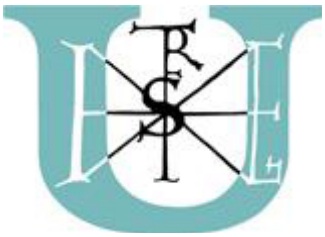

Szent István University

Doctoral School of Management and Business Administration

The Thesis of the 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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Approval of the School Leader Approval of the Supervisor

CONTENTS

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 (HOßMANN, 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 for 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). 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. 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).

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). 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). 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. 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. The Workplace Health Management may be able to produce a relief in many of these sectors.

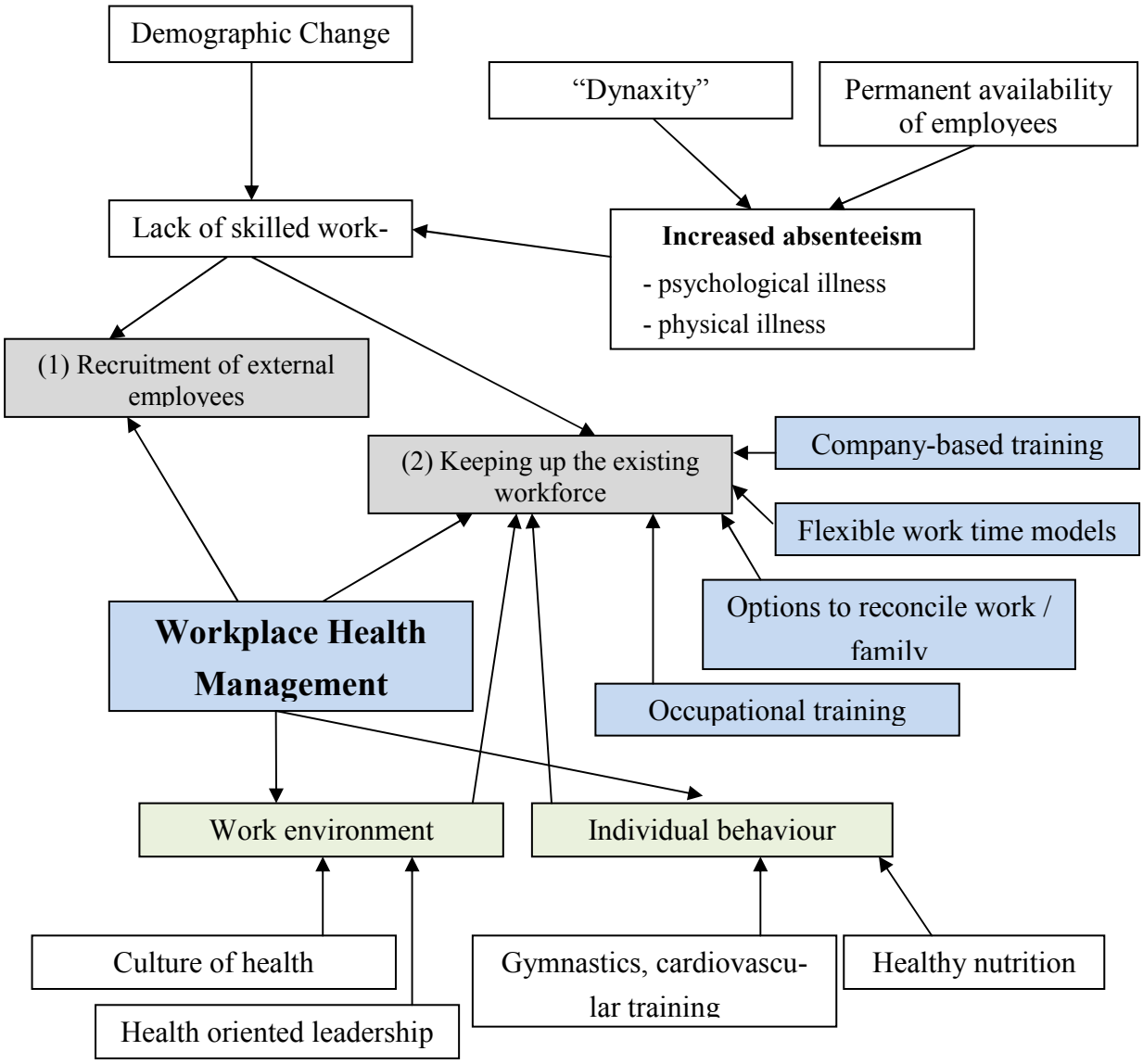

Figure 1: Selected interactions in regard to the WHM

Source: author's work

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 the whole Europe.

These two societies and economies 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 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.

1.3 Research Questions

Building upon the analysis of the current scientific literature and the evaluation of research reports and recent studies 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.

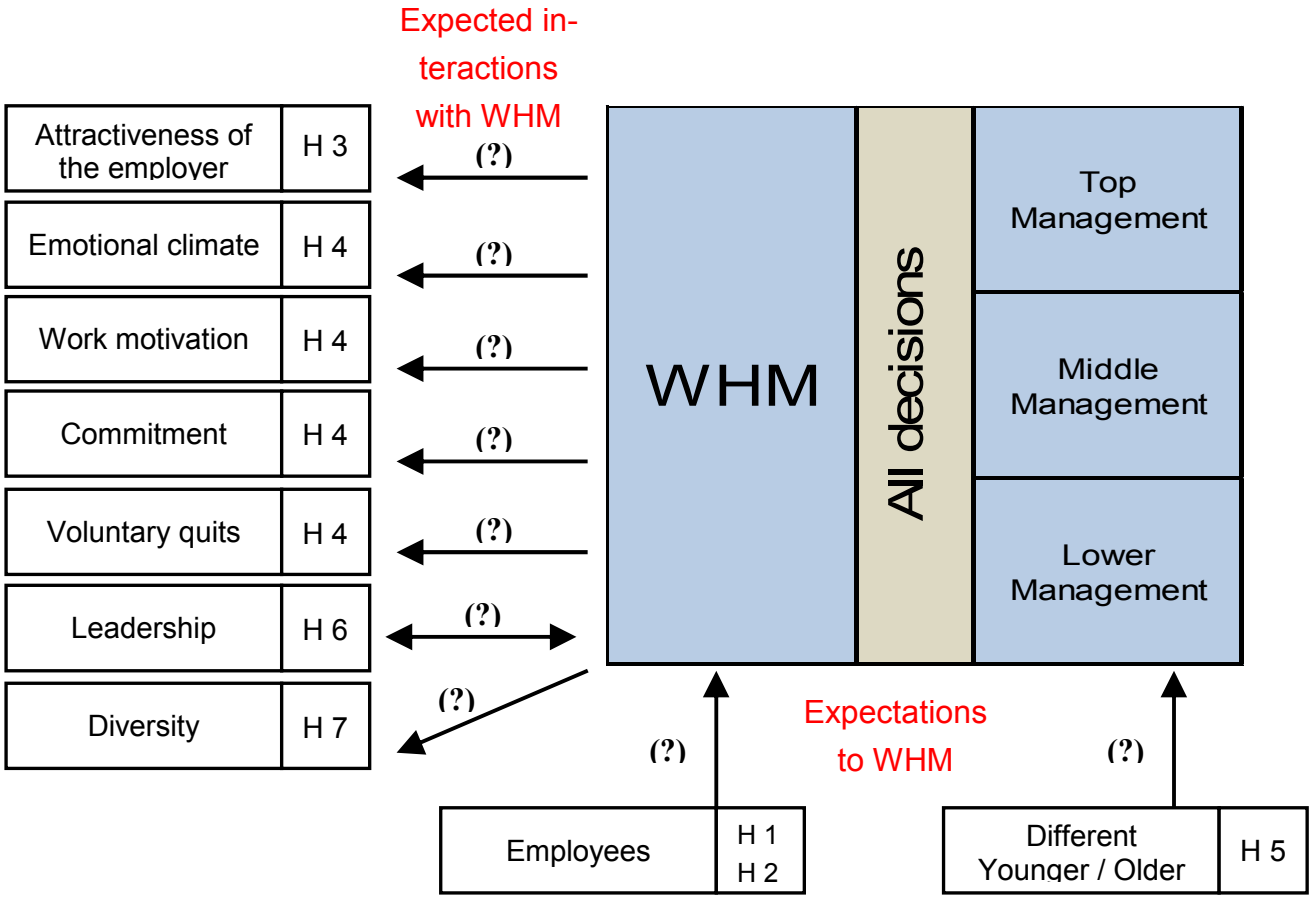

Figure 2: Research scope and objectives

Source: author's work

1.4 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 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.

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 MATERIAL AND METHODS

2.1 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.

2.2 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**, the non-parametric method **Mann-Whitney-U-test / Wilcoxon rank-sum test** and the **Pearson's Chi-squared test** were used. Furthermore analyzing the collected data for the hypotheses 5 the **Cluster Analysis** is executed.

3 RESULTS

3.1 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.

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".

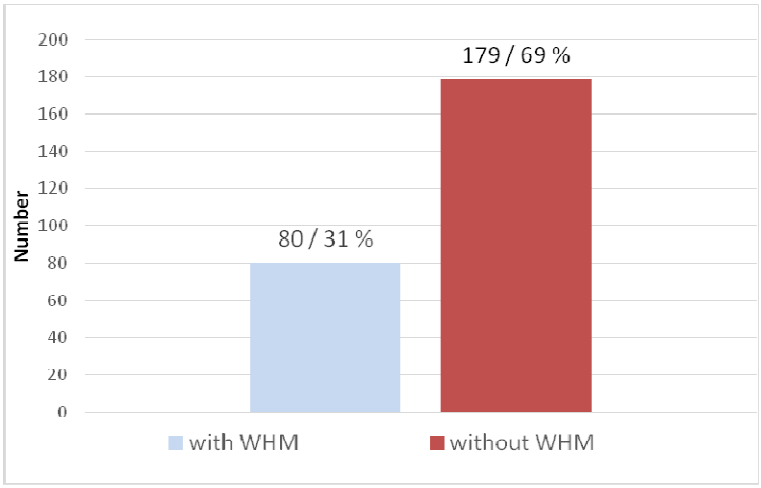

Figure 3: Companies with and without a sustainable and long-term oriented WHM (excluding respondents for section F "Diversity")

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. 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.

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

The distribution of the item B1 is displayed in the Figure 4. 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!

Table 1: (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.

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.

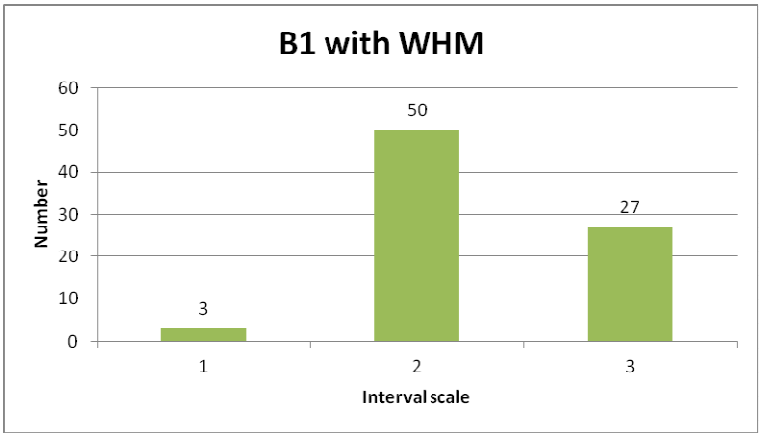

Figure 4: (Hypothesis 1) Histogram for B1 (contribution to the overall health) with WHM

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 2).

Table 2: (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
B1	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.

3.3 Perceived importance of the WHM for the employees (Hypothesis 2)

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

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 3: (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 mostly chosen alternative for BG2 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. 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.

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

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. 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 3). While for the same items in the group without a WHM only 84,4 % can be numbered. 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 4).

Table 4: (Hypothesis 2b) Independent samples t-test for BG2

	without long-term, sustainable WHM (179 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
BG2	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 5: (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 2016A) displayed in Table 5. 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.

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

For 82 % of the asked persons the WHM increases the employer´s attractiveness for employees which are already working for the company (see Table 11). 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. 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 and one with a WHM, 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 %.

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? To analyse this fact the combination of the answers "C1" and "C2" is evaluated. 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 6: (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.

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.

3.5 Additional emotional impacts of the WHM (Hypothesis 4)

The mean of D1 is 2,64 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 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. 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. 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".

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 7: (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.

3.6 Relationship between age and expected WHM activities (Hypothesis 5)

Table 8: (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
2.1	Health awareness days	3.32	3.65	3.72	2.88	3.50
2.2	Health screening	3.75	4.09	4.30	3.91	3.98
2.3	Exercise / moving breaks	3.22	3.64	3.36	4.11	3.44
2.4	Back schools	3.49	3.77	4.40	4.30	3.72
2.5	Consultation	3.07	3.42	3.28	2.80	3.23
2.6	Cooking courses	2.39	2.48	2.16	2.00	2.36

2.7	Availability of modern food	4.08	4.30	4.16	4.00	4.17
2.8	Sport groups	3.42	3.58	3.78	3.10	3.53
2.9	Massage at the workplace	3.12	3.22	3.35	3.73	3.22
2.10	Entrance fee for fitness-studios	3.75	3.61	3.49	3.18	3.63
2.11	Quit smoking programs	2.67	2.85	2.91	2.40	2.77
2.12	Stress, time, etc management training	3.91	4.03	3.91	3.91	3.96
2.13a	Coaching (Sport)	3.00	3.19	3.43	3.45	3.17
2.13b	Coaching (Life)	3.28	3.47	3.52	3.86	3.40
2.14	Psychological counselling	3.13	3.71	3.50	2.50	3.39
2.15	Involvement into work process improvement	4.40	4.39	4.30	4.00	4.36
2.16	Involvement into work conditions improvement	4.18	4.31	4.24	4.45	4.25

Source: author's work.

In Table 8 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.

Are there groups of actions which can be combined? This is analysed with a cluster analysis:

Table 9: (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.

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

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, 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 10: (Hypothesis 5) Independent samples t-test for X-40 and 41-X

	X-40		41-X						
	Mean	Variance	Mean	Variance	t-value	df	P(T<=t) two-tail	critical t-value two-tail	Deviation
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 10. Only deviation of the actions 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 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 2016A) displayed in Table 11.

Table 11: (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 ac-

tions of the WHM as important as younger employees. About these findings the hypothesis 5 is <u>not</u> confirmed.

3.7 Leadership behaviour and WHM (Hypothesis 6)

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.

Table 12: (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.

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 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.

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

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 results of the Mann-Withney-U-test / Wilcoxon rank-sum test are displayed in Table 13.

Table 13: (Hypothesis 6) Mann-Withney-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-Withney-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 14: (Hypothesis 6) Pearson's Chi-squared test

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Chi²-	24,64	20,06	24,44	9,82	23,11	25,77	19,97	23,31	19,96	24,70	20,84	34,52
d.f.	9	9	9	9	9	9	9	9	9	9	9	9
Chi²-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 Chi²-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 -Withney-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.

3.8 Impacts of the WHM on the cooperation exchange (Hypothesis 7)

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.

3.8.1 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.

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.

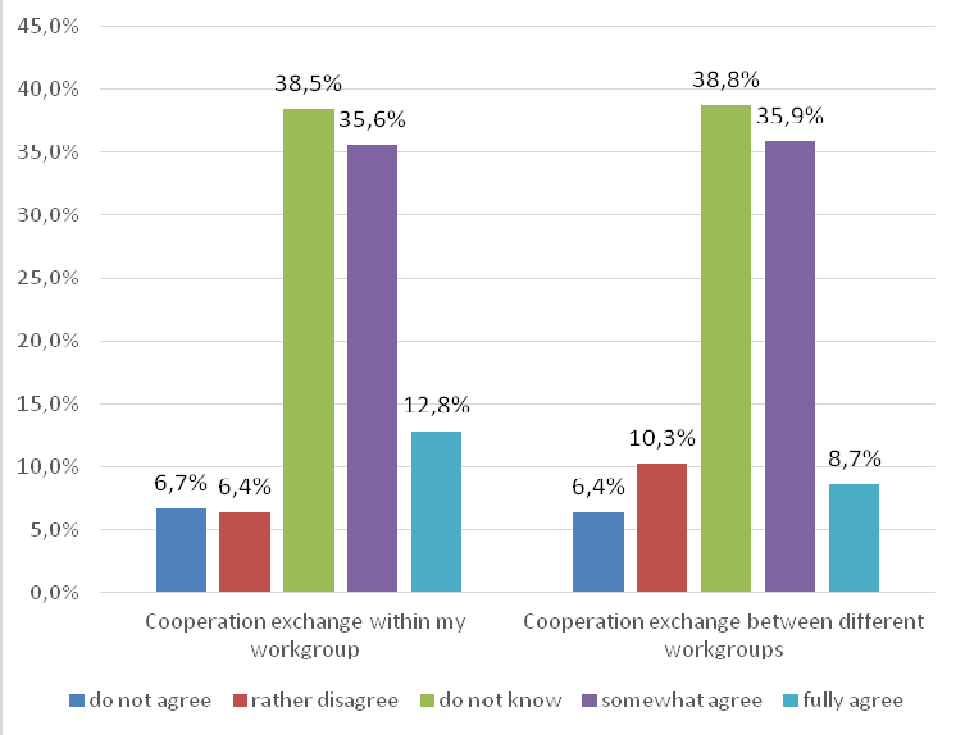

Figure 5: (Hypothesis 7) Cooperation exchange within my workgroup (F16) and between different workgroups (F15)

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.

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 15).

Table 15: (Hypothesis 7) Pearson's Chi-squared test for F12 (0, 1 or 2)

	F15	F16
Chi²-	53,898	51,539
d.f.	8	8
Chi²-crit	15,51	15,51
p-value	0,0000000072	0,000000021
Deviation	Significant	Significant

Source: author's work.

The Chi²-value is higher than the critical Chi²-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.

3.8.2 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. To test if there are differences between the groups the Pearson's Chi-squared is performed. In all cases Chi²-value is smaller than the critical Chi²-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.

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

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

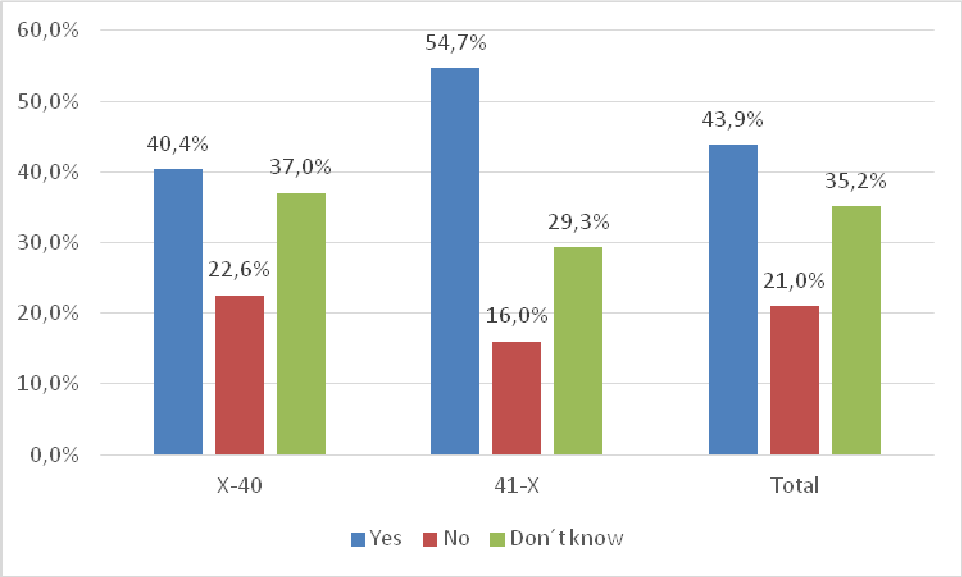

Figure 6: (Hypothesis 7) Comparison X-40 and 41-X (Positive change of the attitude to another person in a concrete case (F12))

Source: author’s work.

Figure 6 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. 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-Withney-U-test / Wilcoxon rank-sum test) it can be stated that the hypotheses 7a and 7b are confirmed.

3.9 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-Withney-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-Withney-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.

3.10 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.

4 CONCLUSIONS, RECOMMENDATIONS

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 figure displays an overview of the results of the tested hypothesis. 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.

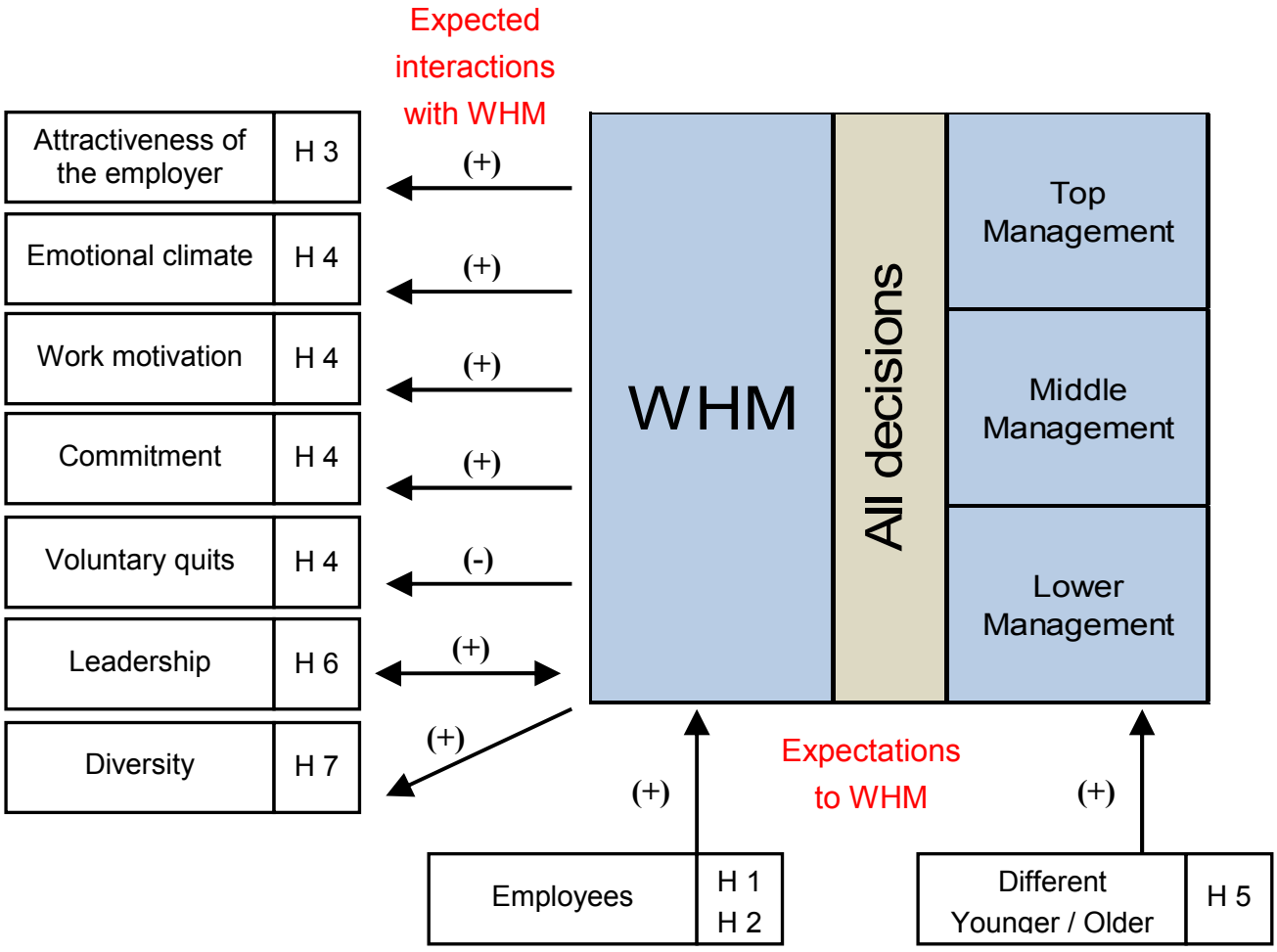

Figure 7: Overview of the results

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.

My recommendations for companies for dealing with the described the future challenges are the following:

- I recommend companies to establish a sustainable Workplace Health Management.
- I recommend anchoring the WHM at highest level of the organisation and to create a Culture of Health within the company.
- I recommend starting the WHM with the involvement of the employees into work process improvements and into the improvement of work conditions. The next essential measurement to implement is the availability of modern food for the employees.
- As other activities to increase the communication of the employees among each other I propose to foster the creation of sport groups. In addition to sport groups I recommend to offer cooking courses which are aimed at all employees, not only at sport interested people.
- I recommend using the indirect effects of the WHM to increase the productivity through an increased job satisfaction.
- In my opinion an underestimated activity are breaks for gymnastics. With 3-4 minute gym and stretching per day many movement restrictions could be avoided.
- I further propose using actions which in some specifications are similar to actions within the **diversity** management.
- 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.

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 to 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.

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