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THE IMPACT OF COMPETENCIES ON WAGES OF EMPLOYEES IN THE CONTEXT OF EMPLOYERS' EXPECTATIONS – POLAND IN THE LIGHT OF EU COUNTRIES

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Abstract

Motivation: Competencies are an important feature from the perspective of both the employer and the job candidate. On the one hand, the employer is looking for candidates with specific competencies on the market and is willing to pay a specific salary for them. On the other hand, from the perspective of the job candidate, it is important to know which compe-

tencies are the best paid. In this way, the job candidate can direct their professional development in order to gain these competencies. Hence, research was undertaken to identify the best paid competencies.

Aim: The purpose of this article is to identify the competencies of employees that determine obtaining a salary at least at the level of the average salary in the economy.

Results: Based on individual data from Poles derived from the Human Capital Balance for 2021 (partially 2022), three logistic regression models were estimated: for the entire sample, for women, and for men. Significant variables for all models are age, education level, as well as willingness to work unusual hours required by the employer, willingness to travel frequently. It is worth considering which characteristics and competencies are specific to each model and positively influence the receipt of a high salary. Thus, in the case of the general model, gender, possession of a category B driver's license and the ability to use a computer, tablet and smartphone turn out to be important. In the case of women, the ability to use specialized computer programs, as well as to work with people of different nationalities, influences higher salaries. For men, the competency that gives them the opportunity for higher salaries is analyzing information and drawing conclusions.

Keywords: *competencies, wages, logit model, Poland*
JEL: *J24;E24; C53*

1. Introduction

As is well known, the human resource is one of the key ones in an organization. Using their knowledge, skills, experience or attitudes, employees can contribute to the achievement of the company's goals, thus often affecting its profit. Thus, it can be supposed that the more qualified employees, the greater the likelihood of success for the organization.. Therefore, it now seems important to shape the image of a good employer (employer branding), whose task is to attract potential employees and retain current ones. One of the key elements of this process is the appropriate formation of the organization's compensation policy.

Given that it is often wage factors that have a greater impact on employee motivation, and that the most important element of wage motivation is base pay (Mierzwa, 2023, p. 299), it is worth considering what factors determine its amount. Therefore, this article attempts to fill the research gap of determining the relationship between individual competencies and the amount of remuneration received.

The purpose of this article is to identify the competencies and individual features that determine obtaining a salary at least at the level of the average salary in the economy. The realization of such a goal can be beneficial to both sides of the labor market. From the point of view of employees or job candidates, the identification of highly valued competencies can indicate the directions of development for these individuals. In turn, from the point of

view of employers, it will be possible to verify whether the valuation of competencies in a given company is the same as the market approach.

The analysis of employee remuneration should begin by solving the definitional problems. One of them is the concept of wages. According to the definition of the Central Statistical Office, 'wages and salaries include monetary payments paid to employees or other individuals (i.e., gross wages and salaries), representing expenditures incurred by employers to pay for work performed, regardless of the source of their financing (from own or reimbursed funds) and regardless of the basis of the employment relationship or other legal relationship or legal action on the basis of which the work or service is performed' (Kamorska et al., 2020, p. 20).

This article assumes that the level of remuneration reflects the quality of human capital. The higher the quality of human capital, the higher the salary. Creating a relationship between these elements in an organization can give an important incentive for candidates and those already employed to increase their competencies (Bilian et al., 2017, p. 213). Of course, not all competencies are valued in the same way. It is value to emphasize, that competences can be defined 'as broader attributes that refer to an ability to use knowledge, skills social and/or methodological abilities in work or study situations and in professional and personal development. Competence is not limited to the cognitive area; it also encompasses functional/technical areas, interpersonal skills and values'(European Commision). Therefore, in the empirical part of this paper, they will be divided into three groups (Grzybowska, Łupicka, 2018, pp. 40–41):

- social (e.g., communication skills, ability to work in a group),
- technical (e.g., IT knowledge and skills, data and information processing),
- managerial (e.g., creativity, conflict resolution, decision-making).

2. Literature review

The literature review focus on employers' expectations of employees in selected European Union countries. The selection of countries base on data availability, and the analysis includes Poland, Romania, Latvia, and Spain. Particular attention was paid to the types of competencies expected. This will make it possible to determine what kinds of skills are in demand in national labour markets. In the case of Poland, these expectations will be linked to the subsequent model results to examine whether the desired competencies translate into higher wages. Polish employers' expectations of their employees can be determined on the example of a survey conducted among 32 companies in the SME sector in the Mazowieckie Voivodeship. The survey questionnaire used in the study was addressed to owners or top managers.

Based on the results, it can be concluded that from rank-and-file employees, employers mainly expected the ability to work with co-workers, a great deal of knowledge as a result of work experience and the ability to cooperate with superiors. Managers were also expected to have knowledge as a result of experience, the ability to work with co-workers, but also the ability to handle stressful situations, the ability to set goals, or knowledge of the industry (Dymek-Maciejewska, 2018, p. 16).

Another survey included 3,646 subjects, which identified competencies desirable from the perspective of the labor market. The implementation of this survey took place in 2021-2022. Based on the opinions of employers, the most important qualities include: responsibility for work, time management, ability to organize work, willingness to learn new things and communication skills. Among the qualities that were considered least important were: artistic ability, assembly and repair of machinery and equipment, performance of complex mathematical calculations and willingness to travel frequently. For managerial and specialized positions, employers also expected a college degree (Górniaket al., 2022, pp. 47, 50).

The next country discussed is Romania. One of the surveys is the one conducted in 2019 on a sample of 80 respondents (including CEOs, human resources specialists) involved in conducting recruitment and selection processes in their organizations. Based on its results, it can be concluded that among personal qualities, employers rated commitment to work and responsibility and ethical behavior highest. Referring to knowledge and skills, respondents valued to the highest degree a proactive attitude towards work, digital competence, communication skills, teamwork, or communication in a modern language (Staiculescuet al., 2021, pp. 191–192).

Another survey of employers' expectations in Romania was conducted in 2014 and included an analysis of job advertisements for one hundred managerial positions regardless of industry. Based on the results of the survey, it can be concluded that the most frequently sought qualities and competencies were: work experience, higher education, English language skills, communication skills, computer skills, planning and organizational skills. Among the competencies sought the least frequently were: power of persuasion, objectivity and decisiveness, ability to work with budgets, willingness to work for a company for a longer period of time, experience in working in a multicultural team (Matei, 2015, pp. 541–542).

In the case of Latvia, one study worth noting is the one in which the authors asked employers to rate the importance of particular skills, knowledge and attitudes of employees. Based on the results, it can be concluded that the most important things for employers are professional knowledge, knowledge of the Latvian language, purposefulness in action, attention to order and organization of work, ability to cooperate, and ability to plan and control tasks (Kantane, 2015, p. 227).

Another survey included 336 employers. They were asked to determine the importance of specific competencies. In their opinion, loyalty to the company, the ability to plan working time, the ability to work independently, or the ability to cooperate are important. Knowledge and skills, willingness to improve skills, creativity and initiative were found to be important factors, but to a much lesser extent (Sloka et al., 2015, p. 71).

According to Spanish employers selected as recruitment and selection professionals, key competencies include the ability to argue in an interview, communication skills, problem solving, project presentation, time management, learning skills, the ability to control one's emotions, the ability to work under pressure, commitment at work, leadership, among others (Cabreraet al., 2016, pp. 74–75).

It is also worth citing a survey targeting 806 employees in the Spanish branch of a multinational service company with about 6,000 employees. The aim of the survey was to determine what competencies the best employees (talents) possess and whether these competencies are gender-specific. The results of the study confirm that the best employees show initiative, are willing to continue learning and are able to think outside the box. For men, willingness to learn is given significant weight, while the other competencies are more important for women (De Haroet al., 2023, p. 227).

Comparing the expectations of employers in selected countries, it can be seen that by far the most common expectation of employers was for employees to have the ability to organize work (in all countries), as well as the willingness to learn, the ability to cooperate and communication skills (in three countries). Less frequently, employers expected expertise, experience, knowledge of the industry or taking responsibility for work (two countries). It can be concluded that the desired skills depend on the position to be filled. In the case of filling production positions, expertise is important, while in the case of managers, attention is directed toward social (soft) skills.

3. Methods

The data used to estimate the parameters of the models came from the Human Capital Survey conducted in 2021. According to the adopted methodology, the survey included 2,529 people from Poland. The sampling is stratified, proportional taking into account the sub-region of the CSO, the size of the locality and gender combined with age (Antosz, 2018, pp. 13-14).

Although the data contained a total of 2,529 observations, there were 1,611 working people. In addition, some people did not answer the questions, resulting in missing data. However, the analysis showed that these gaps were random in nature, so it was decided to remove some of the observations, bringing the final sample to 1159 people. The article uses a logit model that

belongs to the group of qualitative models. This model has the form (Walesiak, 2011, pp. 101–103):

$$\ln \frac{p_i}{1-p_i} = x'_i \beta \tag{1}$$

where:

$\ln \frac{p_i}{1-p_i}$ – the logarithm of the odds ratio of accepting and not accepting the value of 1 by the dependent variable;
x'_i – vector of independent variables;
β – vector of model parameters.

Using a logit model, the probability that the characteristics adopted for the study will contribute to a salary[1] at the level of the average salary in the national economy in 2021 was estimated (PLN 4083.44 net[2]) and higher (Sury M.,2025). The choice of this year was arbitrary. The measure itself, on the other hand, was adopted for the study due to its nature of viz. income comparability. This value can serve as a benchmark in the process of comparing a person's income with that of other working people. Its advantage is its universality over, for example, quartile values, which makes it a more intuitive measure in the aforementioned comparisons. Since much of the salary data was defined by ranges, it was assumed that the first range corresponding to the average salary is the range of 4-5 thousand zlotys net. The dependent variable is binary and takes the value of 0 or 1:

$$y = \begin{cases} 1, & a\ wage\ equal\ to\ or\ higher\ than\ the\ average\ wage\ in\ the\ economy \\ 0, & a\ wage\ lower\ than\ the\ average\ wage\ in\ the\ economy \end{cases}$$

Table 1 shows the explanatory variables used to estimate the logit model. They were divided into three categories: socio-demographic characteristics, the nature of the place of residence and characteristics of human capital. The first group distinguished between such characteristics as gender, age, marital status, disability and having children. The next category distinguished between groups of provinces divided into 6 communities. In the last group, education, foreign language skills, possession of a driver's license and additional competencies (technical, managerial and social) were distinguished.

Table 2 shows selected characteristics of the study samples used to estimate the three logit models. The first model covered the entire survey sample, while the next two models applied to women and men, respectively.

1 Salary is understood as the amount received "in hand' from all types of work performed.

2 Net income can vary depending on the person and his fiscal and personal situation.

Taking into account the following statistics, a respondent profile can be created for each model:

- model for the entire surveyed population – male, aged over 50, married, with a university education, living in the eastern region;
- model for women – married woman over 50, with a university education, residing in the eastern region;
- the model for men – a married resident of the eastern region, aged over 50, with a post-secondary and secondary vocational education.

4. Results

Using the explanatory variables presented in Table 1, a logit model was estimated for the entire research sample. In the next step, a model with significant independent variables was estimated. The stepwise (a posteriori) method was used for elimination. The significance level of the variables was assumed to be α=0.1. Further models were estimated in the same way for women and men, respectively, but in their case the variable characterizing gender was omitted.

From a cognitive value perspective, it is worth focusing on two elements – the marginal effect and the odds ratio. Marginal effects are interpreted as the impact of an independent variable on the probability that the dependent variable takes the value of 1. An example of such an interpretation, in the context of the model for the entire sample, is gender. Being a woman decreases the probability of earning a salary at the national average level by 29.9%.

Another measure is the odds ratio, which indicates how a one-unit change in an independent variable affects the odds ratio – that is, the ratio of the probability of success to the probability of failure. In the model for the entire sample, regarding competency k19 (willingness to take responsibility for completing tasks), possessing this skill increases the odds of receiving a salary at the national average level by 111.4%.

Table 3. shows the results of estimating models with significant independent variables. Based on the data in the table, it can be seen that the characteristics positively influencing the probability under study for the entire sample include: age 25 and over, possession of a category B or category D1/D driver's license, residence in the southern region, knowledge of foreign languages other than English and German, higher education, as well as competence in using a computer, tablet, smartphone, and willingness to take responsibility for the performance of tasks and coordinate the work of others. Willingness to travel frequently and willingness to work unusual hours required by the employer are also important. Analyzing the listed characteristics, one can see that they are often required for managerial positions,

which are associated with higher salaries. Among the characteristics that reduce the chance of a high salary should be distinguished: an established disability, basic vocational education, female gender, as well as the performance of simple calculus and artistic abilities. The first two characteristics mentioned may indicate that people with disabilities or those with vocational education are likely to be employed at lower rates, e.g., manufacturing positions, which are often lower paid. It is worth noting that a factor that reduces the chance of high pay is female gender. This may suggest a different problem cited in the literature, namely gender discrimination.

In the case of the model for women, qualities positively influencing the probability studied include: age 30 and over, knowledge of other foreign languages (except English and German), higher education, as well as the ability to use specialized computer programs, to cooperate with people of different nationalities. Also positively influenced by willingness to travel frequently and willingness to work unusual hours required by the employer. On the other hand, the probability studied is negatively affected by basic vocational education, the ability to assemble and repair machinery and technical equipment, and to perform simple calculus. In the case of the female population, one can see a certain correlation. Namely, characteristics that increase the probability of a high salary are usually required for managerial positions, while characteristics that decrease this probability may suggest lower positions in the hierarchy of the company.

The results of the estimation of the last model for men indicate that the factors that positively affect the studied probability are: age 25 or older, residence in the southern region, possession of a D1/D driver's license, higher education, ability to analyze information and draw conclusions, coordinate the work of others, willingness to take responsibility for the performance of tasks, as well as willingness to travel frequently and willingness to work unusual hours required by the employer. Characteristics that lower the probability studied include: basic vocational education, an established disability, as well as artistic ability and easy ability to relate to people. While disability or vocational education are unquestionable, the negative impact of social skills on achieving higher-than-average salaries is somewhat surprising. However, this may stem from the fact that individuals with highly developed social skills consciously choose professions that rely on interpersonal contacts, which are associated with lower salaries. Therefore, individuals with highly developed social skills may value interpersonal relationships more highly than high salaries. Considering the highest-paid industries, such as IT, finance, or engineering, technical skills should be emphasized, as they are more important than social skills. In the case of the male collective, similar trends can be observed as in the other groups. Namely, the traits that increase the likelihood of a high salary are related to managerial positions. A certain exception may be the possession of a cat D driver's license, since

this feature is related to the nature of the work, not the position in a particular company. As you can see, bus drivers in Poland are well compensated.

It is also worth referring to groups of competencies. Based on the results of all models, it is clear that employers pay particular attention to technical competencies. In the case of the general model, managerial competencies are more important than social competencies. Referring to the model for men, the amount of social competencies statistically significant is the same as the amount of managerial competencies. Interestingly, in the case of the model for women, completely statistically insignificant, from the point of view of the probability studied, turned out to be managerial competencies. Which means that employers focus mainly on technical and social competencies when offering them higher salaries. This may indicate a different problem raised in the literature, namely the lack of gender parity. Managerial positions are more often held by men than by women.

The verification of econometric models is also an important element. Table 4. and Figure 1. show selected measures for determining the fit of models to real data. One of the indicated measures is the likelihood ratio test, which provides information about the overall significance of the model. The null hypothesis in this test assumes that all parameters associated with the explanatory variables are equal to zero, while the alternative hypothesis states that at least one of the parameters differs from zero:

$$\begin{cases} H_0: \beta_0 = \beta_1 = \beta_2 = \ldots = \beta_j = 0 \\ H_1: \beta_0 \neq \beta_1 \neq \beta_2 \neq \ldots \neq \beta_j \neq 0 \end{cases}$$

The test statistic for the likelihood ratio test is given by:

$$LR = 2(\ln_{LUR} - \ln_{LR})$$

where:

L_{UR} – the likelihood function value for the full model,

L_R – the likelihood function value for the model consisting only of the intercept.

The above statistic follows a chi-squared (χ^2) distribution with k degrees of freedom.

One of the commonly considered measures of fit for econometric models is the McFadden R-square. This measure is based on the value of the likelihood function and is expressed by the formula:

$$R^2_{McFaddena} = 1 - \frac{\ln L_{UR}}{\ln L_R}$$

where:
L_{UR} – the likelihood function value for the full model,
L_R – the likelihood function value for the model consisting only of the intercept.

The values of this measure for a large amount of micro data are usually low (Stasiura, Konstanty, 2015, p. 139), which can also be seen from the estimated models.

Measures that reflect well the accuracy of the models are overall accuracy and the odds ratio. The former is calculated as the ratio of correctly predicted predictions to the total number of observations in the sample (Kufel, 2011, p. 147):

$$TA = \frac{n_{00}+n_{11}}{N} * 100, \quad (2)$$

where:
TA – total accuracy,
n_{00} –number of correctly predicted 'zeros',
n_{11}– number of correctly predicted 'ones',
N – total number of observations in the sample.
The odds ratio is calculated as follows (Śliwicki, Ręklewski, 2014, p. 83):

$$IRS = \frac{n_{11}*n_{00}}{n_{01}*n_{10}},$$

where:
IRS – odds ratio, n01 – number of incorrectly predicted 'zeros',
n10 – number of incorrectly predicted 'ones'.

Based on the data in Table 4, it can be seen that all models have high forecast accuracy. Due to the lack of balanced samples, the total accuracy was calculated taking into account the threshold point (c), which is calculated as the share of 'ones' in the total sample (Grabowski, 2019, p. 48). In the case of the general model, c = 0.379, in the women's model c = 0.255, and for men c = 0.509. When considering the accuracy of the predictions, it can be seen that for the general model and for men it is very similar. A lower result was recorded for the model for women, nevertheless, the model is still much more accurate than random classification (the value of overall accuracy is then 50.0) (Gruszczyński, 2012, p. 92).

The final element used to verify the model is the Receiver Operating Characteristic (ROC) curve. All the curves presented (Figure 1) show a good fit of the model to the data. The area under the ROC curve takes the value of 0.5 when the model has no predictive power and 1 when the prediction is excellent. For the general model and for men, the areas are 0.81, while for women they are 0.77.

5. Conclusion

Based on individual data from Poles derived from the Human Capital Balance for 2021 (partially 2022), three logistic regression models were estimated: for the entire sample, for women, and for men.

One result, for the model for the entire sample, is that women have a lower probability of earning higher wages than men. It confirms numerous studies in this regard (Blau, Khan, 2017, p. 853; Goraus et al., 2017, p. 142–144; Śliwicki, 2015, p. 27; Topolewska, 2023, p. 590). Similar conclusions were also reached by Auspurg et al. (2017, p. 204), concluded on the basis of their study of Germans that representatives of both sexes consider lower women to be fair. The authors argue that by endorsing the gender wage gap, the population leads to a self-fulfilling belief that is stable and long-term.

Another individual characteristic that significantly influences employees' wages is age. In all models, all variants of this variable were statistically significant (only in the model for women was the a2 variant not significant). Based on the results, it can be seen that in all cases increasing age will have a rather positive effect on the chances of receiving a higher salary. The effect of age on salary is also confirmed by a number of studies by other authors (Witkowska et al., 2019, p. 16; Kompa, Witkowska, 2018, p. 266).

An important individual characteristic, but one that also affects the shape of human capital, is an individual's education. The results of all models confirm that higher education increases the chances of higher earnings, while basic vocational education decreases these chances. A similar direction of influence of both or one variant of the indicated education can also be seen in the literature (Topolewska, 2023, p. 588; Kompa, Witkowska, 2018, p. 266; Śliwicki, Ryczkowski, 2014, p. 170).

Comparing employers' declarations of the competencies for which they are willing to pay higher wages to the obtained survey results, it is worth noting that the results are consistent and indicate a positive impact on the studied probability in the case of variables (Topolewska, 2023, p. 588; Górniaket al., 2022, pp. 47, 51):

- willingness to work unusual hours required by the employer (all models);
- willingness to travel frequently (all models);
- willingness to take responsibility for work (all-sample model and male model);
- computer literacy (model for the entire sample),;
- the ability to use computer programs (model for women);
- ability to work with people of different nationalities (model for women).

Competencies that negatively affect the probability studied, and this coincides with previous research, include artistic ability (all model and model for men) and the ability to assemble and repair machinery and equipment (model for women) (Topolewska, 2023, p. 588; Górniaket al., 2022, pp. 47, 51).

While the results for most of the other competencies are not in doubt, the decreasing likelihood of high pay for men with the ability to relate easily to people is something to wonder about. In most cases, employers value this skill and it is now a frequently recurring requirement for employees (Staiculescuet al., 2021, pp. 191–192; Matei, 2015, pp. 541–542; Sujováet al., 2021, p. 11; Asefer, Abidin, 2021, p. 45). Nevertheless, this result can be explained by the specifics of the professions. A good example is the profession of salesman. As a person responsible for customer service, he should be characterized by ease in establishing contacts, but the salary for this position itself deviates from that designated as the national average. Another example could be the IT profession, where salaries are considered high, while the need for networking is often limited in this case.

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Appendix

Table 1. The set of explanatory variables used to estimate the parameters of the logit models

SOCIO-DEMOGRAPHIC CHARACTERISTICS			
gender (GENDER*)		Age	
1- woman	0-man**	A1**	18-24 years
marital status		A2*	25-30 years
MS1**	Single	A3*	31-40 years
MS2*	Married	A4*	41-50 years
MS3*	widow or widower	A5*	More than 50 years
MS4*	after divorce or during separation		
disability (DISA*)		having children (HCH*)	
1-yes	no**	1-yes	0-no**
NATURE OF RESIDENCE			
groups of voivodships			
NR* (voivodeships.: pomorskie, kujawsko--pomorskie, warmińsko-mazurskie)	northern region	SR* (voivodeships,: śląskie, małopolskie)	southern region
NWR* (voivodeships: zachodniopomorskie, wielkopolskie, lubuskie)	northwestern region	SWR* (voivodeships: dolnośląskie, opolskie)	southwestern region
CR** (voivodeships: mazowieckie, łódzkie, świętokrzyskie)	central region	ER* (voivodeships: podlaskie, lubelskie, podkarpacie)	eastern region
CHARACTERISTICS OF HUMAN CAPITAL			
Education		language skills	
GIM**	junior high school and below	knowledge of English (ENG*)	
GSE*	general secondary education	1 – yes	0 – no**
BV*	basic vocational	Knowledge of the German language (GER*)	
VTS*	vocational technical school/specialized high school	1– yes	0 – no**
		Knowledge of other foreign languages (ALGG*)	
HE*	higher education	1 – yes	0 – no**
Driving license***			
DL_B*	Category B	DL_C1E_CE*	Category C1E/CE
DL_C_C1*	Category C1/C	DL_D1E_DE*	Category D1E/DE
DL_D1_D*	Category D1/D	DL_T*	Category T

ADDITIONAL COMPETENCIES ****			
Technical competencies			
C1*	analyzing information and drawing conclusions	C8*	artistic ability
C2*	learning new things	C9*	fitness
C3*	use of computer, tablet, smartphone	C10*	administrative work and record keeping
C4*	operation of specialized computer programs	C11*	fluent in spoken and written Polish
C5*	operation of machinery, tools and technical equipment	C12*	performing simple calculus
C6*	assembly and repair of machinery and technical equipment	C13*	performing advanced mathematical calculations
C7*	willingness to work unusual hours as required by the employer		
Menegerial competencies			
C14*	time management and punctuality	C17*	resolving conflicts between people
C15*	independent organization of work	C18*	coordinating the work of others
C16*	ingenuity, creativity	C19*	readiness to take responsibility for the performance of tasks
Social competencies			
C20*	working with people of different nationalities	C23*	easily establish contacts with people
C21*	being communicative and conveying thoughts clearly	C24*	working in a group
C22*	dealing with stressful situations	C25*	willingness to travel frequently

*tag of variable in the model
** baseline variable
*** baseline variable no driver's license of any category
**** baseline variable, is the low and medium level of a given competence
Source: own preparation based on BKL data.

Table 2. Characteristics of the samples used to estimate logit models

		Total for the sample		**Model for women**		**Model for men**	
		in %	total	in %	total	in %	
Gender	Total	1159	100				
	Female	576	49,70	576	100		
	Male	583	50,30			583	100

		Total for the sample		Model for women		Model for men	
		in %	total	in %	total	in %	
Age	18-24	92	7,94	41	7,12	51	8,75
	25-30	160	13,81	87	15,10	73	12,52
	31-40	305	26,32	145	25,17	160	27,44
	41-50	270	23,30	145	25,17	125	21,44
	over 50	332	28,65	158	27,43	174	29,85
Marital status	Single	332	28,65	150	26,04	182	31,22
	Married	749	64,62	373	64,76	376	64,49
	Widower	19	1,64	13	2,26	6	1,03
	divorced, separated	59	5,09	40	6,94	19	3,26
Education	higher education	444	38,31	279	48,44	165	28,30
	vocational technical school/ specialized high school	297	25,63	118	20,49	179	30,70
	general secondary education	134	11,56	83	14,41	51	8,75
	basic vocational	230	19,84	78	13,54	152	26,07
	junior high school and below	54	4,66	18	3,13	36	6,17
Region of residence	Northern region	165	14,24	83	14,41	82	14,07
	Central region	224	19,33	107	18,58	117	20,07
	Northwestern region	172	14,84	85	14,76	87	14,92
	Southern region	220	18,98	114	19,79	106	18,18
	southwestern region	100	8,63	47	8,16	53	9,09
	eastern region	278	23,99	140	24,31	138	23,67

Source: own preparation based on BKL data.

Table 3. Parameter estimation results of estimated logit models with significant explanatory variables

	ALL				WOMEN				MEN			
	Coefficient	p-value	Marginal effect	Odds ratio	Coefficient	p-value	Marginal effect	Odds ratio	Coefficient	p-value	Marginal effect	Odds ratio
Const	-3,1044	***	-	-	-3,0741	***	-	-	-2,9510	***	-	-
A2	0,9972	***	0,2377	2,711	n.s.				1,0609	**	0,2511	2,889
A3	1,4408	***	0,3357	4,224	0,9904	***	0,1795	2,692	1,4348	***	0,3376	4,199
A4	1,4011	***	0,3287	4,060	0,9964	***	0,1807	2,709	1,3294	***	0,3120	3,779
A5	1,5554	***	0,3596	4,737	1,4021	***	0,2613	4,064	1,1673	***	0,2811	3,213
GENDER	-1,3878	***	-0,2991	0,250								

	ALL				WOMEN				MEN			
	Coefficient	p-value	Marginal effect	Odds ratio	Coefficient	p-value	Marginal effect	Odds ratio	Coefficient	p-value	Marginal effect	Odds ratio
C1	n.s.				n.s.				0,6289	**	0,1550	1,876
C3	0,4787	**	0,1030	1,614	n.s.				n.s.			
C4	n.s.				0,4403	*	0,0729	1,553	n.s.			
C6	n.s.				-0,9935	**	-0,1220	0,370	n.s.			
C7	0,5067	***	0,1110	1,660	0,6649	***	0,1072	1,944	0,4491	**	0,1116	1,567
C8	-0,5222	***	-0,1094	0,593	n.s.				-0,7588	***	-0,1834	0,468
C12	-0,3552	*	-0,0811	0,701	-0,4912	*	-0,0845	0,6119	n.s.			
C18	0,4170	***	0,0916	1,518	n.s.				0,4866	**	0,1209	1,627
C19	0,7485	***	0,1495	2,114	n.s.				0,9607	***	0,2283	2,614
C20	n.s.				0,5491	**	0,0869	1,732	n.s.			
C23	n.s.				n.s.				-0,4697	*	-0,1166	0,625
C25	0,5243	***	0,1181	1,689	0,6351	***	0,1086	1,887	0,5994	***	0,1487	1,821
BV	-1,3394	***	-0,2478	0,262	-1,7324	***	-0,1849	0,177	-1,2462	***	-0,2946	0,288
HE	0,8864	***	0,2004	2,426	1,1004	***	0,1763	3,005	0,9029	***	0,2205	2,467
ALGG	0,3579	*	0,0825	1,430	0,4922	*	0,0864	1,636	n.s.			
DISA	-1,1435	*	-0,1972	0,319	n.s.				-1,7062	*	-0,3471	0,182
DL_B	0,3955	*	0,0831	1,485	n.s.				n.s.			
DL_D1_D	1,1359	**	0,2750	3,114	n.s.				1,2564	**	0,2845	3,513
SR	0,5445	***	0,1263	1,724	n.s.				1,0299	***	0,2467	2,801

n.s. - statistically insignificant variable
significance level: *α=0.1, **α=0.05, *** α=0.01

Source: own preparation based on BKL data.

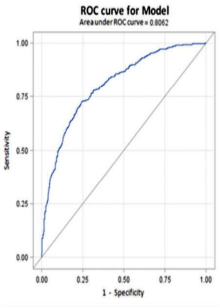
Table 4. Selected measures of model fit

Specification	General model	Model for women	Model for men
McFadden R-square	0,2249	0,1676	0,2304
Corrected R-square	0,1989	0,1279	0,1883
Likelihood ratio test	345,867	109,686	186,193
Log-likelihood	–596,0179	–272,3164	–311,0077
Accuracy (total)	71,8	64,1	71,9
Odds ratio	6,62	3,91	6,59

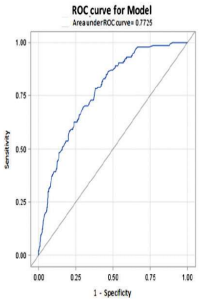
Source: own preparation based on BKL data.

Figure 1. ROC curves for models

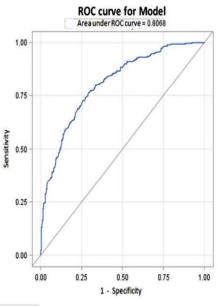
General model



Model for women



Model for men



Source: own preparation based on SAS.