

Grmanova, Eva; Bartek, Jozef

## Article

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## Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics  
Düsternbrooker Weg 120  
24105 Kiel (Germany)  
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)  
<https://www.zbw.eu/>

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## JOB SATISFACTION AS AN IMPORTANT FACTOR OF WORK QUALITY AND THE INFLUENCE OF SELECTED FACTORS

**Eva Grmanova,**  <https://orcid.org/0000-0003-2269-1677>

Associate Professor, PhD., Alexander Dubcek University in Trencin, Slovakia

**Jozef Bartek,**  <https://orcid.org/0000-0002-8899-5836>

Alexander Dubcek University in Trencin, Slovakia

**Corresponding author:** Eva Grmanova, <mailto:eva.grmanova@tnuni.sk>

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**Abstract:** *Current demographic developments and population projections indicate that the search for approaches that lead to employees remaining in employment even after reaching retirement age will gain importance. Job satisfaction is one of the most important approaches to prolonging working life. The job satisfaction of older workers is in the scope of researchers as older age groups are growing workforce in the labour market of national economies and the European Union. Researchers are mainly focused on the relationship between job satisfaction and various factors like older age, gender, disability, skills, or salary. The scientific study aims to specify the influence of «Satisfied with job» and the factors «Work allowed development of skills», «Work had adequate salary», and «Work atmosphere» for the group of workers aged 50 and over. SHARE, the Survey of Health, Aging, and Retirement in Europe, which has a transnational dimension, is used to detect the specification of the relationship. The Chi-square test is used to detect dependence. The tightness of the dependence is detected by using Cramér's V. Where the relationship is expressed, it is detected using adjusted standardized residuals. The strongest tightness of dependence is expressed in the case of random variables «Satisfied with job» and «Work allowed development of skills». This fact points to the importance of developing work skills among workers. At the same time, the scientific study results show that the respondents answered the same statistically significantly more than what would correspond to the assumed independence of both random variables in all three cases. It follows that if employers are trying to make their employees significantly «Satisfied with job», then in addition to adequate remuneration, they must choose procedures that lead to them also being significantly satisfied with the «Work atmosphere» and the possibilities of developing employees' skills. The significance of the conclusions obtained while fulfilling the objective is broad. Results provide employers and decision-makers with important findings about the factors influencing job satisfaction. Appropriately used management methods and interventions based on such knowledge are able to positively influence the quality of work, and work performance and fully utilize work potential.*

**Keywords:** development of skills, job satisfaction, older workers, salary, work quality, work atmosphere.

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**Introduction.** According to Hornak and Chynoradska-Sevcikova (2006), the work potential of each employee is significantly influenced by the potential of his behavior and his personality – human potential. Part of human potential is intellectual and emotional potential. These components play an important role in the work process and interact with each other. An essential part of the emotional potential is motivation. Motivation is closely connected with job satisfaction within the work process. Its perception is multispectral. One of the perspectives on defining the essence of job satisfaction is that it reflects working conditions and the quality of the working environment (Sutekova, 2020). Job satisfaction is linked to the quality of human capital. It is reflected in creativity, work performance, and willingness to work. Increasing job satisfaction in the group of older employees can also affect their willingness to prolong their working life. It can reduce the decision of people of pre-retirement age to take early retirement or influence their decision to stay at work even after retirement age.

Current demographic developments and population projections indicate that searching for approaches that lead to employees remaining in employment even after reaching retirement age will gain importance. Job satisfaction is an important determinant. For this reason, it is necessary to determine the factors that affect job satisfaction and specify their impact. This study follows previous studies and monitors the influence of selected factors on «Satisfied with job» among people aged 50 and over. The research goal of the scientific study is to specify the influence of selected factors on «Satisfied with job» for a group of workers aged 50 and over. The factors, which dependence is monitored, are selected on the analysis of scientific sources basis. Data from the SHARE, the Survey of Health, Aging, and Retirement (2022) in Europe database, are used to achieve the goal.

**Literature Review.** Job satisfaction is understood and assessed from different perspectives. Locke (1976; as cited in Armstrong and Taylor, 2014) perceives it as «a pleasurable or positive emotional state resulting from the appraisal of one's job and job experiences». Spector (1997) characterizes job satisfaction as how people feel about their jobs and various aspects of the job. According to Schmitt et al. (2012) «job satisfaction is a set of cognitive and affective responses to the job situation», while Armstrong and Taylor (2014) say that job satisfaction is made up of «the attitudes and feelings that people have about their jobs».

Job satisfaction was already the subject of extensive research and has not stopped even now when human resources researchers focus on the specifics of the research sample according to selected factors. According to Wiegand et al. (2021), it is proven successful when long-term national criteria are consistent with job satisfaction. It seems that the diversity of factors and dimensions that influence job satisfaction is as diverse as the respondents' job positions, regions, age groups, or social statuses. Lakic (2019) states that the most important areas of job satisfaction of people in public, private, and third sectors are the working atmosphere, work environment, and relationship with the management.

Zhai and Liu (2008) researched that for white-collar urban employees, satisfaction with pay, benefit, work itself, and age is decisive for a good feeling about the work performed. According to Boumans et al. (2011), higher levels of work characteristics like motivating potential scores, social support from colleagues and supervisors, and career opportunities are significantly related to higher total job satisfaction regardless of age. Roelen et al. (2008) identified the factors of task variety, working conditions, workload, and career perspectives for the job satisfaction of employees in the health sector. Chen (2008) described the job satisfaction dimensions of personnel working in information systems as task identity, professionalism, feedback, autonomy and significance, social, job-related, and self-actualization satisfaction. Rosenberg and Bonsaksen (2022) found that being an employee is more job satisfying than being self-employed. Sutekova (2020) stated that the relationship with work is influenced by adequate financial remuneration and other factors that bring joy and enable the employee's personal growth. Raziq and Maulabakhsh (2015) evaluated a positive relationship between the working environment and job satisfaction in a sample of residents in a selected city in Pakistan. Their sample was limited locally and to selected professions. Phonthanukitithaworn et al. (2017) researched the relationship between industrial workers' job satisfaction and skill development in Thailand. They confirmed the positive effect, especially between job satisfaction and perspectives on training. Reilly and Brown (2008; as cited in Armstrong and Taylor, 2014) substitute the terms «job satisfaction», «motivation», and «commitment for engagement» concerning business practice. Crawford et al. (2013; as cited in Armstrong and Taylor, 2014) pointed out the following engagement factors: job challenge, autonomy, variety, feedback, fit, opportunities for development, rewards, and recognition. Current topics of the perception of an individual's job satisfaction are researched in work and organizational psychology. Lee et al. (2015) revealed a significant negative impact of family-to-work conflicts on job satisfaction. Wu et al. (2021) confirmed that job burnout is negatively associated with job satisfaction. Azcarate (2006) researched a positive

correlation with personal satisfaction. Chen et al. (2021) noted a significant positive correlation between gratitude and job satisfaction.

Regarding job satisfaction and job stressors concerning the work week, job satisfaction is stronger at the beginning of the week (Pindek et al., 2021). According to Arvan et al. (2019), job dissatisfaction anticipates upcoming perceived overqualification, not vice versa. Andel et al. (2019) found that low levels of job satisfaction may be a predictor of verbal aggression exposure. Pindek et al. (2017) concluded the stabilization of the problem of the relationship between job satisfaction and job performance by researching the literature by saying that most researchers agree that there is a modest relationship.

The job satisfaction of older workers is in the scope of researchers as older age groups are growing in population, and they are a significant workforce in the labour market of national economies and the EU. Groot and van den Brink (1999) researched older people in the Netherlands and found that job content is the main factor of overall job satisfaction. Saner and Eyupoglu (2012) measured older age groups of academics in North Cyprus with a higher level of job satisfaction than the younger age groups. Soja (2015) researched the job satisfaction of older people aged 50 and over in Poland and identified the determinants: support, recognition, salary, and opportunity to develop new skills. Homocianu et al. (2020) discovered that core predictors of job satisfaction of Romanians aged 50 and over are a good atmosphere in the workplace and receiving recognition. The same Romanian population has job satisfaction peculiarities like the family's financial well-being or life satisfaction (Plopeanu et al., 2021). Nekola et al. (2018) found a significant positive impact of downward occupational mobility on the overall job satisfaction of older European workers.

An important relationship to job satisfaction is retirement or remaining in the labour market, which is often compared from a gender point of view. By researching ICT skills at work, job satisfaction, and early retirement, Cavapozzi et al. (2015) found that both genders, especially white collars, have higher job satisfaction and a lower probability of retiring if they are skilled in the usage of PC at work where it is required. Cantarero-Prieto et al. (2018) researched that older European workers with high job satisfaction, those with good quality of life or health, have less early retirement intentions. Axelrad and Mcnamara (2018) found that higher levels of job satisfaction make older workers decisions not to retire and remain to be employed. Women stay in the labour force and do not retire more than men, even when they are less job satisfied. Sandu and Jaba (2022), researching the gender job satisfaction gap of older employees in Europe, found that men achieve a higher level of satisfaction than women, which is conditioned by a poor working environment. Women consider salary and opportunities for skill development to be more important factors of satisfaction than men. Health is more important for men, marital status is more important for women, and recognition and fair treatment are also important for both sexes. According to Grmanova and Bartek (2022), the early retirement of older people in the European Union is strongly influenced by job satisfaction. Still, factors of physical job demands and the individuals' health limits within professional performance are not to blame.

Research on job satisfaction of disabled older workers aged 50-64 in Europe showed that they are less likely to be totally job satisfied but more satisfied with job characteristics than their non-disabled counterparts (Pagan, 2011). Moreover, self-employed persons are more satisfied than salaried workers regardless of disability (Pagan-Rodriguez, 2011). However, disabled workers are less satisfied in the public and private sectors (Pagan-Rodriguez et al., 2014).

**Methodology and research methods.** Job satisfaction reflects the quality of working conditions. It is an important motivational element that affects work performance and is a part of work potential. «Satisfied with job» has its specifics in individual age groups of workers. It changes because of the length of a worker's service. Thus, the relationship between job satisfaction and other factors must be detected for each age group separately. Our research is focused on the 50 and over age group and researches the influence of selected factors on «Satisfied with job».

A wide range of scientific studies, mostly at the national level, were devoted to researching the relationship «Satisfied with job» and various factors. The scientific study is focused on findings at the transnational level. For this reason, the international (transnational) questionnaire survey database SHARE, the Survey of Health, Aging, and Retirement in Europe, is used to detect the specifics dedicated to international research on people aged 50 and over. Another specificity of the research is that it is not focused only on whether the relationship exists but also on a closer specification of the relationship. That means where and how the relationship is expressed itself.

The factors among the dependence on «Job satisfaction» are selected based on the systematization of scientific studies. The scientific study is about to search and further specify the relationship between «Job satisfaction» and the factors:

- «Work allowed development of skills»;

- «Work had adequate salary»;
- «Work atmosphere».

The research is conducted at the international level. The scientific study aims to specify the influence of selected factors on job satisfaction among people aged 50 and over. The following tasks are carried out when processing the results of the questionnaire survey and fulfilling the goal:

- testing the dependence among job satisfaction and selected factors;
- in case of rejection of the null hypothesis about the independence of two factors, the intensity of dependence between them is to be expressed;
- by analyzing the contingency table, the relationship between job satisfaction and selected factors is to be more closely identified; and
- critical analysis, discussion, and formulation of conclusions.

The research is based on the SHARE international survey aimed at people in the age group 50 and over. Data are drawn from the «Work Quality» module. Data are used from the seventh survey wave (SHARE, 2022). The following countries are involved in the seventh wave survey: Austria, Germany, Sweden, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Israel, Czech Republic, Poland, Luxembourg, Hungary, Portugal, Slovenia, Estonia, Croatia, Lithuania, Bulgaria, Cyprus, Finland, Latvia, Malta, Romania, and Slovakia. «*The data collection of SHARE Wave 7 started in March 2017 and ended on 31 October 2017*» (Bergmann et al., 2019b, p. 15).

There are always monitored pairs of indicators in the questionnaire – «Satisfied with job» as a dependent random variable and a selected factor as an independent random variable. If the respondent did not answer any of the pair of questions, his or her answers are excluded from the analysis. The amount of sample file units is 38,437.

Dependent random variable: «Satisfaction with job» is from the SHARE survey wave 7 (Bergmann et al., 2019b; Share, 2022) variable WQ727 «All things considered, I was satisfied with the job as... Would you say you strongly agree, agree, strongly disagree?» Answer options in the questionnaire were: «Refusal», «Don't know», «Strongly agree», «Agree», «Disagree», and «Strongly disagree». Based on the given answer options, the dependent random variable is nominal.

Independent random variables, according to Bergmann et al. (2019b) are from the SHARE wave 7 questionnaire survey (Bergmann et al., 2019b; Share, 2022):

- WQ008 «I had an opportunity to develop new skills. (Would you say you...)»;
- WQ010 «Considering all my efforts and achievements, my salary was adequate. (Would you say you...)»;
- WQ012 «There was a good atmosphere between my colleagues and me. (Would you say you...)».

Answer options in the questionnaire are: «Refusal», «Don't know», «Strongly agree», «Agree», «Disagree» and «Strongly disagree». Based on the response options, the independent random variables are nominal.

Based on the formulated aim, the following research hypothesis and research questions in the research study:

- Research hypothesis: there is a relationship between job satisfaction and independent random variables.
- Research questions:
  - Is there a dependency between «Satisfied with job» and «Work allowed development of skills» and how is it expressed itself?
  - Is there a dependency between «Satisfied with job» and «Work had adequate salary» and how is it expressed itself?
  - Is there a dependency between «Satisfied with job» and «Work atmosphere» and how is it expressed itself?

To fulfill the main objective and research questions, the following tasks are performed:

- based on the research questions, statistical hypotheses are formulated - null and alternative hypotheses;
- the Chi-square test of independence tests null hypotheses. Contingency tables and expected frequencies are created. The fulfillment of the conditions for using the Chi-square test is verified. If the conditions for using the Chi-square test are not met, the data in the contingency table will be adjusted (combination of categories);
- based on the p-level, it is decided whether or not to reject the null hypothesis;
- in case of rejection of the null hypothesis:
  - express the intensity (strength) of the relationship using Cramér's V coefficient,

- using Pearson's adjusted standardized residuals are about to detect where the relationship appears;
  - the intensity of dependence for all selected random variables is compared, and it is detected which combination of factors has the greatest intensity of the relationship; and
  - for all combinations of factors, it is compared in which parts the relationships are expressed.

Statistica StatSoft and IBM SPSS statistical software is used to analyze the data and verify the statistical hypotheses.

The Chi-square ( $\chi^2$ ) test of independence is used to verify the dependence between nominal random variables. Part of it is the expression of empirical frequencies in a contingency table ( $n_{ij}$ ) and the subsequent calculation of expected frequencies ( $m_{ij}$ ). After finding that the conditions for using the Chi-square ( $\chi^2$ ) test of independence have been met, the values of the test statistic Chi-square ( $\chi^2$ ) of the independence test are expressed. Based on the p-value, a null hypothesis testing conclusion is made. If the alternative hypothesis is accepted (that is, the potential variables are dependent), the tightness of Cramér's V dependence is detected. With the help of Pearson's adjusted standardized residuals, it is detected where the relationships are expressed. The null hypothesis  $H_0$  is that both random variables are stochastically independent.

The alternative hypothesis  $H_1$  is: the random variables are dependent.

The test statistic  $\chi^2$  test, also called Pearson's Chi-square statistic, is expressed from empirical and expected frequencies.

The expected frequencies of  $m_{ij}$  are expressed from the empirical frequencies in the contingency table by the relation:

$$m_{ij} = \frac{n_{i.} n_{.j}}{n} \quad (1)$$

where  $n_{i.}$  is the sum of the i-th row,  $n_{.j}$  is the sum of the j-th column, and  $n$  is the range of the file.

The expression for Pearson's Chi-square statistic is:

$$\chi^2 = \sum_{i=1}^R \sum_{j=1}^S \frac{(n_{ij} - m_{ij})^2}{m_{ij}} \quad (2)$$

where  $R$  is the number of rows and  $S$  is the number of columns;  $n_{ij}$  are empirical, observed frequencies in the i-th row and j-th column of the contingency table;  $m_{ij}$  is the expected frequencies in the i-th row and in the j-th column expressed by formula (1).

Pearson's Chi-square statistic has  $(R-1)(S-1)$  degrees of freedom ( $df$ ). The prerequisite for using the Chi-square ( $\chi^2$ ) test of independence is that the expected frequencies do not fall below «the value of 5 in at least 80% of the boxes» and that the values of at least 1 occur in the other boxes (Rezankova, 2010, p. 84). According to Hendl (2015), if there are zero values in some fields, it proceeds to the analysis of the derived table, which is created by merging the categories with little occupancy.

The measure of the strength of the relationship in the contingency table (tightness of dependence) is expressed through Cramér's V:

$$V = \sqrt{\frac{\chi^2}{n(m-1)}} \quad (3)$$

where  $q = \min\{R, S\}$ , and  $n$  is the number of units.

The greater the value obtained at the same values of  $n$ ,  $R$ , and  $S$ , the stronger the dependence (Rezankova, 2010). Cramér's V has a value from the interval (0, 1). There is no relationship with a value of zero. With a value of one, the relationship is complete.

Pearson's adjusted standardized residuals are used to detect in which parts of the table the relationship is expressed. Those are standardized residuals that have a standardized normal distribution. It is true that if their absolute value is greater than 1.96, then it is possible «with 95% probability to be sure that in a given field the difference between the observed and expected abundance is statistically significant and therefore that the difference is not arisen by chance» (Vondrousova, 2019).

**Results.** The modal group of the random variable «Satisfied with job» is «Strongly agree». The relative frequency of the modal group is 50.88%. The null hypothesis  $H_0$  is: The random variables «Satisfied with job» and «Work allowed development of skills» are stochastically independent. The alternative hypothesis

1H1 is: The random variable «Satisfied with job» and «Work allowed development of skills» are dependent. The empirical frequencies are expressed in the first step (Table 1). The modal group of the random variable «Work allowed development of skills» is «Agree». The relative frequency of the modal group is 43.33%.

**Table 1. Contingency table «Work allowed the development of skills»**

Satisfied with job	Work allowed the development of skills						SUM
	Refusal	Don't know	Strongly agree	Agree	Disagree	Strongly disagree	
Refusal	17	1	0	1	0	2	21
Don't know	0	858	5	9	10	8	890
Strongly agree	5	49	7225	7998	2826	1454	19557
Agree	6	43	1911	7959	4380	1178	15477
Disagree	1	8	169	575	758	425	1936
Strongly disagree	0	4	47	116	136	253	556
SUM	29	963	9357	16658	8110	3320	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Based on the values in the contingency table, the expected abundances are expressed based on formula (1) for all empirical abundances (Table 2).

**Table 2. Expected values**

Satisfied with job	Work allowed the development of skills					
	Refusal	Don't know	Strongly agree	Agree	Disagree	Strongly disagree
Refusal	0.016	0.526	5.112	9.10	4.431	1.814
Don't know	0.671	22.298	216.659	385.71	187.785	76.874
Strongly agree	14.755	489.981	4760.904	8475.70	4126.422	1689.238
Agree	11.677	387.761	3767.679	6707.49	3265.564	1336.828
Disagree	1.461	48.505	471.295	839.03	408.486	167.222
Strongly disagree	0.419	13.930	135.351	240.96	117.313	48.025

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The proportion of expected frequencies with a value less than 5 is less than 20%, but the expected frequencies are less than 1. The condition for using the Chi-square test is not met. Therefore, under Hendl (2015), the answers «Refusal» and «Don't know» are combined in both random variables (Table 3).

**Table 3. Contingency table «Work allowed the development of skills»- connection «Don't know» and «Refusal»**

Satisfied with job	Work allowed the development of skills					SUM
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	
Don't know+Refusal	876	5	10	10	10	911
Strongly agree	54	7225	7998	2826	1454	19557
Agree	49	1911	7959	4380	1178	15477
Disagree	9	169	575	758	425	1936
Strongly disagree	4	47	116	136	253	556
SUM	992	9357	16658	8110	3320	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The expected frequencies are expressed again (Table 4), and it is verified again whether the conditions for using the Chi-square test are met. After merging the answers «Refusal» and «Don't know», the smallest expected frequency is 14.3495, which means none of the expected values is less than 1. Both conditions of using the chi-square test are fulfilled. The value of Pearson's Chi-square and p-level is calculated in the next step. Pearson's Chi-square value is 37746.71. The p-level is 0.000. The null hypothesis 1H0 is rejected. The alternative hypothesis 1H1 is accepted. There is a dependence between the variables «Satisfied with job» and «Work allowed development of skills». Cramér's V is 0.496.

**Table 4. Expected values «Work allowed the development of skills»- connection «Don't know» and «Refusal»**

Satisfied with job	Work allowed the development of skills					SUM
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	
Don't know+Refusal	23.5115	221.771	394.81	192.216	78.688	911.00
Strongly agree	504.7362	4760.904	8475.70	4126.422	1689.238	19557.00
Agree	399.4376	3767.679	6707.49	3265.564	1336.828	15477.00
Disagree	49.9652	471.295	839.03	408.486	167.222	1936.00
Strongly disagree	14.3495	135.351	240.96	117.313	48.025	556.00
SUM	992.0000	9357.000	16658.00	8110.000	3320.000	38437.00

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The tightness of the dependency is medium. The adjusted standardized residuals are shown in Table 5. Based on them, it is possible to determine where the relationship is expressed. Based on the values of Pearson's adjusted standardized residuals, it is concluded that all possible combinations of answers are statistically significant with 95% probability. Respondents answered both questions in the same statistically significant manner, more than what would correspond to the assumed independence of both random variables. The case with two other combinations of answers, namely:

1. «Agree» with the random variable «Satisfied with job» and «Disagree» with the random variable «Work allowed development of skills».
2. «Disagree» with the random variable «Satisfied with job» and «Strongly disagree» with the random variable «Work allowed development of skills» are the same.

**Table 5. Standardized/Adjusted Residual**

Satisfied with job	Work allowed the development of skills				
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree
Don't know+Refusal	175.8/180.3	-14.6/-16.9	-19.4/-26	-13.1/-15	-7.7/-8.2
Strongly agree	-20.1/-29	35.7/58.6	-5.2/-9.8	-20.2/-32.5	-5.7/-8.5
Agree	-17.5/-23	-30.2/-45	15.3/26.3	19.5/28.4	-4.3/-5.9
Disagree	-5.8/-6.0	-13.9/-16.4	-9.1/-12.4	17.3/20	19.9/21.4
Strongly disagree	-2.7/-2.8	-7.6/-8.8	-8.1/-10.8	1.7/2.0	29.6/31.2

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Respondents answered both questions statistically less than what would correspond to the assumed independence of both random variables for other combinations of answers. The null hypothesis 2H0: the random variable «Satisfied with job» and «Work had adequate salary» are stochastically independent. The alternative hypothesis 2H1 is: the random variable «Satisfied with job» and «Work had adequate salary» are dependent. Table 6 demonstrates the empirical frequencies.

**Table 6. Contingency table «Work had adequate salary»**

Satisfied with job	Work had adequate salary						SUM
	Refusal	Don't know	Strongly agree	Agree	Disagree	Strongly disagree	
Refusal	17	2	0	1	0	1	21
Don't know	0	857	3	13	10	7	890
Strongly agree	11	66	5309	9184	3565	1422	19557
Agree	8	102	988	8001	5145	1233	15477
Disagree	1	7	79	437	879	533	1936
Strongly disagree	0	5	36	93	131	291	556
SUM	37	1039	6415	17729	9730	3487	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The modal group of the random variable «Work had adequate salary» is «Agree». The relative frequency of the modal group is 46.12%. The expected frequencies are expressed in Table 7 based on the values in the contingency table and based on formula (1).

**Table 7. Expected values**

Satisfied with job	Work had adequate salary					
	Refusal	Don't know	Strongly agree	Agree	Disagree	Strongly disagree
Refusal	0.02021	0.568	3.505	9.69	5.316	1.905
Don't know	0.85673	24.058	148.538	410.51	225.296	80.741
Strongly agree	18.82584	528.650	3263.994	9020.63	4950.688	1774.209
Agree	14.89838	418.363	2583.057	7138.74	3917.871	1404.072
Disagree	1.86362	52.332	323.112	892.98	490.082	175.634
Strongly disagree	0.53521	15.029	92.794	256.45	140.747	50.440

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The proportion of expected frequencies with a value less than 5 is less than 20%, but the expected frequencies are less than 1. The condition for using the Chi-square test is not met. Therefore, under Hendl (2015), the answers «Refusal» and «Don't know» are combined in both random variables (Table 8).

**Table 8. Contingency table «Work had adequate salary»- connection «Don't know» and «Refusal»**

Satisfied with job	Work had adequate salary					
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	SUM
Don't know+Refusal	876	3	14	10	8	911
Strongly agree	77	5309	9184	3565	1422	19557
Agree	110	988	8001	5145	1233	15477
Disagree	8	79	437	879	533	1936
Strongly disagree	5	36	93	131	291	556
SUM	1076	6415	17729	9730	3487	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Expected frequencies are repeatedly expressed (Table 9), and it is detected whether the conditions for using the Chi-square test are met.

**Table 9. Expected values «Work had adequate salary»- connection «Don't know» and «Refusal»**

Satisfied with job	Work had adequate salary					
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	SUM
Don't know+Refusal	25.502	152.043	420.20	230.612	82.646	911.00
Strongly agree	547.476	3263.994	9020.63	4950.688	1774.209	19557.00
Agree	433.261	2583.057	7138.74	3917.871	1404.072	15477.00
Disagree	54.196	323.112	892.98	490.082	175.634	1936.00
Strongly disagree	15.565	92.794	256.45	140.747	50.440	556.00
SUM	1076.000	6415.000	17729.00	9730.000	3487.000	38437.00

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

None of the values is less than 1 after combining the answers «Refusal» and «Don't know». Both conditions for using the test are fulfilled. Pearson's Chi-square value and the p-level are calculated in the next step.

Pearson's Chi-square value is 35849.34. The p-level is 0.000. The null hypothesis  $H_0$  is rejected. The alternative hypothesis  $H_1$  is accepted. There is a dependence between the variables «Satisfied with job» and «Work had adequate salary». Cramer's V is 0.483. The tightness of the dependence is medium, and it is lower than in the case of the random variable «Work allowed development of skills». Subsequently, it is detected where the relationship is expressed itself. Suppose the respondents were not satisfied with their work (answers: «Disagree» or «Strongly disagree»). In that case, it is assumed that they will consider their salary as adequate less often than expected (answers: «Disagree» or «Strongly disagree») and vice versa. The assumption is verified based on the adjusted standardized residuals in Table 10. Based on the values of Pearson's adjusted standardized residuals (Table 10), it is concluded that all possible combinations of answers are statistically significant.

**Table 10. Standardized Residual/ Adjusted Residual**

<b>"Work had adequate salary"</b>					
<b>Satisfied with job</b>	<b>Don't know+Refusal</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Don't know+Refusal	168.4/172.9	-12.1/-13.4	-19.8/-27.3	-14.5/-17	-8.2/-8.7
Strongly agree	-20.1/-29.1	35.8/56.0	1.7/3.3	-19.7/-32.5	-8.4/-12.5
Agree	-15.5/-20.4	-31.4/-44.5	10.2/18	19.6/29.4	-4.6/-6.2
Disagree	-6.3/-6.5	-13.6/-15.3	-15.3/-21.3	17.6/20.9	27/29
Strongly disagree	-2.7/-2.7	-5.9/-6.5	-10.2/-14	-0.8/-1	33.9/35.8

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Respondents answered both questions in the same statistically significant manner more than what would correspond to the assumed independence of both random variables. The same is the case with three combinations of answers, namely:

- 1) «Strongly agree» with the random variable «Satisfied with job» and «Agree» with the random variable «Work had adequate salary»;
- 2) «Agree» with the random variable «Satisfied with job» and «Disagree» with the random variable «Work had adequate salary»;
- 3) «Disagree» with the random variable «Satisfied with job» and «Strongly disagree» with the random variable «Work had adequate salary».

For other combinations of answers, respondents answered both questions statistically significantly less than what would correspond to the assumed independence of both random variables. The exception is the combination «Strongly disagree» with the random variable «Satisfied with job» and «Disagree» with the random variable «Work had adequate salary».

The null hypothesis 3H0: the random variable «Satisfied with job» and «Work atmosphere» are stochastically independent. Alternative hypothesis 3H1 is: the random variable «Satisfied with job» and «Work atmosphere» are dependent. Empirical frequencies are in Table 11. The random variable «Work atmosphere» modal group is «Agree». The relative frequency of the modal group is 48%.

**Table 11. Contingency table «Work atmosphere»**

<b>Work atmosphere</b>							
<b>Satisfied with job</b>	<b>Refusal</b>	<b>Don't know</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>SUM</b>
Refusal	17	2	0	2	0	0	21
Don't know	0	854	14	18	3	1	890
Strongly agree	32	114	11446	7239	547	179	19557
Agree	27	124	4503	9904	755	164	15477
Disagree	6	24	470	1063	295	78	1936
Strongly disagree	2	11	173	226	77	67	556
SUM	84	1129	16606	18452	1677	489	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

The proportion of expected frequencies with a value less than 5 is less than 20%, but the expected frequencies are less than 1. The condition for using the Chi-square test is not met. The expected frequencies are expressed in Table 12 based on the empirical frequencies in the contingency table and based on formula (1).

**Table 12. Expected values**

<b>"Work atmosphere"</b>						
<b>Satisfied with job</b>	<b>Refusal</b>	<b>Don't know</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Refusal	0.04589	0.617	9.07	10.08	0.916	0.2672
Don't know	1.94500	26.142	384.51	427.25	38.831	11.3227
Strongly agree	42.73976	574.443	8449.24	9388.50	853.269	248.8064
Agree	33.82335	454.602	6686.55	7429.86	675.259	196.9002
Disagree	4.23092	56.866	836.41	929.39	84.467	24.6300
Strongly disagree	1.21508	16.331	240.21	266.91	24.258	7.0735
SUM	84.00000	1129.000	16606.00	18452.00	1677.000	489.0000

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

After combining the answers «Refusal» and «Don't know», none of the values is less than 1. Both conditions of using the test are fulfilled. Pearson's Chi-square and p-level are calculated in the next step. In accordance with Hendl (2015), the answers «Refusal» and «Don't know» are combined in both random variables (Table 13).

**Table 13. Contingency table «Work atmosphere»- connection «Don't know»+ «Refusal»**

Satisfied with job	Work atmosphere					SUM
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	
Don't know+Refusal	873	14	20	3	1	911
Strongly agree	146	11446	7239	547	179	19557
Agree	151	4503	9904	755	164	15477
Disagree	30	470	1063	295	78	1936
Strongly disagree	13	173	226	77	67	556
SUM	1213	16606	18452	1677	489	38437

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Expected frequencies are repeatedly expressed (Table 14), and it is detected whether the conditions for using the Chi-square test are met. Pearson's Chi-square value is 30913.84, and the p-level is 0.000. The null hypothesis 3H0 is rejected. The alternative hypothesis 3H1 is accepted.

**Table 14. Expected values «Work atmosphere»- connection «Don't know» and «Refusal»**

Satisfied with job	Work atmosphere					SUM
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree	
Don't know+Refusal	28.749	393.58	437.33	39.747	11.5898	911.00
Strongly agree	617.182	8449.24	9388.50	853.269	248.8064	19557.00
Agree	488.425	6686.55	7429.86	675.259	196.9002	15477.00
Disagree	61.097	836.41	929.39	84.467	24.6300	1936.00
Strongly disagree	17.546	240.21	266.91	24.258	7.0735	556.00
SUM	1213.000	16606.00	18452.00	1677.000	489.0000	38437.00

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

There is a dependence between the variables «Satisfied with job» and «Work atmosphere». Cramér's V is 0.448. The tightness of the dependency is medium, and within the comparison of all three dependencies, it is the lowest. By expressing the adjusted standardized residuals, it is detected where the relationship is expressed itself (Table 15).

**Table 15. Standardized Residual / Adjusted Residual**

Satisfied with job	"Work atmosphere"				
	Don't know+Refusal	Strongly agree	Agree	Disagree	Strongly disagree
Don't know+Refusal	157.5/161.9	-19.1/-25.7	-20/-28	-5.8/-6.0	-3.1/-3.2
Strongly agree	-19/-27.5	32.6/61.7	-22.2/-43.9	-10.5/-15.3	-4.4/-6.4
Agree	-15.3/-20.1	-26.7/-45.8	28.7/51.5	3.1/4.1	-2.3/-3.1
Disagree	-4/-4.1	-12.7/-17.3	4.4/6.2	22.9/24	10.8/11.1
Strongly disagree	-1.1/-1.1	-4.3/-5.8	-2.5/-3.5	10.7/11	22.5/22.8

Sources: developed by the authors on the basis of (Borsch-Supan et al., 2013; Bergmann et al., 2019a; Bergmann et al., 2019b; Borsch-Supan, 2022; SHARE, 2022).

Based on the values of Pearson's adjusted residuals, it is concluded that 14 combinations of answers out of 15 possible are statistically significant. Respondents answered both questions in the same statistically significant manner, more than what would correspond to the assumed independence of both random variables. The same is true for four combinations of answers, namely:

1) «Disagree» with the random variable «Satisfied with job» and «Agree» with the random variable «Work atmosphere»;

2) «Agree» with the random variable «Satisfied with job» and «Disagree» with the random variable «Work atmosphere»;

3) «Strongly Disagree» with the random variable «Satisfied with job» and «Disagree» with the random variable «Work atmosphere»;

4) «Disagree» with the random variable «Satisfied with job» and «Strongly disagree» with the answer «Work atmosphere».

Respondents answered both questions statistically less than what would correspond to the assumed independence of both random variables for other combinations of answers.

As the dependence of «Satisfied with job» with all selected factors is confirmed, it might be concluded, like Sutekova (2020) claims, that «Satisfied with job» is broad-spectrum and dependent on many factors. Surprising is the finding that the strongest tightness of dependence is not expressed in the case of the random variables «Satisfied with job» and «Work had adequate salary» but in the case of the random variables «Satisfied with job» and «Work allowed development of skills». Dependency is pointed to the importance of the development of skills among workers. An important finding in further research would be to verify the intensity of dependence «Satisfied with job» and «Work allowed development of skills» also among workers in other age groups and compare the results with the age group 50 and over.

The results of the scientific study show that the respondents answered consistently statistically significantly more than what would correspond to the assumed independence of both random variables in all three cases simultaneously. It follows that if employers are trying to make their employees significantly «Satisfied with job», then in addition to adequate remuneration, they must choose procedures that lead to employees also being significantly satisfied with the «Work atmosphere» and the possibilities to develop skills.

**Conclusions.** The scientific study deals with job satisfaction among people aged 50 and over. The scientific study aims to specify the influence of «Satisfied with job» and the factors «Work allowed development of skills», «Work had adequate salary» and «Work atmosphere». SHARE, the Survey of Health, Aging, and Retirement in Europe, which has a transnational dimension, is used to detect the specification of the relationship. 38437 responses are analyzed. To achieve the goal, the following methods are used: Chi-square test, Cramér's V, and analysis of contingency tables.

The strongest tightness of dependence is expressed in the case of random variables in the case of the random variables «Satisfied with job» and «Work allowed development of skills». The scientific study results showed that the respondents answered consistently statistically significantly more than what would correspond to the assumed independence of both random variables in all three cases of random variables. It follows that if employers are trying to make their employees significantly «Satisfied with job», then in addition to adequate salary, they must choose procedures that lead to employees also being significantly satisfied with the «Work atmosphere» and the possibilities to develop skills. The significance of the conclusions obtained while fulfilling the objective is broad. One of the implications is that it will provide employers and decision-makers with important findings about the factors that influence job satisfaction. Appropriately used management methods and interventions based on such knowledge can influence the quality of work and work performance and fully utilize work potential.

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**Єва Грманова**, доцент, PhD., Університет Олександра Дубчека в Тренчині, Словаччина

**Йозеф Бартек**, Університет Олександра Дубчека в Тренчині, Словаччина

#### **Задоволеність умовами праці як ключова детермінанта її якості**

Поточні демографічні тенденції та прогнози населення свідчать про те, що пошук підходів, які сприяють збереженню працівників на роботі навіть після досягнення пенсійного віку є визначальним фактором конкурентоспроможності як країни, так і підприємства. Рівень задоволення роботою є одним з найважливіших факторів, що впливає на продовження працездатного віку робітників. При цьому авторами зазначено, що старші вікові групи є зростаючою робочою силою національних економік та Європейського Союзу. Існуючі наукові дослідження головним чином фокусуються на взаємозв'язку між рівнем задоволеністю роботою та такими факторами як вік, стать, особливі потреби, вміння або заробітна плата. Метою цього дослідження є визначення впливу факторів «Задоволеність роботою», «Розвиток навичок», «Заробітна плата» та «Робоча атмосфера» на якість праці для групи працівників віком 50 років і старше. Для виявлення специфікації зв'язку використано дослідження SHARE (Опитування щодо здоров'я, старіння та виходу на пенсію в Європі, яке має транснаціональний вимір). У рамках дослідження застосовано критерій хі-квадрат для виявлення залежності, критерій Крамера V для визначення тісноти залежності, а також скориговані стандартизовані залишки для визначення вираженого зв'язку. Результати дослідження свідчать про те, що найсильнішою є тіснота зв'язку у випадку випадкових величин «Задоволеність роботою» та «Розвиток навичок». Це свідчить про важливість розвитку трудових навичок серед працівників. Автори прийшли до висновку про те, що для підвищення «Задоволеності роботою» працівників, крім адекватної винагороди, роботодавці повинні впроваджувати політики та інструменти, які забезпечують формування позитивного робочого клімату в колективі та розвиток власних навичок та компетенцій. Авторами зазначено, що отримані результати дослідження дають роботодавцям та особам, які приймають рішення, важливі висновки про фактори, що впливають на задоволеність роботою працівників. Правильно використані методи та інструменти управління, засновані на таких знаннях, можуть позитивно вплинути на якість та результативність роботи, а також ефективне використання трудового потенціалу підприємства.

**Ключові слова:** розвиток навичок, задоволеність умовами праці, старші працівники, заробітна плата, якість роботи, атмосфера робочого середовища.