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COMPETENCIES AS DETERMINANTS OF REMUNERATION

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Purpose: The purpose of this study is to determine how the competencies expected by employers affect the possibility of achieving a wage equal to or above the average wage in the economy.
Design/methodology/approach: Achieving the stated goal required a several-step approach. The first step was an analysis of the literature in terms of employers' expectations in the labor market and individual determinants of the salary received. Subsequently, the focus was on obtaining and checking the data (they came from the Human Capital Study -HCS). After this stage, an econometric model was estimated, which, after verifying its correctness, became the basis for analyzing the impact of individual competencies on the proposed salary.
Findings: Based on the results of the logit model, it can be concluded that among the competencies that have a positive impact on wages should be distinguished, among others: the ability to operate a computer and specialized computer programs, the ability to assemble and repair machinery and technical equipment, the ability to perform advanced mathematical calculations, cooperation with people of other nationalities, willingness to travel frequently, and willingness to work unusual hours.
Research limitations/implications: The main limitation of the survey was data gaps. Some employers were unwilling to state the amount they would offer for the indicated position.
Practical implications: Employers have the opportunity to compare what aspects of employee competence, businesses pay attention to, and how they value them. Based on this data, the approach of a particular organization can be verified and adjusted to market conditions.
Social implications: Based on the analysis, it is possible to see which competencies are particularly valued by employers. By developing them, employees can increase the likelihood of receiving a higher salary. Consequently, this will contribute to improving their living conditions. These results can also influence job seekers, who, by developing the indicated competencies, can adapt to the requirements of the labor market and thus shorten the job search period.
Originality/value: The added value of the article is to show the expectations of employers and their direct impact on the chance of obtaining a high salary.
Keywords: competencies, wages, logit model.
Category of the paper: Research paper.

Introduction

Currently, when the unemployment rate is close to natural unemployment and employers often face the problem of insufficient labor supply in the market, it becomes an important aspect to encourage candidates to take up employment. An important role in this case is, of course, played by the incentive system and the motivators proposed within it. Consequently, one of the key aspects is the level of remuneration offered to potential employees. It is this element that largely determines the choice of a particular employer.

Considering how important an aspect of salary is, it is worth considering what qualities and competencies contribute to its level. In other words, it is worth analyzing what qualifications and skills employers expect and how this translates into the proposed salary.

The purpose of this study is to determine how the competencies expected by employers affect the possibility of achieving a wage equal to or above the average wage in the economy.

According to the Central Statistical Office's definition, "wages and salaries include monetary payments paid to employees or other natural persons (i.e., gross wages and salaries), representing expenses 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).

When starting to consider the determinants of remuneration, it is impossible to ignore the influence of such factors as the general level of wages in the economy, the difficulty of working in a given position, labor market conditions, work experience, the financial capabilities of the company or elements of a secondary nature, such as discriminatory factors and cronyism. One element that should also be included in this set of determinants is the possession of competence.

In the literature authors have pointed to various divisions of competencies. On the one hand, the Council of the European Union indicated the need to promote key competencies from the perspective of lifelong learning, among which it distinguishes: basic skills for understanding and creating information, personal and social competencies (especially pro-health competencies), competencies in natural sciences, technology, engineering and mathematics, digital competencies, competencies in entrepreneurship, creativity and initiative, foreign language communication skills, civic competencies and awareness of the importance of competencies (Council Recommendation, 2018; Stuss, 2016).

Subsequent studies (Oleksyn, 2006; Wodecka-Hyjek, 2011) indicated that competencies can be considered from different perspectives:

- competencies that condition the performance of an organization, such as management competencies, knowledge, memory or competencies adopted from outside (e.g., licenses);
- professional and job competencies;
- competencies possessed and attainable.

According to another division, a distinction should be made between the following skills: core, function-specific, and role-specific for an employee. The first type of competency is consistent for the entire organization, the second is related to the job position, while the third includes competencies specific to a particular employee (Springer, 2011; Gajda et al., 2013; Wieczorek-Szymańska, 2009).

According to the classification of F. Delamare Le Deist's and J. Winterton's (Le Deist, Winterton, 2005), competencies are divided using two division criteria: the area of application of competencies (professional or personal) and those resulting from the type of activities in which competencies are used (conceptual, operational). The division of competencies according to this classification is presented in Table 1.

Table 1.
Classification of competencies according to Le Deist's and J. Winterton's

	Profesional	**Personal**
Conceptual	Cognitive	Meta-competence
Operational	Functional	Social

Source: Le Deist, Winterton, 2005, p. 39.

Another division focused on managerial competencies, among which we should distinguish (Grzybowska, Łupicka, 2017):

- technical skills - including knowledge and skills related to work,
- managerial competencies - including decision-making and conflict resolution skills,
- social competencies - understood as an individual's motivation, ability to work in a team or leadership skills.

The last of the presented divisions will be used in the rest of the article, including the empirical part.

Literature review

The literature on competencies have showed a tendency to focus on employer surveys in general. Entrepreneurs identify what competencies they think are crucial for the jobs they offer. The surveys usually do not refer to the salary offered. Table 2 shows the expectations of employers in selected countries of Central and Eastern Europe, taking into account the division into technical, managerial and social competencies. As can be seen - in the group of technical competencies, the frequently indicated skill is computer literacy, creativity, willingness to learn new things, and taking initiative. In the group of managerial competencies, employers often expect employees to take responsibility, solve problems and manage conflict, and have the ability to work independently. In the last group of competencies, employers most often indicated the ability to work in a group, knowledge of the native and foreign language, communication skills, the ability to adapt to change or commitment. Some employers also indicated that loyalty to the organization was an important element. It is worth noting that employers are more likely to focus on expectations for technical and social competencies, rather than managerial ones.

Table 2.
Employers' expectations of employees in selected Central and Eastern European countries

	Poland	**Slovakia**	**Latvia**	**Hungary**	**Lithuania**
Technical competencies	- operation of computer, tablet, smartphone - operation of specialized computer programs - operation of machines, tools and technical equipment - creativity - willingness to acquire new knowledge - ability to analyze and draw conclusions - analytical thinking - goal-oriented - thoroughness	- learning from feedback - goal-oriented - performance of tasks	- taking the initiative - computer literacy - willingness to acquire new knowledge - goal-oriented - taking care of order and organization of work	- taking initiative - knowledge of modern IT tools - creativity - willingness to acquire new knowledge - acquisition and processing of information - knowledge of practical methods used in the profession -high professional competence, up-to-date theoretical knowledge	- taking the initiative - computer skills - creativity - willingness to acquire new knowledge - having the necessary knowledge, both general and specialized

Cont. table 2.

Managerial competencies	- taking responsibility - coordinating the work of others - resolving interpersonal conflicts - ability to work independently - time management and punctuality	- taking responsibility	- ability to plan and control (tasks and their implementation) - ability to lead a team	-taking responsibility - ability to manage conflict - problem solving -ability to manage change - decision-making skills - ability to work independently	- ability to work independently - time management
Social competencies	- ability to work in a group -proficient use of Polish language - fluent use of English language -communicative-ness -ease in establishing contacts -sincerity and openness - cooperation with people of other nationalities - dealing with stressful situations	- ethical behavior - ability to adapt to change - flexibility - willingness to do something extra - commitment	- ability to work in a group - knowledge of Latvian language - knowledge of foreign languages - communicative-ness - empathy - discipline - intelligence - motivation - reliability and loyalty to the organization	- ability to work in a group - foreign language skills - communicative-ness - ethical behavior - ability to adapt to change - flexibility - load tolerance and endurance - tolerance of a different point of view - commitment -confidence and motivation	- ability to work in a group - ability to find oneself in a situation - intelligence - solidarity and loyalty to the company

Source: Own preparation based on: Lisa et al., 2019, p. 77; Górniak et al., 2022, p. 51; Slok et al.,2015, pp. 71-72; Lotko et al., 2016, pp. 304-307; Kantane et al., 2015, p. 227; Tóth-Téglás et al., 2016, p. 180; Gawrycka et al., 2020, pp.1099-1001; Szydło et al., 2021, p. 11.

A different approach can be seen in the literature, in which the authors try to determine the individual factors that determine the level of wages received. One of this type of research is a study based on the 2001, 2003, 2006, 2009 Labour Force Survey data. The authors estimated three logit models for each year: general, for women and for men. Thus, twelve models were estimated. Based on their results, it can be concluded that the determinants of wages are gender, age, seniority, education, company size and occupation. At the same time, the study confirmed that women earned less than men. Another important finding was that with increasing age and seniority, salaries of the general population increased (Kompa, Witkowska, 2018).

Another study gave a picture of the determinants of wages in some European Union countries. Based on data from the Labour Force Survey, estimates of multinomial ordered logit models were carried out. Considering the results of the survey, it should be noted that men, regardless of country, are more likely to have higher wages compared to women. Another aspect that should rather go without saying is that with higher job position, the chance of a higher salary also increases. An important factor that influenced salary in some countries was having a child. In Poland, having children lowered the chances of a higher salary (Witkowska et al., 2019).

Methods and data

The data used in the empirical part came from the Human Capital Study conducted in 2021. According to the methodology adopted, the survey covered about 3500 enterprises, of which about a thousand observations came from large companies, another thousand from medium-sized enterprises, while the remainder were small enterprises with a minimum of two employees. The draw of enterprises was stratified, disproportionate in terms of entity size, and the groups of PKD sections in the sample represented equally (Antosz, 2018). Due to data gaps, a total of 2278 observations were used in the study.

The logit model used in this article belongs to the group of qualitative models. It has the form (Walesiak, 2011):

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

where:

$\ln \frac{p_i}{1-p_i}$ – 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.

In the model author estimated the probability that a given set of characteristics and competencies will contribute to a salary at the 2021 national average (PLN 5888.80) or higher. The dependent variable in this case was binary, that was, it took the value 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 3 shows a number of variables that were used to estimate the full model. They were divided into four subcategories: education, work experience, expected gender and other competencies. The first category included five variants of the variable determining the expected education of an employee, the second included three variants of the variable determining the length of work experience, and the third distinguished three variants of gender expectations: female, male and irrelevant. The last group distinguished between 20 competencies and two variables characterizing expected attitudes (TC12 and SC5), which were divided into three groups: technical, managerial and social competencies.

Table 3.
A set of explanatory variables used to estimate the logit model

VARIABLES				
Education		**Seniority**		
LSE**	lower secondary education and below	LTY** less than a year	F1T5* from 1 to 5 years	MT5Y* more than 5 years
SE*	secondary education	**Expected gender**		
BVE*	basic vocational education	GENW* woman	GENM* man	GENNM** no matter
HEB*	higher education- bachelor degree			
HEM*	higher education –master degree			
OTHER COMPETENCES 1 = high level of competence 0 = low or medium level of competence				
Technical competences				
TC1	information analysis and drawing conclusion			
TC2	learning new things			
TC3	using a computer (tablet or smartphone) and specialized computer programs knowledge			
TC4	knowledge of machines, tools, and technical devices			
TC5	assembly and service of machines and technical devices			
TC6	knowledge of basic calculations			
TC7	performing advanced mathematical calculations			
TC8	artistic abilities			
TC9	physical fitness			
TC10	ingenuity, creativity			
TC11	administrative work and record – keeping			
TC12	readiness to work unusual hours required by the employer			
TC13	fluent in spoken and written Polish			
Management competences				
MC1	willingness to take responsibility for the performance of tasks			
MC2	time management (punctuality) and independent organization of work			
MC3	coordinating the work of other employees			
MC4	resolving conflicts			
Social competences				
SC1	overcoming stressful situations			
SC2	group work			
SC3	establishing contacts with people and being communicative and expressing thoughts clearly			
SC4	cooperating with people of different nationalities			
SC5	willingness to travel frequently			
*indication of the variable in the model. **base variable.				

Source: own preparation based on Human Capital Study data.

Results

Given that there have been a small number of studies in the literature that directly indicate the expectations of employers and their impact on wages, it is worth filling this gap. To this end, logit model estimations were carried out. The variables in Table 3 became the basis for estimating the full model. The stepwise (a posteriori) method was used to eliminate variables, which was insignificant, and then the model with significant explanatory variables

was estimated. Assumed significance level, is α = 0.1. Table 4 shows the estimates of the model with significant explanatory variables.

Table 4.
Logit model with significant explanatory variables

Variable	Coefficient	Standard error	Wald Chi-Square	p-value		Marginal effect	Odds ratio
Intercept	-1.5634	0.1627	92.3707	<.0001	***	-	-
TC3	0.3314	0.1308	6.4176	0.0113	**	0,0434	1.393
TC4	-0.3050	0.1375	4.9240	0.0265	*	−0,0399	0.737
TC5	0.2704	0.1437	3.5412	0.0599	*	0,0365	1.310
TC7	0.2444	0.1265	3.7353	0.0533	*	0,0329	1.277
SC2	-0.5276	0.1308	16.2649	<.0001	***	−0,0743	0.590
SC4	0.3738	0.1272	8.6328	0.0033	***	0,0493	1.453
SC5	0.2688	0.1455	3.4121	0.0647	*	0,0361	1.308
TC12	0.4990	0.1445	11.9311	0.0006	***	0,0678	1.647
TC13	-0.2528	0.1372	3.3954	0.0654	*	−0,0340	0.777
BE	-0.6625	0.1707	15.0584	0.0001	***	−0,0762	0.516
SE	-0.8764	0.1684	27.0963	<.0001	***	−0,0991	0.416
HEM	0.5981	0.1452	16.9554	<.0001	***	0,0872	1.819
GENW	-2.2098	0.3722	35.2485	<.0001	***	−0,1627	0.110
F1T5	0.4602	0.1175	15.3332	<.0001	***	0,0602	1.584

Source: own calculation based on Human Capital Study data.

The verification of the built model is also an important element. Referring to Table 5, it can be noted that McFadenn's R-square coefficient takes the value of about 0.12. Low values of this coefficient are a characteristic for a model with a dichotomous dependent variable (Kosko, Osińska, 2007). The accuracy of its predictions also provides important information regarding the verification of the estimated model (Kufel, 2011). It can be seen that this value is almost 67%, indicating that the model's predictions are much better than random classification.

Table 5.
Selected measures of logit model fit

Specification	Model
McFadden R-square	0,1217
Corrected R-square	0,1084
Likelihood ratio test	275,473
Log-likelihood	-994,374
Accuracy (total)	66,9
Odds ratio	4,45

Source: own calculation based on Human Capital Study data.

The final element indicating a good fit of the model is the Receiver Operating Characteristic (ROC) curve. The area under this curve takes values in the range from 0.5 (the model has no predictive power) to 1 (the model has perfect prediction) (Gruszczyński, 2012). For the estimated model, the area under the ROC curve is about 0.75 (figure 1), which gives reason to conclude that the model is a good fit to the empirical data.

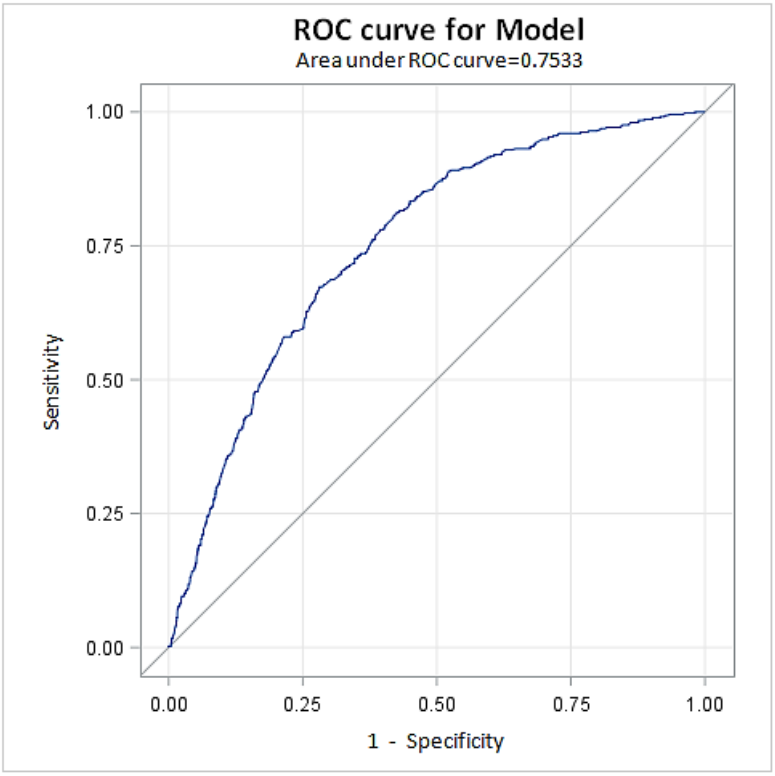

Figure 1. Receiver Operating Characteristic curve for logit model.

Source: own preparation based on SAS.

Referring to the initial set of characteristics contained in Table 1, it should be noted that for each group, at least one variant of the variable proved to be statistically significant.

Among the variables relating to educational level, secondary education, basic vocational education and master's degree proved to be statistically significant. Considering the variable determining job tenure, the only statistically significant variant turned out to be tenure of 1 to 5 years. On the other hand, when considering the effect of the expected gender of the employee on the probability of receiving a higher salary, it can be seen that the statistically significant variant turned out to be that of the female gender.

The last group of variables were the competencies of employees. Among them, statistically significant and at the same time positively influencing the probability under study were: the ability to operate a computer and specialized computer programs, the ability to assemble and repair machinery and technical equipment, perform advanced mathematical calculations, cooperate with people of other nationalities, willingness to travel frequently, willingness to work unusual hours.

Competencies that reduce the likelihood of earning a salary at the national average or higher included: operation of machinery and technical equipment, ability to work in a group, fluency in Polish.

Conclusion

As already noted, based on model verification, the model is a good fit to empirical data. However, in order to be able to talk about its implication value, it is necessary to verify whether the obtained results reflect reality.

With regard to the group of variables characterizing the level of education, it can be noted that completing a master's degree increases the probability of obtaining a higher salary by almost 9 p.p. The variants of secondary and basic vocational education turned out to be statistically significant and at the same time lowering the probability studied. Although it may seem that the earnings of individuals with lower secondary education and below should be lower than the salaries of those with vocational and secondary education, market research studies in the literature do not confirm this trend (Wróbel, 2023). This state of affairs may be the result of earlier entry into the labor market, and increasing work experience may determine an increase in salary levels.

The aforementioned relationship is shown by another variable, namely seniority. As already mentioned, those with seniority of 1 to 5 years are more likely to earn a higher salary (by about 6 p.p.).

Another group of variables related to employers' expectations of the gender of the employee they want to hire for a given position. The probability examined decreased by more than 16 p.p. when employers indicated that they wanted to hire a woman, showing that the estimates confirmed the existence of a wage gap.

The last group of variables concerned competencies, including employee attitudes. Considering those qualities that positively affect the probability of receiving a high salary, it should be noted that the issue of willingness to work unusual hours has the greatest impact (an increase in probability of almost 7 p.p.), the ability to work with people of different nationalities also turned out to be an important element (an increase in probability of almost 5 p.p.). Another variable that results in a 4.3 p.p. increase in the probability tested is the ability to operate a computer and specialized computer programs. On the other hand, each of the other statistically significant variables that positively affect the probability under study, namely the ability to assemble and repair machinery and technical equipment, perform advanced mathematical calculations or the willingness to travel frequently raises the probability by more than 3 p.p. It is also important to distinguish competencies whose possession negatively affects the probability of having a high salary. The variable most affecting this probability is working in a group (a decrease in probability by more than 7 p.p.). It can be assumed that those who work independently bear more individual responsibility for decisions made, the implementation of assigned tasks or their qualitative dimension. In the case of work teams, this responsibility may be distributed among group members. Hence, the remuneration of those working in a group may be lower.

A skill that will also significantly negatively affect the surveyed probability (down almost 4 p.p.) is the operation of machinery and equipment. While the repair of such equipment often requires significant technical skills, hence, as mentioned, positively affects the surveyed probability, their operation is often considered repetitive work, belonging to simple jobs that can be performed by less skilled people. As a result, these salaries can be below the average salary in the country.

The last competency considered is fluency in Polish. This variable, too, is among the traits negatively affecting the probability studied (lowering it by more than 3 p.p.). A high level of language proficiency will be characterized mainly by people with a humanities education. This group of people is often indicated as having a lower salary level (Magda et al., 2015). In addition, it is also worth noting that for a significant proportion of companies, it is now more important to be able to communicate in a foreign language, especially English. This determines the ability to establish contacts with contractors from other countries, as well as to respond to the changing environment, in which people of other nationalities are increasingly common. These people are customers of many companies, hence the emphasis of many, especially large companies, on proficiency in English.

When considering the results obtained, it is important to consider how consistent they are with previous research. Both Kompa and Witkowska (2018) and Witkowska et al. (2019) pointed out that one important factor is gender. Women earn less than men and at the same time are less likely to earn a higher salary. The results confirm this trend. Similarly, Lotko et al. (2016), Kantane et al. (2015), Tóth-Téglás et al. (2016), Slok et al. (2015), Górniak et al. (2022) indicated that one of the most important skills is computer skills, as well as specialized programs - such conclusions can also be drawn based on the present study. Based on Table 4, it is worth noting that employers mainly focus on technical and social competencies in their expectations. The survey also have confirmed that managerial competencies do not significantly affect salary levels. However, the study did not confirm employers' expectations regarding the ability to work in a group and speak the native language, it turned out that these competencies negatively affected the chance of achieving a high salary.

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