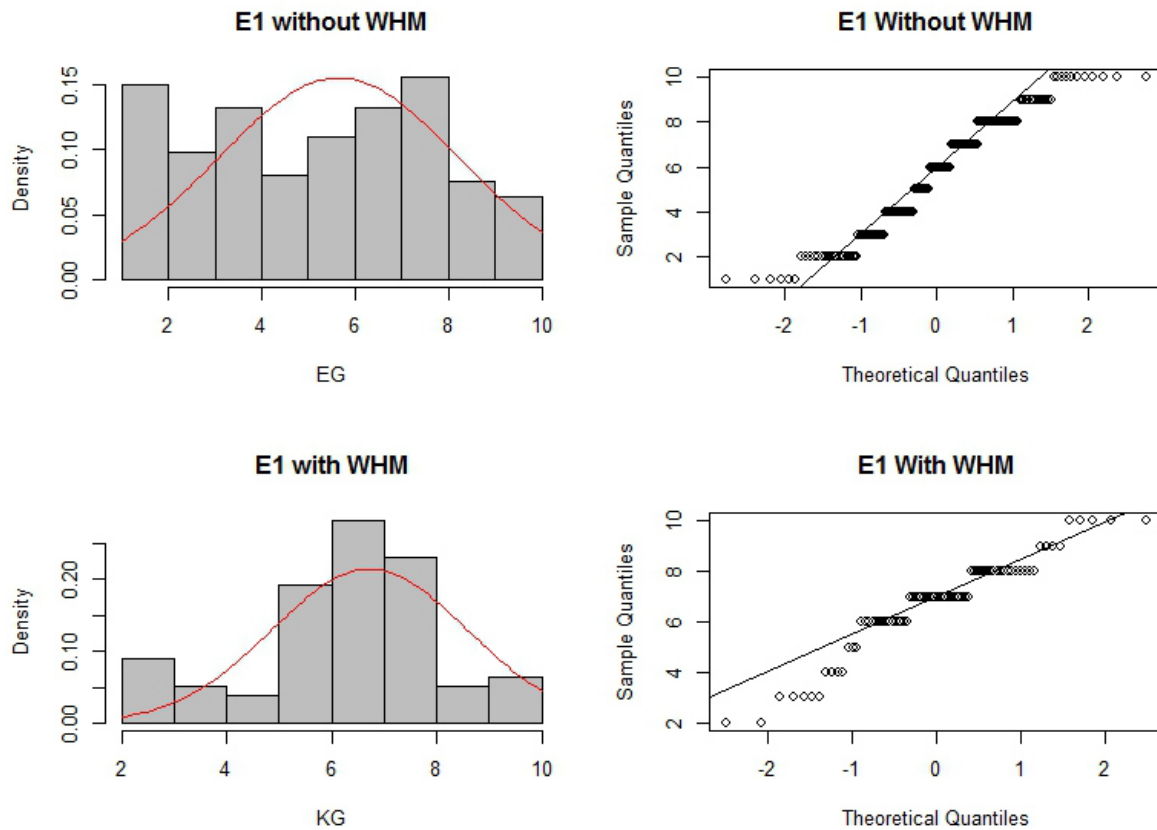


Figure 42: (Hypothesis 6) Item E1, Histogram and distribution curve, theoretical Q-Q-Plots  
Source: author's work.

To compare the results of the two groups **the independent samples t-test (assuming unequal variances)** is used. For E1 – E12 the graphical check shows that the data is not normal distributed (see Figure 42 for E1 as an example). The normal distribution curve drawn in the histogram displays the deviation of the data from the Gauss curve. A similar picture can be observed looking at the theoretical Q-Q-Plots. The data is only in part located on the line.

The verification of the normal distribution using the Shapiro-Wilk-Test of normality (WOLLSCHLÄGER, P. 195) as well shows no normal distribution for all items. But in case of this sample size for the t-test the **data needs not to be normal distributed** (MANDERSCHIED 2012, P. 145).

Nonetheless, to confirm the results of the t-test the **non-parametric Mann-Whitney-U-test / Wilcoxon rank-sum test** (UNIVERSITÄT ZÜRICH 2016B) and the **Pearson's Chi-squared test** (UNIVERSITÄT ZÜRICH 2016C) are done.

Table 31: (Hypothesis 6) Independent samples t-test for E1 – E12

	without long-term, sustainable WHM		with long-term, sustainable WHM		t-value	df	P(T<=t) two-tail	critical t-value two-tail	Deviation
	Mean	Variance	Mean	Variance					
E1. Develops cooperate relationships among the people he/she works with.	5,647	6,578	6,718	3,452	3,732	200	0,00024739	1,972	significant
E2. Praises people for the job well done.	5,740	7,135	6,974	5,714	3,648	165	0,00035379	1,974	significant
E3. Makes it a point to let people know about his / her confidence in their abilities.	5,942	6,543	7,487	3,448	5,394	200	0,00000019	1,972	significant
E4. Follows through on promises and commitments he/she makes.	6,581	5,321	6,961	5,301	1,202	146	0,23136398	1,976	not significant
E5. Treats others with dignity and respect.	6,661	6,955	8,167	3,154	5,288	212	0,00000031	1,971	significant
E6. Makes sure that people are creatively rewarded for their contributions to the success of projects.	4,890	6,999	6,385	4,214	4,858	189	0,00000248	1,973	significant
E7. Shows others how their long-term interests can be realized by enlisting in a common vision.	4,877	5,908	6,090	5,304	3,787	157	0,00021709	1,975	significant
E8. Builds consensus around a common set of values for running our organization.	5,023	5,406	6,372	5,535	4,218	147	0,00004285	1,976	significant
E9. Makes certain that we set achievable goals, make concrete plans and establish measurable milestones for the projects and programs that we work on.	5,994	7,012	7,333	5,004	4,134	174	0,00005530	1,974	significant
E10. Gives people a great deal of freedom and choice in deciding how to do their work.	6,849	6,340	7,679	3,831	2,833	188	0,00511559	1,973	significant
E11. Finds ways to celebrate accomplishments.	5,029	7,397	6,346	5,502	3,909	171	0,00013354	1,974	significant
E12. Gives the members of the team lots of appreciation and support for their contributions.	5,640	7,132	6,910	4,109	4,141	192	0,00005166	1,972	significant

Source: author's work

Table 31 shows the results for the independent samples t-test. In all cases (except for the item E4) the calculated t-value is higher than the critical t-value for the two-tailed test. This fact indicates that with 95% certainty there really is a difference between companies without a WHM and with a WHM. In all these cases in addition the p-value calculated for the two-tailed test is smaller than alpha (0,05). These results strengthen the former conclusions.

In case of item E4: "Follows through on promises and commitments he/she makes." the calculated t-value (1,202) is smaller than the critical t-value for the two-tailed test (1,976). This means that there is no statistically significant difference between the group with a WHM and the group without a WHM. This result also is confirmed by the p-value (0,23136) which is larger than alpha with 0,05.

The highest t-value within the whole sample is 5,394 for the item E3: "*Makes it a point to let people know about his / her confidence in their abilities.*". For this item the p-value is the clearest, too. With a p-value of 0,00000019 a statistically significant difference between the two groups can be stated. The difference is also reflected in the difference of the mean of the two groups. The mean overall is 6,42 while the mean for the group without a WHM is 5,942 and for the group with a WHM 7,487. This is a difference of nearly 1,5. The item E3 shows the trust of the leader into the employee.

The other clear outcome in the sample is for the item E5: "*Treats others with dignity and respect.*". With a t-value of 5,288 and a p-value of 0,00000031 the result is similar to that of E3: strong statistically significant difference. Having respect for other persons is the fundament to be interested in their personal health and well-being. About this fact the results for this question are particularly fascinating. Another interesting finding is the result for the item E9: „*Makes certain that we set achievable goals, make concrete plans and establish measurable milestones for the projects and programs that we work on*” (without WHM: 5,994 / with WHM: 7,333; t-value 4,134). This displays that in regard to a health oriented leadership behaviour (which means a long-term accurate fit of needs and resources) a leader in a company with a WHM is more concerned to agree together with the employee on attainable goals instead of dictate unattainable goals on which the employee is getting worn out. Combining the results for these items and characteristics it appears, that the existence of a WHM is in correlation to a high esteem and great confidence in the employees. For the item E4 with no significant differences in the t-test there are higher values for the group with the WHM observable, as well as in the other items (without WHM: 6,581 / with WHM: 6,961).

The same result can be seen for the item E10: "*Gives people a great deal of freedom and choice in deciding how to do their work.*". With 2,833 it has the second lowest t-value calculated. This result is still a sign for a statistically significant difference between the two groups, but not a very strong one. Important is the fact that in comparison of the two groups the mean

for the group with a WHM is higher as well (without WHM 6,849 / with WHM 7,679). In a positive leader – employee relationship the characteristic to give people a great deal of freedom and choice in deciding how to do their work can be seen as a sign for confidence into the employee but in a negative leader – employee relationship it also may be a sign of disinterest.

The results of the Mann-Whitney-U-test / Wilcoxon rank-sum test are displayed in Table 32.

Table 32: (Hypothesis 6) Mann-Whitney-U-test / Wilcoxon rank-sum test

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Zpos	2,94	3,45	4,41	1,17	4,16	4,29	3,54	4,04	3,67	2,21	3,62	3,34
Zcrit (95%)	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96
Deviation	significant	significant	Significant	not significant	significant	significant	significant	significant	significant	significant	significant	significant

Source: author's work.

The Mann-Whitney-U-test / Wilcoxon rank-sum test confirms the results of the t-test. Only for the item **E4** (as in the t-test) the z-value (1,17) is lower than the critical z-value of 1,96. This indicates that for the item **E4** there is no statistical significant difference between the two groups. For all the other items the z-value is higher than the critical z-value. The highest value is 4,41 for the item **E3** and the second highest is 4,16 for **E5** (like the results of the t-test).

Table 33: (Hypothesis 6) Pearson's Chi-squared test

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Chi <sup>2</sup> -d.f.	24,64	20,06	24,44	9,82	23,11	25,77	19,97	23,31	19,96	24,70	20,84	34,52
Chi <sup>2</sup> -crit	16,92	16,92	16,92	16,92	16,92	16,92	16,92	16,92	16,92	16,92	16,92	16,92
p-value	0,0034	0,0176	0,0037	0,3654	0,0060	0,0022	0,0181	0,0055	0,0181	0,0033	0,0134	0,00007
Deviation	significant	significant	significant	not significant	significant	significant	significant	significant	significant	significant	significant	significant

Source: author's work.

In addition to the t-test and the Mann-Whitney-U-test the Pearson's Chi-squared test shows similar results: Only the Chi<sup>2</sup>-value for the item E4 is smaller than the critical value of 16,92 and the p-value is higher than 0,05 which means that there are no significant differences between the group with a WHM and the group without a WHM.

In combination the three methods show that there seems to be a connection between the existence of a WHM and certain leadership behaviours.

What could be the cause for such findings? Is the existing of a WHM the basis for frequent contact with health friendly thinking? And this subsequently leads to particular leadership behaviours? Or the other way around: Do health oriented leaders want to implement a WHM? Is the existence of a WHM or the existing of certain leadership behaviour the start for this?

It is possible that both areas influence each other and that the corporate leaders will be sensitized for the health of the employees by dealing with a WHM. This may change their position in regard to the employees. The success of a WHM may in turn be positively affected by such a change of the internal attitude as well. Leaders and employees will more easily accept and support a WHM which is well organised and carried out from the heart. And again on the other hand this may have effects to the attitudes and the behaviour of the employees and the leaders....

**In combination the results of the t-test, the Mann-Whitney-U-test / Wilcoxon rank-sum test and the Pearson's Chi-squared test show that certain leadership behaviours are statistically significant related to the existence of long-term / sustainable WHM practices and as a consequence the hypothesis 6 is confirmed.**

#### 4.10 Impacts of the WHM on the cooperation exchange (Hypothesis 7)

**Hypothesis 7a:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange within teams.

**Hypothesis 7b:**

There is a positive impact of the actions of the Workplace Health Management on the cooperation exchange between different teams.

*The aim of this survey is to investigate if there is a positive impact of the actions of the Workplace Health Management on the cooperation between*

*a) employees within a workgroup and*

*b) between different workgroups.*

*These positive effects may be able to support the Diversity Management activities in a company. In that case the measures fulfill several functions and represent a management-tool in the area of the Diversity Management. The WHM has more to offer than only the health aspect. With the right actions, achievements in other areas (here Diversity Management) can be performed and thereby possibly costs for measures in this areas be saved.*

The questions used in the questionnaire to evaluate these hypotheses were the questions F16 and F15.

The items are measured with an interval scale (Likert-scale):

<b>16.</b> By participating in actions of the WHM the cooperation within my working group improves.				
Fully agree 5	Somewhat agree 4	Don't know 3	Rather disagree 2	Fully disagree 1

<b>15.</b> By participating in actions of the WHM the cooperation within the company as a whole improves.				
Fully agree 5	Somewhat agree 4	Don't know 3	Rather disagree 2	Fully disagree 1

To strengthen the result the question F12 was used:

The item is measured with a nominal scale:

<b>12.</b> Concrete: By participating in actions of the WHM my personal attitude towards another person changed positively in a concrete case.		
Yes 2	No 1	Don't know 0

The examination of this hypothesis is an extension of the analyses of a former examination with my co-authors Prof. Dr. Czeglédi and J. Fonger (CZEGLÉDI, REICH & FONGER 2015; REICH, CZEGLÉDI & FONGER 2015) using a larger German –Hungarian sample and additional analysis methods.

#### 4.10.1 Overall view

This part of the thesis concerns the whole German part and the results of the Hungarian online questionnaire. The number of the usable responses differs between 310 and 312.

Table 34: (Hypothesis 7) Results for F12 (concrete case), F16 (within working group) and F15 (company as a whole)

	F12: Positive change of the attitude to another person in a concrete case	F16: Cooperation exchange within my workgroup	F15: Cooperation exchange between different workgroups
Number of data-bases	310	312	312
Minimum	0	1	1
1. Quartile	0	3	3
Median	1	3	3
Mean	1,09	3,41	3,30
3. Quartile	2	4	4
Modus	2	3	3
Maximum	2	5	5
Spread	2	4	4
Variance	0,79	1,03	0,98
Standard deviation	0,89	1,02	0,99

Source: author's work.



Table 35: (Hypothesis 7) Distribution for F16 and F15

	Cooperation exchange within my workgroup (F 16)		Cooperation exchange between different workgroups (F15)	
Do not agree (1)	21	6,7%	20	6,4%
Rather disagree (2)	20	6,4%	32	10,3%
Do not know (3)	120	38,5%	121	38,8%
Somewhat agree (4)	111	35,6%	112	35,9%
Fully agree (5)	40	12,8%	27	8,7%
Total	312	100,0%	312	100,0%

Source: author's work.

Table 35 shows that 48,4 % of the respondents agree to the statement that the actions of the WHM have positive influence on the cooperation exchange within their workgroup. Only 13,1 % disagree with that statement (38,5 5 do not know about the effects). Nearly a similar clear result is the outcome about the positive effects of the actions of the WHM between different workgroups. 44,6% of the participants agreed fully or partly (16,7 % disagreed to some extent and 38,8 % didn't know about the effects).

The displayed results indicate that the actions of a WHP improve the cooperation exchange within teams and between different teams.

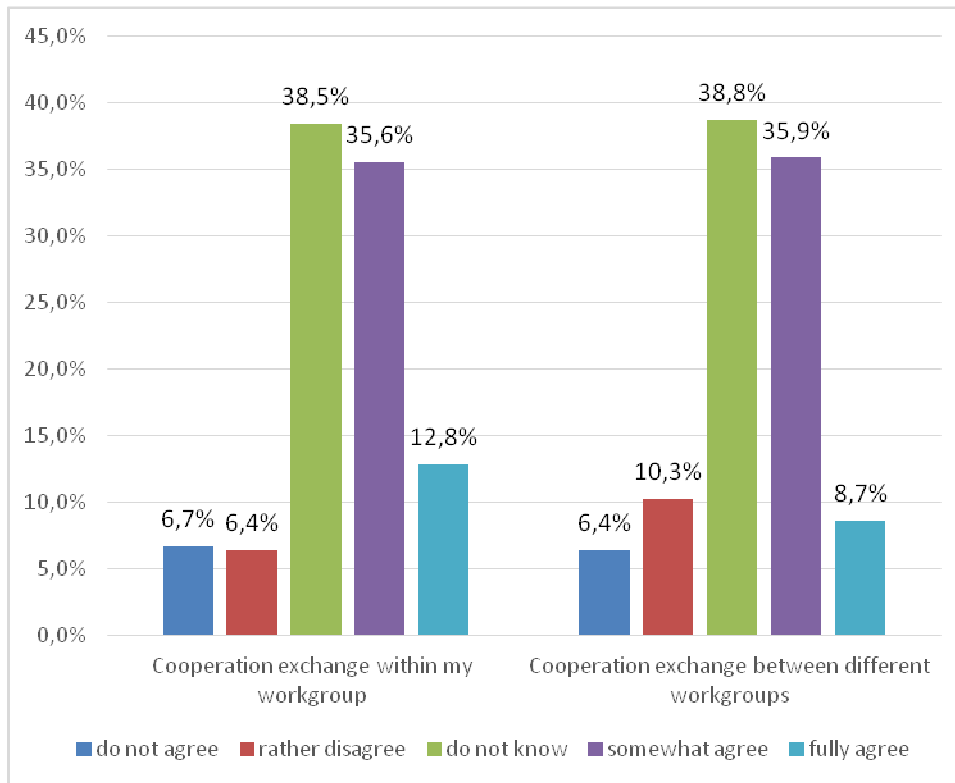


Figure 43: (Hypothesis 7) Cooperation exchange within my workgroup (F16) and between different workgroups (F15)

Source: author’s work.

To bolster this conclusion the positive change of the attitude to another person in a concrete case caused by the actions of the WHP is examined.

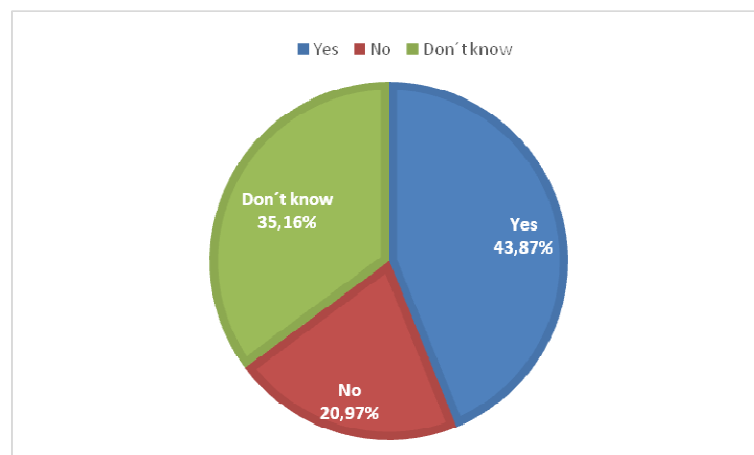


Figure 44: (Hypothesis 7) Positive change of the attitude to another person in a concrete case (F12)

Source: author’s work.

The survey displays that in 136 of the 310 (43,87 %) responses the employees confirmed a positive change in a concrete case. Very interesting is the fact, that only in 65 cases (20,97 %) the answer was “No” and in 109 cases (35,16 %) the response was a “Don’t know”. This

means that in over 40 percent the actions of the WHM helped to lay foundations for a better cooperation. Reason for this may be that by participation in diverse actions of the WHM the employees come into direct contact to each other and are able to form parties between different departments, fields and buildings. With such events (joint sports, breakfast, lecture, etc.) these employees could have contact to colleagues they would never have face-to-face contact on this personal level otherwise. Common shared experiences support the forming of teams beyond the departmental boundaries.

Pearson's Chi-squared test for the three groups (F12 with 0, 1 or 2) strengthens this argumentation (see Table 36).

Table 36: (Hypothesis 7) Pearson's Chi-squared test for F12 (0, 1 or 2)

	F15	F16
Chi <sup>2</sup> -	53,898	51,539
d.f.	8	8
Chi <sup>2</sup> -crit	15,51	15,51
p-value	0,0000000072	0,000000021
Deviation	Significant	Significant

Source: author's work.

The Chi<sup>2</sup>-value is higher than the critical Chi<sup>2</sup>-value and the p-value is smaller than 0,05, which means that there are significant differences in all two cases. In other words, there is a connection between the experience of a positive change to another person in a concrete case and the given answer for F15 and F16. The mean for the group which have made positive experiences is 3,68 for F15 and 3,82 for F16. In the group with no positive experience (answer: "1") the means are 3,08 for F15 and 3,02 for F16.

#### 4.10.2 Comparison of people aged less than 41 and people aged 41 and older

For a deeper analysis the respondents are parted into two groups:

- 1.) aged less than 41 and
- 2.) 41 and older.

This allows investigating if the experiences of the employees change / differ when getting older. The results for the two groups are displayed in Table 40.

To test if there are differences between the groups the Pearson's Chi-squared is performed (see Table 37). In all cases Chi<sup>2</sup>-value is smaller than the critical Chi<sup>2</sup>-value and the p-value is higher than 0,05, which means that there are no significant differences in all cases. But nevertheless it allows to show a tendency how older and younger people think about the impacts of the measures of a WHM.

Table 37: (Hypothesis 7) Pearson's Chi-squared test for X-40 and 41-X

	F12	F15	F16
Chi <sup>2</sup> -	4,75	6,84	9,42
d.f.	2	4	4
Chi <sup>2</sup> -crit	5,99	9,49	9,49
p-value	0,0930	0,14458	0,05144
Deviation	Not significant	Not significant	Not significant

Source: author's work.

The same result can be seen for the independent samples t-test (t-value smaller than critical t-value) and the Mann-Whitney-U-test / Wilcoxon rank-sum test (Z-value smaller than Z-critical).

Table 38: (Hypothesis 7) Independent samples t-test for X-40 and 41-X

	F12	F15	F16
t-value	1,48	1,80	0,80
d.f.	98	102	101
P(T<=t) two-tail	0,1424	0,0780	0,3752
critical t-value two-tail	1,9844	1,9834	1,9837
Deviation	Not significant	Not significant	Not significant

Source: author's work.

Table 39: (Hypothesis 7) Mann-Whitney-U-test / Wilcoxon rank-sum test for X-40 and 41-X

	F12	F15	F16
Zpos	1,39	1,85	1,29
Zcrit (95%)	1,96	1,96	1,96
Deviation	Not significant	Not significant	Not significant

Source: author's work.

Nearly 76 % of the respondents were younger than 41, a consequence of the questioned population.

Table 40: (Hypothesis 7) Comparison cooperation exchange for X-40 and 41-X

X-40 / 41-X	Cooperation exchange within my workgroup (F16)			Cooperation exchange between different workgroups (F15)		
	X-40	41-X	Total	X-40	41-X	Total
(1) do not agree	15	6	21	16	4	20
	6,4 %	7,9 %	6,73 %	6,8 %	5,3 %	6,41 %
(2) rather disagree	19	1	20	28	4	32
	8,1 %	1,3 %	6,41 %	11,9 %	5,3 %	10,26 %
(3) do not know	95	25	120	96	25	121
	40,3 %	32,9 %	38,46%	40,7 %	32,9 %	38,78 %
(4) somewhat agree	75	36	111	77	35	112
	31,8 %	47,4 %	35,58 %	32,6 %	46,1 %	35,90 %
(5) fully agree	32	8	40	19	8	27
	13,6 %	10,5 %	12,82 %	8,1 %	10,5 %	8,65 %
Total	236	76	269	236	76	269
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Distribution	75,64 %	24,36 %		75,64 %	24,36 %	
Chi <sup>2</sup> = 9,42; df = 4; p =0,05144				Chi <sup>2</sup> = 6,84; df = 4; p = 0,14458		

Source: author's work.

47,4 % of the respondents of the group 41-X do “somewhat agree” to the statement of the cooperation exchange within the own workgroup. This is the highest number in the survey. Summarized with the 10,5 % of the item “fully agree” 57,9% of this group agree to this statement (in comparison to 45,4 % of the group X-40). Only 32,9 % of the older group did not decide (“do not know”) and 9,2 % of them disagree. In the group younger than 41 14,5 % disagree and 40,3 % answered neutral. The same tendency occurs for the question about the cooperation exchange between different workgroups: 56,6 % of the group 41-X agreed minimum to some degree (total: 44,55 %; X-40: 40,7 %) and 10,6 % disagreed to the statement (total: 16,67 %, X-40: 18,7 %). A reason for this result may be the greater life experience of the older people.

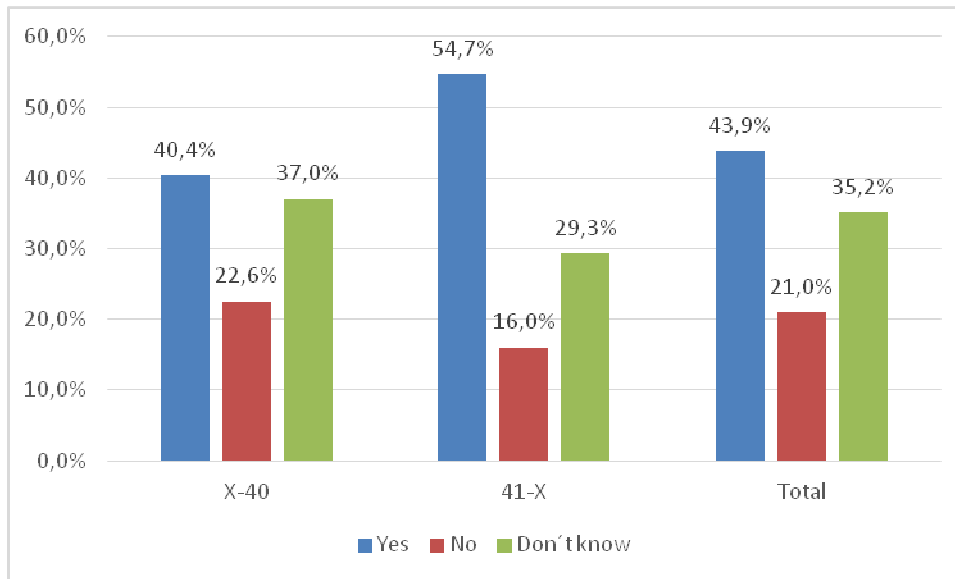


Figure 45: (Hypothesis 7) Comparison X-40 and 41-X (Positive change of the attitude to another person in a concrete case (F12))

Source: author's work.

Figure 45 shows that the results of the question about a positive change of the attitude to another person in a concrete case strengthen the previous displayed results. In a much larger scale than the younger group the people of the group 41 and older have made positive experiences. While only 40,4 % of the group younger than 41 agreed to the statement answering "Yes", 54,7 % of the group 41 and older did so. It is very important to stress that the difference of the results for the answer "No" is quite small (only 6,6 %). In summary, it can be emphasised that the older people have gained more positive experience, but the other way around the younger have not gained more negative experience in that point.

This interesting fact may consist because the actions of a WHM are suitable for stimulating the contact between people, but the young people have not yet made this experience.

**Considering the described results of the used methods (t-test, Pearson's Chi-squared test and the Mann-Whitney-U-test / Wilcoxon rank-sum test) it can be stated that the hypotheses 7a and 7b are confirmed.**

## **4.11 New Scientific Findings**

The new scientific findings displayed at this point have to be considered with the limitations in regard to the used population of the sample of the conducted primary research.

### **1. The existence of a Workplace Health Management is considered as essential in the eyes of the employees.**

Although the sample is not representative there is a positive expected impact of the WHM to the improvement of the overall health of employees. The employees expected the WHM as an important factor in caring for their health. This is proven by the results of the performed analyses for testing the hypotheses H1 and H2. Using amongst others methods the independent sample t-test, in case of H1 it could be stated that employees working in a company with a WHM, to a significant higher rate consider a WHM as essential as employees working in a company without a WHM. In combination with the fact that 88,4 % of the questioned employees answered with “very important”, “important” or even with “medium important” to the question how important a WHM is for them among other factors of preserving and improving their health, it can be stated that the existence of a WHM is considered as essential in the eyes of the employees. This statement is even more true, when the employees had personal experience with WHM measures.

### **2. There is no large difference between the expectations of younger and older employees to Workplace Health Management measures.**

Using different analysis methods (the cluster analyses, the independent samples t-test (assuming unequal variances) and the non-parametric Mann-Whitney-U-test / Wilcoxon rank-sum test), it is displayed that older employees do not evaluate other WHM actions as important as younger employees. Only in case of 3 of 16 investigated WHM measures statistically significant differences between the two groups are located. This is true for the deviations of the actions 2.2 (Health screening), 2.4 (Back schools) and 2.13a (Coaching (Sport)). But in all three cases the differences between the group of younger and the group of older employees are minor.

### **3. Based on the LPI-Questionnaire by Kouzes and Posner relation was shown between the existence of a WHM and certain leadership behaviours.**

For 11 of 12 leadership behaviours, a significant difference between companies with a WHM and companies without a WHM is found. The results of the used independent samples t-test (assuming unequal variances) are strengthened by the Mann-Whitney-U-test / Wilcoxon rank-sum test and the Pearson’s Chi-squared test. In combination the three methods show that there seems to be a connection between the existence of a WHM and certain leadership behaviours.

Only in case of item E4: “Follows through on promises and commitments he/she makes.” all three used methods showed no statistically significant difference between the group with a WHM and the group without a WHM.

#### **4. The positive impacts of the Workplace Health Management on the cooperation exchange within teams and between different teams are stated.**

Testing the hypotheses 7a and 7b the methods t-test, Pearson’s Chi-squared test and the Mann-Whitney-U-test / Wilcoxon rank-sum test are used. In addition to the results of these methods, 48,4 % of the respondents agree to the statement that the actions of the WHM have positive influence on the cooperation exchange within their workgroup (only 13,1 % disagree with that statement). The result about the positive effects of the actions of the WHM between different workgroups is very clear, too. In this case 44,6% of the participants agreed fully or partly (only 16,7 % disagreed to some extent). This is bolstered by the examination of the positive change of the attitude to another person in a concrete case caused by the actions of the WHP. The survey displays that in 136 of the 310 (43,87 %) responses the employees confirmed a positive change in a concrete case.

This also is a very important finding because the indirect effects of the WHM (e.g. in the area of Diversity Management) are not examined more thoroughly in the literature about WHM so far.

### **4.12 Existing scientific results supported by new examination**

#### **1. The Workplace Health Management has additional emotional positive impacts on the employment relationship.**

This relation is shown by measurements of the attractiveness of a company, the emotional climate at the workplace, the work motivation and the commitment of employees towards their organization. As found in other research before, there is a statistically positive relation to the attractiveness of a workplace with a Workplace Health Management as well as to the improvement of the emotional climate at the workplace, the increase of the work motivation and the increase of the commitment of the employees to the company.

Examining the attractiveness of a workplace/employer the statistics of the items “C1” and “C2” were analysed. In addition to this, a one sample t-test was performed. With 95 % certainty the test displayed that there is a positive correlation between the WHM and the attractiveness of an employer. The same result was achieved with the one sample t-tests for the items (“D1” emotional climate), “D2” (work motivation) and “D3” (increase commitment). In combination with the analyses of the statistical numbers of each item, the existing scientific results for these issues could be strengthened.



## 5 CONCLUSIONS, RECOMMENDATIONS

### 5.1 Conclusions

It is important to stress that the questioned population of the survey is not representative. Nevertheless it can show a rough direction and it is important and possible to draw conclusions of these results. It is also important to highlight that the responses within this primary research are estimates of the employees.

Overall, with exception of the hypotheses 4 and 5 all other hypotheses could be confirmed. The hypothesis 4 was only partly confirmed and the hypothesis 5 was rejected.

The following table (Table 41) displays an overview of the results of the tested hypothesis.

Table 41: Overview of the results

Hypothesis 1	Confirmed
Hypothesis 2a	Confirmed
Hypothesis 2b	Confirmed
Hypothesis 3	Confirmed
Hypothesis 4	Partly confirmed
Hypothesis 5	Rejected
Hypothesis 6	Confirmed
Hypothesis 7a	Confirmed
Hypothesis 7b	Confirmed

Source: author's work.

In order to summarize my dissertation I start with displaying the results of the hypotheses, which are followed by the presentation of the conclusions and my recommendations.

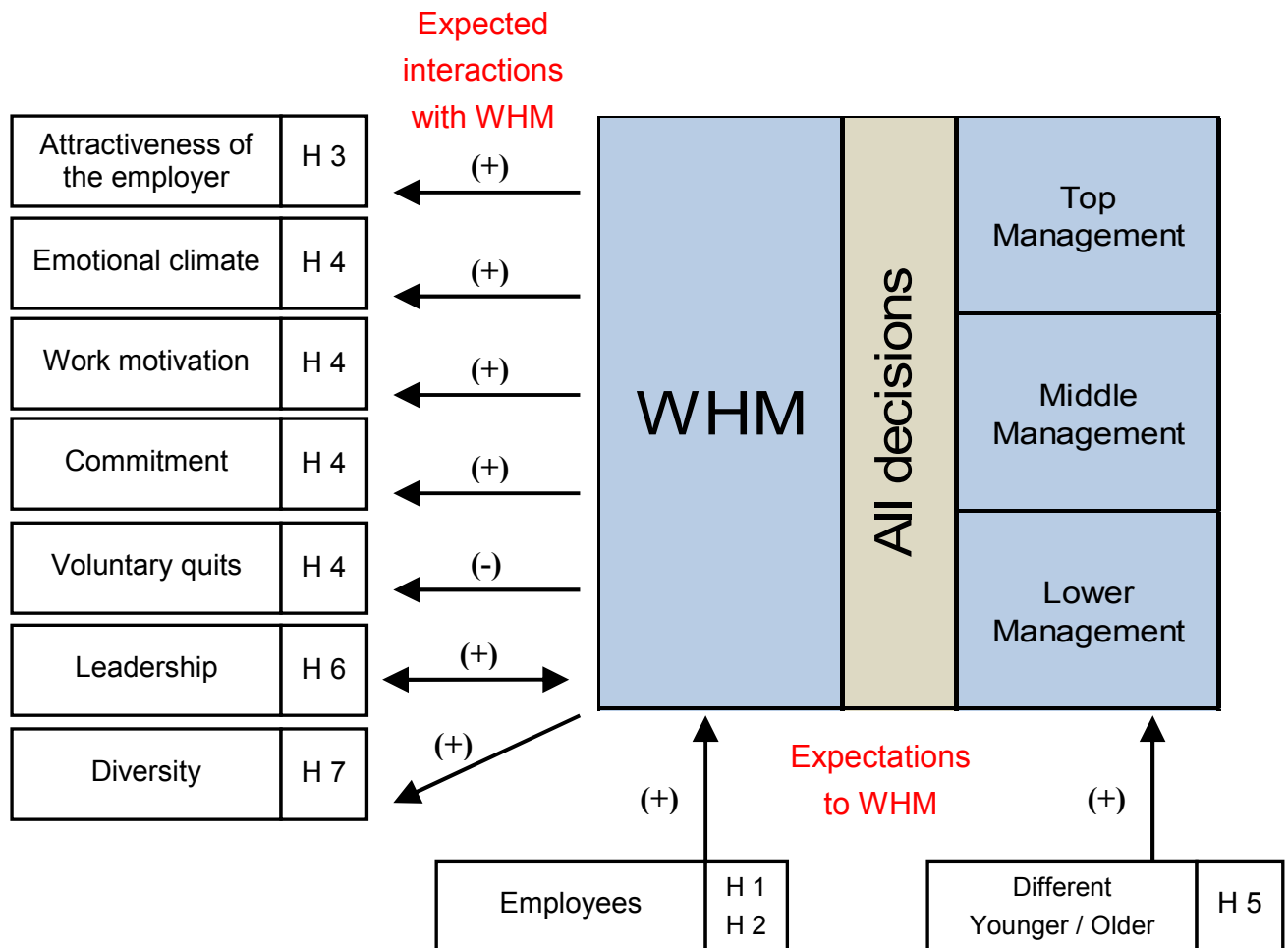


Figure 46: Overview of the results

Source: author's work

**H1** hypothesis 1 is **verified**, because the analysis of the answers has proved that significantly more employees in a company, which performs a long-term-oriented / sustainable Workplace Health Management, think, that WHM programs contribute to a larger extent to the improvement of the overall health of employees than in a company which does not perform a sustainable WHM. This may be because employees who have experienced the effects of WHM-actions at first hand consider the measures in another way than employees without experience in this field. Focusing on the perceived organization-wide effects the H1 differs to the H2 which is targeting the place and role of WHM within the complexity of other factors affecting the health of individuals.

**H2** hypothesis 2 and its sub-hypotheses (**H2a** and **H2b**) are also **verified**. This can be stated because based on the results of the analyses it is evident that the employees think that the Workplace Health Management is an important factor in caring about their health. It can also be stated that the employees in companies with a WHM think significantly more positive about this fact than employees in a company without a WHM. One reason for this may be that

the employees with experience about methods of a WHM are more suitable to assess the effects of a WHM.

**H3** hypothesis 3 is verified. The responses display that the Workplace Health Management is statistically positive related to the attractiveness of the workplace or employer. This means as well, that for the companies a WHM may be able to improve the image of the company. This is in contrast to the results of the previous discussed study of the FOM (FOM 2013) in which 52,4 % denied that the WHM is an important factor for them to work for their company.

**H4** hypothesis 4 is **partially verified**, because the results show that employees think that a Workplace Health Management is statistically positive related to good / better emotional climate at the workplace, an increased work motivation of the employees and an increased commitment of the employees towards the organization, but the employees don't think it leads to a decreased number of voluntary quits. It may be a reason that the effects of the WHM are very positive, but limited.

**H5** hypothesis 5 is **not verified**. The analyses of the data displayed that older employees do not evaluate other actions of the Workplace Health Management as important as younger employees. There are only small differences between the group of older employees and the group of younger employees, but the most results are nearly the same in both groups. An implication which may be justified by the fact that most WHM measures cause equal effects for younger and for older people.

**H6** hypothesis 6 is **verified**, because the used statistical tests have proven that in case of 11 of examined 12 leadership behaviours is a difference between the group with a WHM and the group without a WHM. About this it can be stated that certain leadership behaviours are statistically significant related to the existence of long-term oriented / sustainable Workplace Health Management.

**H7** hypothesis 7 and its sub-hypotheses (**H7a** and **H7b**) are **verified** as well. In the meaning of the employees the actions of a Workplace Health Management have positive impacts on the cooperation exchange within teams and on the cooperation exchange between different teams. The performed analyses show that the actions of a WHM are suitable to bring the employees together and by that give chances for communication.

One important aim of this dissertation is to investigate if employees consider a Workplace Health Management as important and essential (see **research question 1**). If the answer is positive, it can be in the interest of an employer to provide a WHM for the employees. If the employees are not interested in a WHM because they don't consider it as good or enriching, the employers do not have to invest in a WHM. The results of the hypotheses H1 and H2 show that the employees are very interested in a WHM and that they consider it as an important factor in caring about their health. It can also be stated that the more the employees have made experience with the actions of a WHM the more they consider it as good.

The **research question 2** deals with the expectations the employees have on WHM and its additional effects. The first conclusion which can be drawn is that the WHM increases the attractiveness of an employer. Reason for this may be the general interest of employees in their own health. It is also a conclusion to display that the employees feel confident that the actions of a WHM lead to a better emotional climate at the workplace. And because Suliman and Ad Al Harethi (SULIMAN & AL HARETHI 2013) described significant relationship between the work climate and the job performance, it can be stated that the WHM leads to a better job performance. A reason for this assumption may be that the employees feel more respected by the employer and that most of the people don't want to be treated like machines but to communicate with others and get to know the other colleagues around. This can be simplified by participating in actions of a WHM. A further conclusion is that employees think a WHM increases the work motivation and increases the commitment towards the organization. Caused by the perceived own importance for the company the motivation to work for this company may improve, too. The same reason may be responsible for the expected improved commitment of the employees. If a company is interested in an employee and does not consider an individual employee as easy replaceable, the employees may be interested in the company as well. In this regard the additional effects of this are very important as well. Faragher et al. (FARAGHER ET AL. 2005) found a very strong correlation between job satisfaction and mental health. In this line the WHM does not only have direct influence to the health of an employee, but also indirect effects.

Although Allen et al. (ALLEN ET AL. 2010) have found a negative correlation between satisfaction, organizational commitment and the willingness to leave the company, which was in line with Elci and Alpkani (ELCI & ALPKANI 2009) who found as well, that job satisfaction is negative related to the intention to leave a company, in this current survey the direct connection between the WHM and the expectations to the number of voluntary resignations was examined. In this case the positive effects of a WHM have their clear limits: The employees do not expect that a WHM is able to prevent an employee from quitting. For this step in the thinking of an employee other aspects may be more important than a performed WHM.

Potential differences in the expectations to a WHM of older and younger employees are the subject of the **third research question**. For purpose of this examination the responses are parted by the age of the employees. Using different analysis methods it can be stated that in most cases the differences are very small and not statistically significant. Only in the part of "health screenings", "back schools" and "coaching (sport)" the differences of the groups are significant. This is an unexpected result, because Kooij et al. (KOOIJ ET AL. 2013) found that the same HR practices have other effects for older than for younger people.

**Research question 4** deals with the possible interaction of WHM and leadership behaviour. Considering the H6 one key finding is that the leadership behavior practice "*Treats others with dignity and respect*" is significantly more pronounced in companies with a WHM. To treat other people with respect is a prerequisite to deal serious with the needs (and therefore

with the health) of subordinates. And as Bradler et al. (BRADLER ET AL. 2013) examined, the appreciation for the employee has positive effects on the productivity of the employees. The investigation carried out in this dissertation is incapable to identify what is the origin and what is consequence in this relationship. Is the practiced leadership behavior affected by the existing of a WHM? Or lays the prevailing leadership culture the foundation for being interested in performing a sustainable WHM? It may be that the existing and performing of a WHM affects the attitude of the leaders in regard to health friendly leadership behavior which in turn supports the execution of activities of a WHM. These effects may mutually promote each other (FEHÉR & REICH 2016).

Because of the displayed necessity of a healthy staff and the possibilities a WHM and health-oriented leadership behavior provide, this relationship should be investigated in further studies.

The last **research question 5** investigates if a WHM has further impacts in addition to the pursued objective of health improvement (e.g. in the field of cooperation). It can be concluded that the impacts of a WHM are positive for the cooperation exchange within workgroups and the cooperation exchange between different workgroups. However the result is more clearly in the first case (cooperation exchange within workgroups).

A very positive effect is displayed in the results for both groups: “age less than 41” and “41 and older”. But comparing the results of these two groups in detail it is observable, that the older employees have made more positive experience with the actions of a WHM. However the younger may have not made the same positive observations, but they do not report negative experiences either. Integrating new colleagues into teams (one important aim of the Diversity Management) the observed effects of the WHM are very useful. The examined increase of the communication is analogue with Roberge et al 2011, (ROBERGE ET AL. 2011) and confirms the examinations of Klein et al. (KLEIN ET AL. 2009) who stressed the importance of actions to enhance the interpersonal relations of team members.

“Thus it can be stated as a result of this survey, that the investments in the Workplace Health Management do not only have positive impacts within the area of health, but also support the, in a diverse workforce necessary, Diversity Management actions. The companies would be able to pursue two aims with one investment at the same time.” (CZEGLÉDI, REICH & FONGER 2015).

## **5.2 Recommendations**

As described among others by Atzler et al. (ATZLER ET AL. 2011) the evaluation of WHM measures is a problem for the practical usage within the companies. Key figures neither consider the external influences nor the age structure or the business sector of a company. Because of this, every comparison with other companies is difficult. Even to compare the situation with a WHM and without a WHM within the same company is not practical.

Nevertheless, based on the knowledge of this explorative survey, I recommend companies to establish a sustainable Workplace Health Management. As Goldgruber and Ahrens (GOLDGRUBER & AHRENS 2010) have displayed, it is possible to perform WHM activities within every company. A very important point why I recommend establishing a WHM is that the employees in this primary study have made positive experiences with WHM actions. The presented expectations of employees in a WHM and the difference of these expectations between employees with experience with WHM actions and employees without experience are clear indicators for the possible impacts of a WHM. But it is important that the WHM is established as a sustainable WHM and not only performed from time to time. In this regard the results Osterspey and Thom (OSTERSPEY & THOM 2013) are essential. It is better to implement only a few activities, but these in a sustainable way, than to perform many individual activities without sustainability.

I recommend anchoring the WHM at highest level of the organisation and to create a Culture of Health within the company. By this the top management can develop objectives which they wish to achieve in the long run with the WHM. It is essential to align the WHM activities with these goals. The top managers also can take the aims of the WHM into account whenever they take decisions. It is important that the managers do not only talk about the WHM activities, but also participate in such actions. This is a strong demand from Waber (WABER 2013). In the same way, the consequent involvement of the middle management is an important factor for the implementation of the WHM (BENDIX-JUSTESEN ET AL. 2017). In my opinion the WHM must be classified as a management task of every leader and as such it must be assessed within the personnel appraisal of the leaders. The progress should be evaluated (through employee surveys) and monitored at regular intervals. Even if this is not possible in all categories, at least the contentment of the employees with the implementation process can be evaluated.

In the adoption of the WHM it is preferable to concentrate on those activities that are considered important within this study. The most vital elements are the involvement of the employees into work process improvements and into the improvement of work conditions. These also are strong indicators of respect of the management for the employees. The next essential measurement to implement is the availability of modern food for the employees. In my opinion this is a very fruitful measurement, because it is possible to reach many employees with this campaign. In addition, a well-attended canteen acts as a gathering place where communication between employees can occur. This is also a crucial demand of Waber (WABER 2013) as a conclusion of his empirical research. Bringing the people together and get to know each other promotes the communication among each other without hierarchical and formal barriers. This in turn improves the creation of informal relations. And as a result may become a very important factor for the cooperation beyond the group level to work together within the entire company.

As other activities to increase the communication of the employees among each other I propose to foster the creation of sport groups, for example running groups. In the next step the company should participate at running events (“company races”), which means that the company organises the trappings (like transportation to the competition, the running shirts, the catering and the drinks for the after race-party) not only for the runners, but also for the attending colleagues. This is a very useful measurement to create motivation to exercise and to create sense of belonging together. It is also a very good publicity for the company, which allows the company to demonstrate dynamic and team spirit to the public. Another positive effect is that presenting the corporation in public as dynamic and employee-oriented is a good opportunity to attract young people, an interesting fact for the recruitment of young people.

I recommend using the indirect effects of the WHM to increase the productivity through an increased job satisfaction as Dickson-Swift et al. (DICKSON-SWIFT ET AL. 2014) and Elci and Alpkın (ELCI & ALPKAN 2009) evaluated. The fact of priming is also well accepted in science, this means, that a dynamic work environment can foster the dynamic of employees.

In addition to sport groups I recommend to offer cooking courses which are aimed at all employees, not only at sport interested people. Those courses in smaller groups are able to transport the team spirit as well. Summarizing I propose to perform activities which foster the communication between the employees, not the membership fee of the gym but group sports and shared experiences in smaller groups. Doing things collective (like sports, corporate challenge races, high rope courses, walks, lectures, etc.) is able to improve the sense of unity.

In my opinion an underestimated activity is breaks for gymnastics. With 3-4 minute gym and stretching per day, many movement restrictions could be avoided. Doing this at the workplace (alone or together) costs only little but the benefit is immense. In a culture of health at the workplace, nobody looks funny if a colleague is doing short gymnastic exercises.

I further propose using actions which in some specifications are similar to actions within the **diversity** management. A possible existing diversity in a company is not necessarily a problem for the WHM. With the WHM the communication within divergent teams can be enhanced. Using the in this study presented effects will put companies in a position to kill two birds with one stone.

I also recommend the establishing of a WHM because focusing on subjects like communication and respect may have implications for the social interaction with each other. This in turn may influence the leadership culture within the company. To improve the communication the health oriented leadership is able to contribute. The measurements of the WHM don't have to be expensive. To respect one another (especially in the leader – employee relationship) doesn't cost money, but it gives a lot. In addition to the direct effects, to support the individual health by use of the WHM can be one important sign to show the respect and responsibility towards the employees.

Summarizing the above, in my opinion the WHM is an important possibility to cope with the future challenges. To alleviate the effects of the declining population to the work force and

the resulting problems of the companies to hire the needed skilled workers the WHM can contribute by maintenance and improvement of the working ability of the employed employees. The WHM has positive effects on the mental challenges of the employees in this dynamic and complex environment, as well. It also is able to improve the team building and communication in diverse work forces and it is an interesting way to distinguish from other companies in the “war for talents”. But the WHM is only one of several possibilities to tackle the challenges. Beside the WHM the described special actions to recruit and exercise skilled workers (company-based training, flexible work time models, expansion of the occupational training, range of options for balancing work and family life and strengthen recruitment of older workers) are further ways to deal with the future challenges.

How to use this non-representative sample in future research? As an explorative study this current research was aimed to discover the field of the WHM. Based on these experiences for the future research I recommend analysing the characteristics of the companies of individual countries. Which measures are favoured for example in Hungary, which in Germany? The future research should also aim to be representative and it should collect more data. The results, gained in this current survey, could be used to specify the questions to the objectives of the future research and I think it could be interesting to evaluate the indirect effects in more detail in the future.



## 6 SUMMARY

In my Ph.D. thesis, I investigated the expectations and estimates of employees to a Workplace Health Management. In a second step I analysed the direct and indirect impacts of a Workplace Health Management on employees and companies. In my research I focused on the perception of employees. For this purpose it was important to obtain employees working in companies with a WHM and employees working in companies without a WHM for the sample.

Reviewing the literature I summarized the emerging of the Workplace Health Management and displayed different approaches. Within the review I identified the commonalities of these approaches and displayed the so far located impacts of the Workplace Health Management. I also outlined diverse leadership approaches and described the model of health-oriented leadership behaviour. Furthermore I described the Diversity Management and the focus of the Diversity Management literature in connection with the Workplace Health Management up to now.

In order to examine the expectations of the employees in cooperation with Prof. Dr. J. Fehér and Prof. Dr. Cs. Czeglédi I performed a primary research with an anonymous questionnaire survey in Hungary and Germany. The survey respondents in Hungary were part-time university students with work experience and in Germany employees attending courses at the Chamber of Industry and Commerce.

In the next step I analysed which of the respondents work in a company with a sustainable Workplace Health Management. This was important, because in order to explore if the Workplace Health Management has impacts on the employees the results of employees working in a company which performs a WHM and of employees working in a company which do not perform a WHM had to be compared.

Using different statistical methods I was able to fully confirm five of the seven hypotheses. One hypothesis could be confirmed partly and one of the hypotheses had to be rejected. As statistical methods the Cluster analysis, the one sample t-test, the two sample t-test, the Mann-Whitney-U-test / Wilcoxon rank-sum test and the Pearson's Chi-squared test have been applied. The results of the survey showed the importance of the Workplace Health Management in the expectations of the employees.

The survey proved that the Workplace Health Management is considered as essential in the eyes of the employees. In my dissertation I also investigated which actions of a Workplace Health Management are expected by the employees and that there is no significant difference between the expectations of older and younger employees.

I was able to show that there are interactions between certain leadership behaviours and the existence of a Workplace Health Management in a company. An important finding within my thesis is the improvement of the cooperation within workgroups and between different teams by performing Workplace Health Management actions. These indirect effects are especially interesting for companies which perform measures in the field of the Diversity Management. Performing the right actions they are able to pursue two aims with one investment at the same time.

About the demonstrated findings after my conclusions I recommended to establish a sustainable Workplace Health Management in companies and make use of the positive impacts.

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## List of Tables

Table 1: Types of Work Team Diversity .....	37
Table 2: (Hypothesis 1) Results for B1 (contribution to the overall health).....	55
Table 3: (Hypothesis 1) Distribution for B1 (contribution to the overall health) .....	56
Table 4: (Hypothesis 1) Independent samples t-test for B1 (contribution to the overall health).....	57
Table 5: (Hypothesis 1) Distribution for B1 for Hungary and Germany (contribution to the overall health).....	59
Table 6: (Comparison Hungary – Germany) Independent samples t-test for B1.....	59
Table 7: (Hypothesis 2a) Results for BG2 .....	60
Table 8: (Hypothesis 2a) Distribution for BG2.....	61
Table 9: (Hypothesis 2b) Independent samples t-test for BG2 .....	64
Table 10: (Hypothesis 2) Mann-Withney-U-test / Wilcoxon rank-sum test.....	64
Table 11: (Hypothesis 2a) Distribution for BG2 for Hungary and Germany .....	66
Table 12: (Comparison Hungary – Germany) Independent samples t-test for BG2.....	66
Table 13: (Hypothesis 3) Results for C1 (attractive for employees) and C2 (attractive on labour market) .....	68
Table 14: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (total).....	69
Table 15: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (without WHM) .....	70
Table 16: (Hypothesis 3) Distribution for C1 (attractive for employees) and C2 (attractive on labour market) (with WHM) .....	71
Table 17: (Hypothesis 3) Combined answers for C1 (attractive for employees) and C2 (attractive on labour market) .....	71
Table 18: (Hypothesis 3) One sample t-Test for the item C1 (attractive for employees) and C2 (attractive on labour market).....	72
Table 19: (Hypothesis 4) Results for D1 (emotional climate) and D2 (work motivation).....	74
Table 20: (Hypothesis 4) Distribution for D1 (emotional climate) and D2 (work motivation) .....	75
Table 21: (Hypothesis 4) Results for D3 (increase commitment) and D4 (decrease turnovers).....	76
Table 22: (Hypothesis 4) Distribution for D3 (increase commitment) and D4 (decrease turnovers).....	77
Table 23: (Hypothesis 4) One sample t-Test for the item D1, D2, D3 and D4.....	78
Table 24: (Hypothesis 5) Mean of 2.1 – 2.16 in total and classified by age groups .....	81
Table 25: (Hypothesis 5) Distance matrix for actions of a WHM (all age groups).....	83
Table 26: (Hypothesis 5) Result Cluster Analysis (all age groups) .....	84
Table 27: (Hypothesis 5) Allocation to groups (Aggregation of the Cluster Dendograms) .....	85
Table 28: (Hypothesis 5) Independent samples t-test for X-40 and 41-X .....	86
Table 29: (Hypothesis 5) Mann-Withney-U-test / Wilcoxon rank-sum test.....	87
Table 30: (Hypothesis 6) Mean and Standard deviation of E1 – E.12 all answers (with and without WHM).....	89



Table 31: (Hypothesis 6) Independent samples t-test for E1 – E12.....	91
Table 32: (Hypothesis 6) Mann-Withney-U-test / Wilcoxon rank-sum test.....	93
Table 33: (Hypothesis 6) Pearson’s Chi-squared test .....	93
Table 34: (Hypothesis 7) Results for F12 (concrete case), F16 (within working group) and F15 (company as a whole).....	96
Table 35: (Hypothesis 7) Distribution for F16 and F15.....	97
Table 36: (Hypothesis 7) Pearson’s Chi-squared test for F12 (0, 1 or 2) .....	99
Table 37: (Hypothesis 7) Pearson’s Chi-squared test for X-40 and 41-X .....	100
Table 38: (Hypothesis 7) Independent samples t-test for X-40 and 41-X .....	100
Table 39: (Hypothesis 7) Mann-Withney-U-test / Wilcoxon rank-sum test for X-40 and 41-X.....	100
Table 40: (Hypothesis 7) Comparison cooperation exchange for X-40 and 41-X.....	101
Table 41: Overview of the results .....	105

## List of Figures

Figure 1: Selected interactions in regard to the WHM.....	6
Figure 2: Research scope and objectives.....	12
Figure 3: Model of an integrated health management.....	20
Figure 4: The “three-pillar-model” of the Workplace Health Management; .....	21
Figure 5: The “Workplace Health Protection and Promotion”; .....	23
Figure 6: Key elements of successful health and safety management, extended by health promotion .....	25
Figure 7: Additional employment effects.....	28
Figure 8: Respondents by gender overall (including respondents for section F “Diversity”) .....	46
Figure 9: Respondents by age overall (including respondents for section F “Diversity”).....	46
Figure 10: Respondents by gender (excluding respondents for section F “Diversity”)..	47
Figure 11: Respondents by age (excluding respondents for section F “Diversity”) .....	47
Figure 12: Respondents by ownership structure (excluding respondents for section F “Diversity”) .....	48
Figure 13: Respondents by number of people working for the organization (excluding respondents for section F “Diversity”) .....	48
Figure 14: Companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”).....	50
Figure 15: Respondents by number of people working for organization <b>with</b> a WHM (excluding respondents for section F “Diversity”).....	50
Figure 16: Respondents by number of people working for organization <b>without</b> a WHM (excluding respondents for section F “Diversity”).....	51
Figure 17: Hungarian companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”).....	51
Figure 18: German companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F “Diversity”).....	52
Figure 19: Hungarian respondents by ownership structure <b>with</b> a WHM (excluding respondents for section F “Diversity”) .....	52
Figure 20: German respondents by ownership structure <b>with</b> a WHM (excluding respondents for section F “Diversity”) .....	53
Figure 21: Hungarian respondents by number of people working for organization <b>with</b> a WHM (excluding respondents for section F “Diversity”).....	53
Figure 22: German respondents by number of people working for organization <b>with</b> a WHM (excluding respondents for section F “Diversity”).....	54
Figure 23: (Hypothesis 1) Boxplot for B1 (contribution to the overall health) total, B1 without WHM and B1 with WHM.....	55
Figure 24: (Hypothesis 1) Histogram for B1 (contribution to the overall health) total (with and without a WHM).....	56
Figure 25: (Hypothesis 1) Histogram for B1 (contribution to the overall health) without WHM.....	57
Figure 26: (Hypothesis 1) Histogram for B1 (contribution to the overall health) with WHM.....	57

Figure 27: (Hypothesis 1) Histogram for B1 Hungary total (with and without a WHM)	58
Figure 28: (Hypothesis 1) Histogram for B1 Germany total (with and without a WHM)	58
Figure 29: (Hypothesis 2a) Boxplot for BG2 total, BG2 without WHM and BG2 with WHM	61
Figure 30: (Hypothesis 2a) Histogram for BG2 total (with and without a WHM)	62
Figure 31: (Hypothesis 2b) Histogram for BG2 without WHM	63
Figure 32: (Hypothesis 2b) Histogram for BG2 with WHM	64
Figure 33: (Hypothesis 2a) Histogram for BG2 Hungary total (with and without a WHM)	65
Figure 34: (Hypothesis 2a) Histogram for BG2 Germany total (with and without a WHM)	65
Figure 35: (Hypothesis 3) Histogram for C1 (attractive for employees)	68
Figure 36: (Hypothesis 3) Histogram for C2 (attractive on labour market)	69
Figure 37: (Hypothesis 4) Histogram for D1 (improvement of emotional climate)	75
Figure 38: (Hypothesis 4) Histogram for D2 (increase of work motivation)	76
Figure 39: (Hypothesis 4) Histogram for D3 (increase commitment)	77
Figure 40: (Hypothesis 4) Histogram for D4 (decrease turnovers)	78
Figure 41: (Hypothesis 5) Mean selected measures parted by groups	82
Figure 42: (Hypothesis 6) Item E1, Histogram and distribution curve, theoretical Q-Q-Plots	90
Figure 43: (Hypothesis 7) Cooperation exchange within my workgroup (F16) and between different workgroups (F15)	98
Figure 44: (Hypothesis 7) Positive change of the attitude to another person in a concrete case (F12)	98
Figure 45: (Hypothesis 7) Comparison X-40 and 41-X (Positive change of the attitude to another person in a concrete case (F12))	102
Figure 46: Overview of the results	106
Figure 47: (Hypothesis 5) Cluster Dendogram (all age groups)	148
Figure 48: (Hypothesis 5) Cluster Dendogram (X-30)	149
Figure 49: (Hypothesis 5) Cluster Dendogram (31-40)	150
Figure 50: (Hypothesis 5) Cluster Dendogram (41-50)	151
Figure 51: (Hypothesis 5) Cluster Dendogram (51-X)	152

## APPENDIX 1. Research Questionnaire

Gender:	Male	Female		
Age:	..... years			
Work experience:	..... years			
Education:	Less than high school	High school	Higher education	
If you possess (a) higher education degree(s), it is (they are) from (a):	University with BA, BSc program	University with MA/MSc program	Two or more BA, BSc programs a University or MA/MSc program+ other B or M level programs	
Occupation:	.....			
Work experience in present position:	..... years			
Experience with supervising (i. e. managing) people:	Yes, ..... years	No		
If you are supervising others, the number of direct subordinates:	..... (people)			
If you are supervising others, your current position is:	Supervisor <small>(you supervise no supervisors) (Note: a CEO of a small organization counts Top Manager even without supervisor-ranked subordinates)</small>	Middle Manager <small>(you supervise i. a. supervisor-ranked subordinates, but you are no top manager)</small>	Top Manager <small>(CEO or direct subordinate of the CEO with own middle manager ranked subordinate(s/))</small>	Other: .....
Which statement does best describe the ownership of the organization you work for?				
<input type="checkbox"/> Fully or to a larger part state ownership <input type="checkbox"/> Multinational company ownership <input type="checkbox"/> Private ownership with headquarters in this country <input type="checkbox"/> Other (please, specify):				
What is the main profile of the organization you work for?				
<input type="checkbox"/> Highly automised production industry <input type="checkbox"/> Other production industry <input type="checkbox"/> IT/Telecommunications <input type="checkbox"/> Construction <input type="checkbox"/> Energy industry	<input type="checkbox"/> Infrastructural public services <input type="checkbox"/> Finance <input type="checkbox"/> Transportation <input type="checkbox"/> Agriculture <input type="checkbox"/> Wholesale	<input type="checkbox"/> Retail <input type="checkbox"/> Professional services <input type="checkbox"/> Leisure services <input type="checkbox"/> Other services <input type="checkbox"/> Central and local government	<input type="checkbox"/> Health services <input type="checkbox"/> Primary/secondary education <input type="checkbox"/> Higher education <input type="checkbox"/> Other (please, specify): .....	
The approximate number of people working for your organization  <small>An approximate number including rental workforce and those working under other special legal constructions (projected to full-employment)</small>	<input type="checkbox"/> under 20 <input type="checkbox"/> 20-49 <input type="checkbox"/> 50-99 <input type="checkbox"/> 100-199		<input type="checkbox"/> 200-499 <input type="checkbox"/> 500-999 <input type="checkbox"/> 1000-	

time base, a year average)		
What is the function you work for?		
<input type="checkbox"/> Overall management <input type="checkbox"/> Production, Technology-Engineering, Logistics <input type="checkbox"/> Service Operations and Client Service <input type="checkbox"/> Marketing, Market Research <input type="checkbox"/> Sales	<input type="checkbox"/> Finance & Accounting <input type="checkbox"/> HR <input type="checkbox"/> IT <input type="checkbox"/> Research and Development <input type="checkbox"/> Other (please, specify): .....	

BG1. Please rate how important it is for you that your employer cares about your health even beyond work health protection (beyond preventing you from harmful effects of work):

Very important	Important	Of medium importance	Moderately important	Less important
5	4	3	2	1

BG2. According to your workplace or other experiences and knowledge/**information** how important is the role of *workplace health promotion programs* (a promotion of „well-being”, of healthy lifestyle; a sustaining of health; an offering of prevention programs; ensuring leverages, methods for improving physical condition, state of health, and mental status; etc. supported by the employer) among other factors of preserving and improving of health?

Very important	Important	Of medium importance	Moderately important	Less important
5	4	3	2	1

A1. Is health (wellbeing at the workplace, promotion of a healthy lifestyle/behaviour, preventive work-health protection) component of your mission statement and / or of the written corporate philosophy?

Yes, to a high extent	Yes, to a certain extent	Yes, to a small extent	No	Do not know, not applicable
4	3	2	1	0

A2. To what extent is there an agreement or a concept for how the Workplace Health Promotion (WHP) should be or how a WHP would be wishful in your company?

To a high extent	To a certain extent	To a small extent	No	Do not know, not applicable
4	3	2	1	0

A3. Is there a clear responsibility for the Workplace Health Management in your company? (This means is there a job description with WHP-tasks, and/or is there a person / group in your company which is displayed in the organisational chart?)

Yes	No	Do not know, not applicable
2	1	0

A4. (Answer this question only if you have answered „yes” to the Q #A3.!) Ensures the responsible person / group a regular exchange with the management and other health-related positions?

Yes	No	Do not know, not applicable
2	1	0

A5. Is there a WHP-steering-group in which all health-related positions are represented (i.e. working group / steering group health)?

Yes	No	Do not know, not applicable
2	1	0

A6. To what extent is the Workplace Health Promotion or the promotion of health component of the leadership principles and are there goals regarding this in the target agreements of the leaders?

To a high extent	To a certain extent	To a small extent	No	Do not know, not applicable
4	3	2	1	0

A7. Is there an opportunity for the employees to participate direct in solving health problems or to contribute to health-related strategic decisions (i.e. working group health, health circle, employee suggestion system, employee attitude survey, staff appraisal)?

Yes	No	Do not know, not applicable
2	1	0

A8. Is there a reporting system about health-related offers and measures in which the management is included (i.e. health report, absence analysis)?

Yes	No	Do not know, not applicable
2	1	0

A9. Are there sufficient financial and / or material resources for the development of health-related offers and measures (i.e. budget, infrastructure, personal resources)?

Yes	No	Do not know, not applicable
2	1	0

A10. Is there a systematic internal public relations work in the case of WHP (i.e. communication concept, media use like intranet, flyer, booklets, and postings)?

Yes	No	Do not know, not applicable
2	1	0

A11. Is the Workplace Health Promotion a part of the basic and continuing training of management and employees (i.e. employee-oriented leadership, teamwork, self- and stress management, conflict management, competence training)?

Yes	No	Do not know, not applicable
2	1	0

A12. Is there a regular evaluation of the offers and measures in your company (i.e. staff appraisal, amount of holding, cost / benefits sheet) and is there a documentation of the results?

Yes	No	Do not know, not applicable
2	1	0

A13. (Answer this question only if you have answered „yes” to the Q #A12.!) Is there a continuous improvement of the health promotion programs on the basis of the evaluation results?

Yes	No	Do not know, not applicable
2	1	0

WHP 1. In summary how do you think does your company have a workplace health management with the aim of preventive health care and an improvement of generic health state?

Yes	No	Do not know, not applicable
2	1	0

If yes, from when? ..... (year, approximately)



If yes (i. e. your company does have a workplace health management with the aim of preventive health care and an improvement of generic health state), do you know about evidences of its effects (e. g. health status indicators; number of complaints, conflicts; absence rates; health indicated voluntary leaving indicators; cost analyses; data of relevant items of employee satisfaction surveys)? If yes, please describe these effects/evidences of these effects:

.....

.....

.....

.....

.....

WHP 2. Which of the below listed health improvement and related solutions are operated at your company?

Health awareness days	Yes	No	Do not know, not applicable
	2	1	0

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5                      4                      3                      2                      1

Health screening	Yes	No	Do not know, not applicable
	2	1	0

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5                      4                      3                      2                      1

Exercise / moving breaks	Yes	No	Do not know, not applicable
	2	1	0

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5                      4                      3                      2                      1

Back schools	Yes	No	Do not know, not applicable
	2	1	0

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Consultation (i.e. food or living situation)	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Cooking courses	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Availability of modern food in the canteen or through other ways	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Sports groups	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Massage at the work-place	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Entrance fee for fitness-studios	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Quit smoking programs	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Stress, cooperation, time management etc. training programs	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Coaching	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Employee Counselling psychological	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Involvement into work process improvement (proposals, teams)	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Involvement into work conditions improvement (proposals, teams)	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Other (please specify):	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Other (please specify):	Yes	No	Do not know, not applicable	
	2	1	0	

How important is or would be this item for you? Rating: on a scale of 5-1; 5= very important, 1=less important

5	4	3	2	1
Other (please specify):	Yes	No	Do not know, not applicable	
	2	1	0	



To a large extent	To a certain extent	To a small extent
3	2	1

C2. Do WHP programs make a workplace / employer more attractive on the labour market?

Yes	No	Do not know, not applicable
3	1	2

If you have answered „yes” to #C2., please, rate the extent to which they make it more attractive!

To a large extent	To a certain extent	To a small extent
3	2	1

D1. Do WHP programs contribute to the improvement of the *emotional climate* at the workplace?

Yes	No	Do not know, not applicable
3	1	2

If you have answered „yes” to #D1., please, rate the extent to which they improve it!

To a large extent	To a certain extent	To a small extent
3	2	1

D2. Do WHP programs increase the work motivation of the employees?

Yes	No	Do not know, not applicable
3	1	2

If you have answered „yes” to #D2., please, rate the extent to which they increase it!

To a large extent	To a certain extent	To a small extent
3	2	1

D3. Do WHP programs increase *the commitment of the employees toward the organization?*

Yes	No	Do not know, not applicable
3	1	2

If you have answered „yes” to #D3., please, rate the extent to which they increase it!

To a large extent	To a certain extent	To a small extent
3	2	1

D4. Do WHP programs decrease the number of *voluntary quits (turnover) of the employees?*

Yes	No	Do not know, not applicable
3	1	2

If you have answered „yes” to #D4., please, rate the extent to which they decrease it!

To a large extent	To a certain extent	To a small extent
3	2	1

**E.**

In the following section you have to rate how often your supervisor shows the behaviours expressed in the statements listed below during his work. You can answer by marking the frequency of these behaviours in a scale of 1 through 10. 1=NEVER - 10=ALWAYS

	Never									Always
1. He/she develops cooperative relationships among the people he/she works with.	1	2	3	4	5	6	7	8	9	10
2. He/she praises people for a job well done.	1	2	3	4	5	6	7	8	9	10
3.He/she makes it a point to let people know about h/h confidence in their abilities	1	2	3	4	5	6	7	8	9	10
4.He/she follows through on promises and commitments he/she makes.	1	2	3	4	5	6	7	8	9	10
5. He/she treats others with dignity and respect.	1	2	3	4	5	6	7	8	9	10
6. He/she I makes sure that people are creatively rewarded for their contributions to the success of projects.	1	2	3	4	5	6	7	8	9	10
7. He/she shows others how their long-term interests can be realized by enlisting in a common vision.	1	2	3	4	5	6	7	8	9	10
8. He/she builds consensus around a common set of values for running our organization.	1	2	3	4	5	6	7	8	9	10
9. He/she makes certain that we set achievable goals, make concrete plans, and establish measurable milestones for the projects and programs that we work on.	1	2	3	4	5	6	7	8	9	10
10. He/she gives people a great deal of freedom and choice in deciding how to do their work.	1	2	3	4	5	6	7	8	9	10
11. He/she finds ways to celebrate accomplishments.	1	2	3	4	5	6	7	8	9	10
12. He/she gives the members of the team lots of appreciation and support for their contributions.	1	2	3	4	5	6	7	8	9	10



## **Questions in the area of Diversity and Workplace Health Management**

### **F.**

1. Which groups of persons are working in the company you work for?

- Women
- Men
- Younger colleagues (up to and including 40 years of age)
- Older colleagues (over 40 years of age)
- People with migration background (naturalized or not naturalized immigrants)
- People with performance limitations (caused by an irreversible illness which is attested by a doctor; not because of a disability)
- People with disabilities
- People with different ethnical origin (language, culture, tradition, customs)
- People with different religion / ideology

2. Which groups of persons are working direct in your team?

- Women
- Men
- Younger colleagues (up to and including 40 years of age)
- Older colleagues (over 40 years of age)
- People with migration background (naturalized or not naturalized immigrants)
- People with performance limitations (caused by an irreversible illness which is attested by a doctor; not because of a disability)
- People with disabilities
- People with different ethnical origin (language, culture, tradition, customs)
- People with different religion / ideology

**Question 3 - 16:**

To what extent do you agree with the following statements?

3. The information exchange in my company as whole is good.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

4. The information exchange within my work team is good.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

5. The cooperation in my company as whole is good.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

6. The cooperation within my working group is good.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

7. The climate between the different groups of people is good.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

Please answer the questions 8-16, if actions / measures in the field of WHM are performed in your company (even if there are only isolated actions).

8. Employees of different groups of people take part in actions of the WHM.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

9. Employees of different sectors of the company take part in actions of the WHM.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

10. By participating in actions of the WHM employees become acquainted with colleagues with whom they otherwise do not have any contact.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

11. By participating in actions of the WHM employees become better acquainted with colleagues with whom they otherwise do only not have superficial contact.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

12. Concrete: By participating in actions of the WHM my personal attitude towards another person changed positively in a concrete case.

Yes	No	Don't know
2	1	0

13. By participating in actions of the WHM the information exchange within the company as a whole improves.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

14. By participating in actions of the WHM the information exchange within my working group improves.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

15. By participating in actions of the WHM the cooperation within the company as a whole improves.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

16. By participating in actions of the WHM the cooperation within my working group improves.

Fully agree	Somewhat agree	Don't know	Rather disagree	Fully disagree
5	4	3	2	1

## APPENDIX 2. Cluster Dendograms

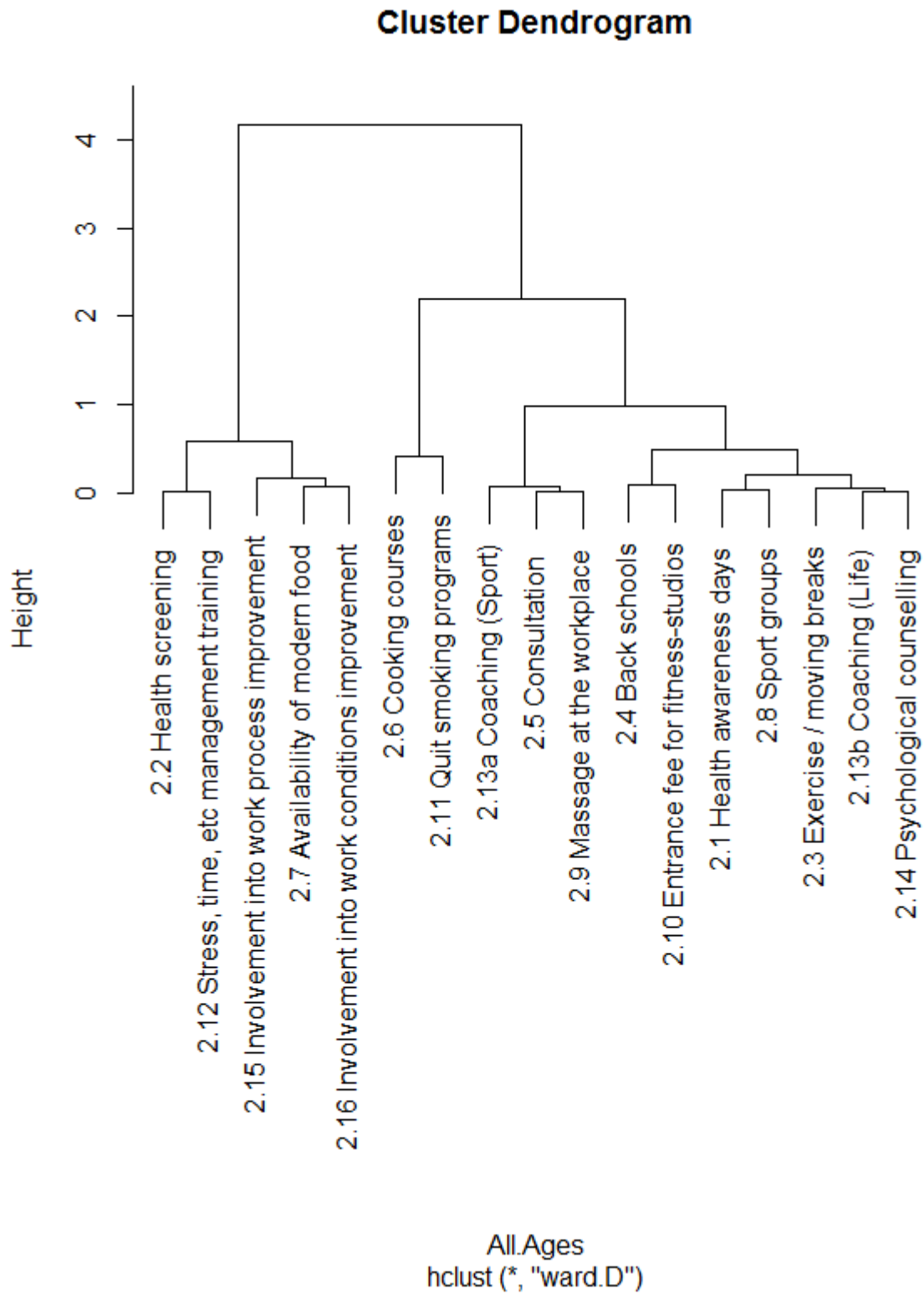


Figure 47: (Hypothesis 5) Cluster Dendrogram (all age groups)

Source: author's work.

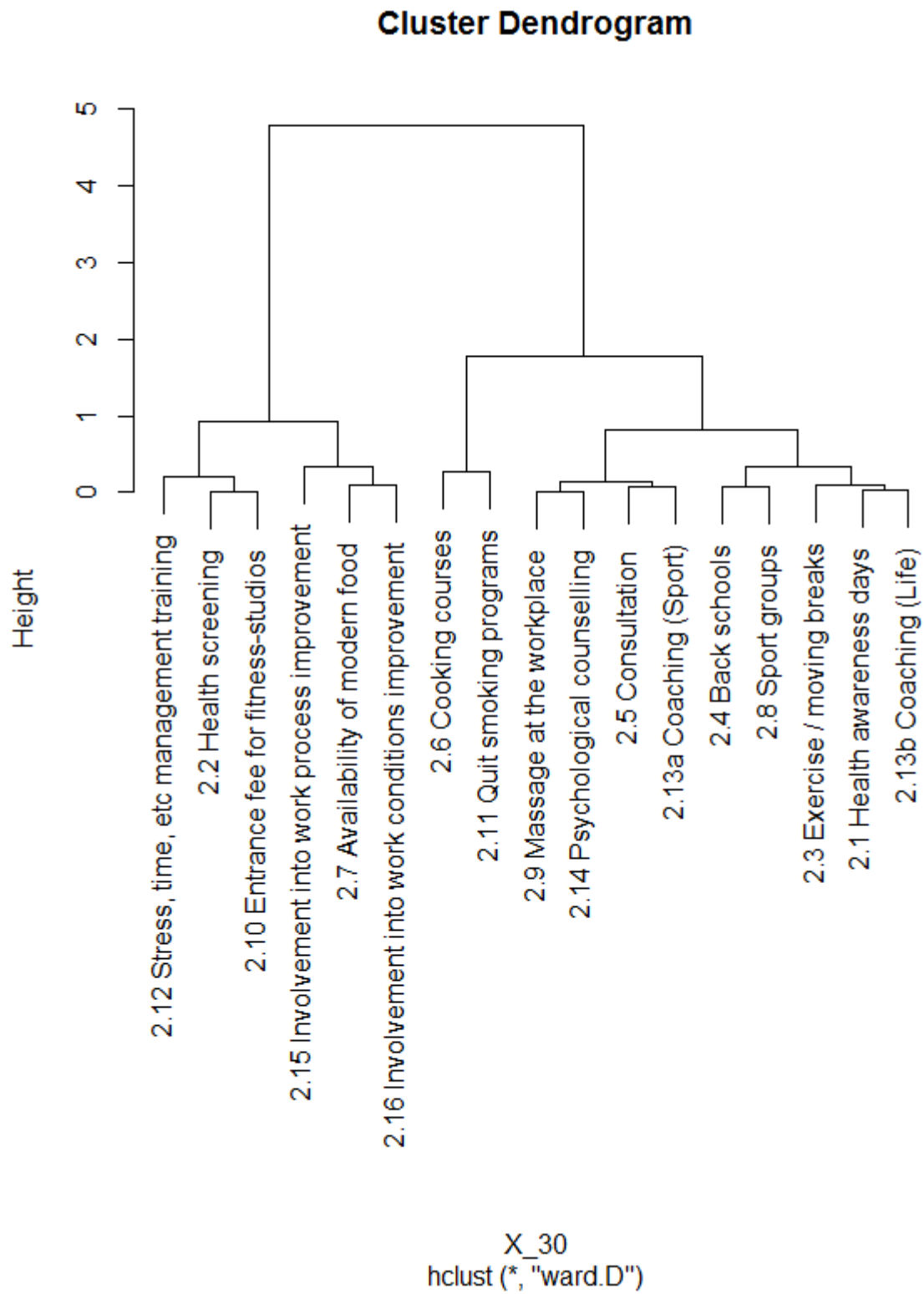


Figure 48: (Hypothesis 5) Cluster Dendrogram (X-30)

Source: author's work.

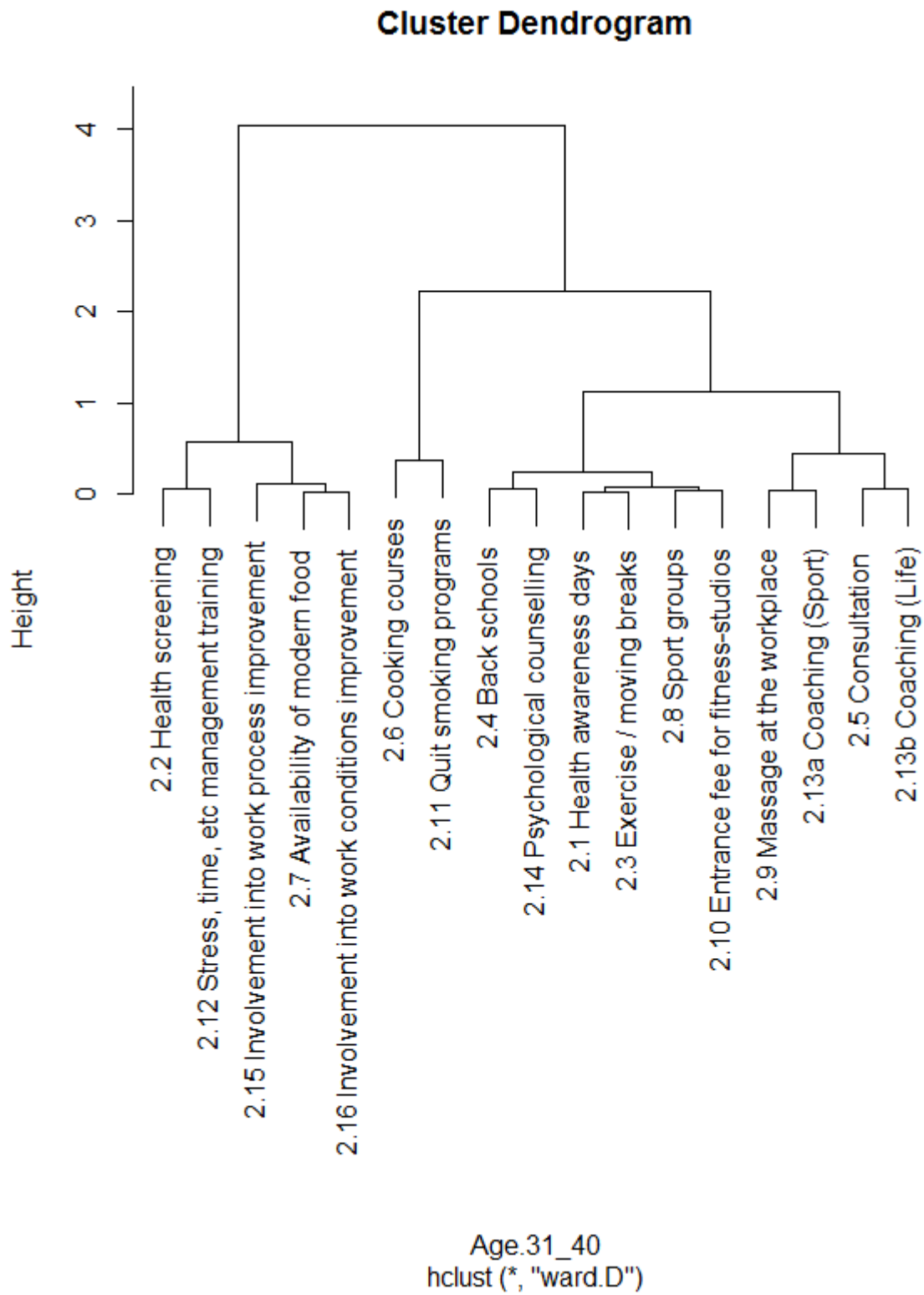


Figure 49: (Hypothesis 5) Cluster Dendrogram (31-40)

Source: author's work.

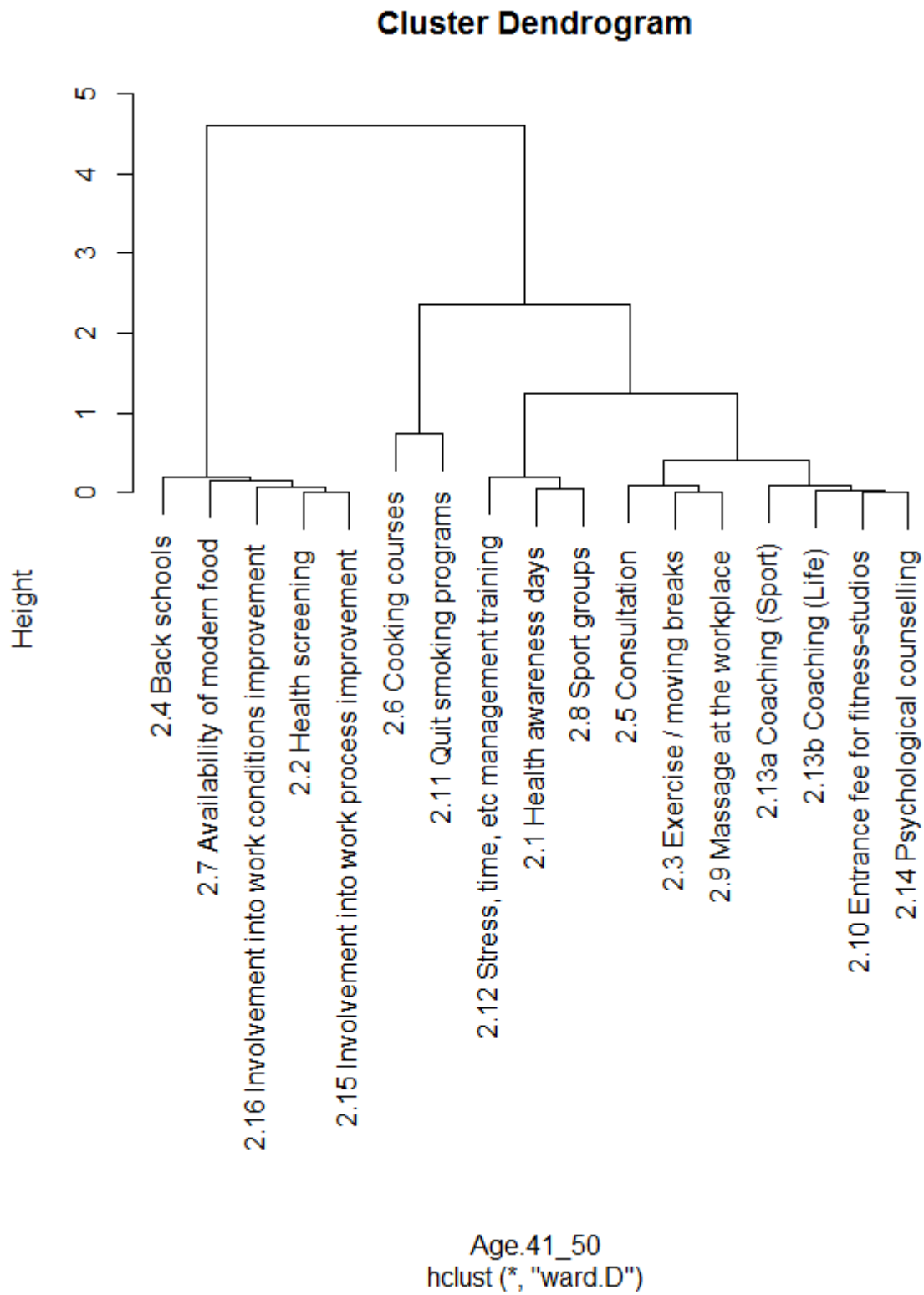


Figure 50: (Hypothesis 5) Cluster Dendrogram (41-50)

Source: author's work.

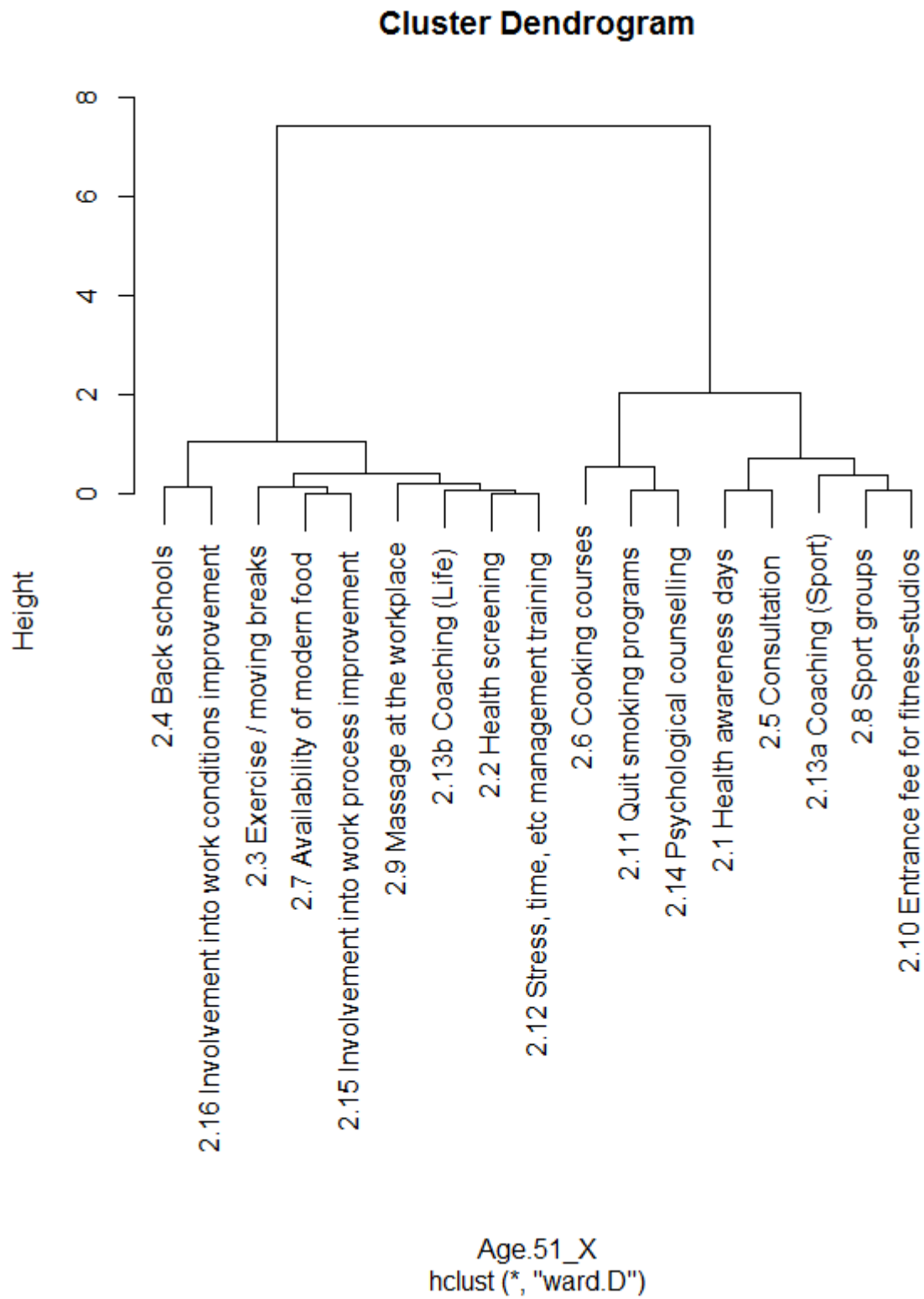


Figure 51: (Hypothesis 5) Cluster Dendrogram (51-X)

Source: author's work.