Model of Improving Communication Competences of Managers

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Abstract:

Purpose: *The article presents the factors and their interrelationships that influence the development of communication skills of future managers. The main goal of the article is to develop a model explaining the development of communicativeness.*
Design/Methodology/Approach: *The research was conducted in 2014-2015 on a group of 593 students. The survey method was used, and the validated self-assessment questionnaire was the research tool. The Mann-Whitney-Wilocxon test and the Kruskal-Wallis test were used to analyze the factors influencing the level of managerial competences. To examine the relationship between the selected competences, selected multivariate statistical techniques such as regression analysis and cluster analysis using the Ward method were used.*
Findings: *The presented model of multiple regression showed that the studied social competences are strongly and positively correlated with communicativeness.*
Practical Implications: *Knowing the factors that influence the development of future managers' communication skills can lead to accelerated skills acquisition. On the other hand, the developed model of improving communicativeness shows the relationship between these factors.*
Originality/Value: *The main value of the article is the developed statistical model that reflects the stages of development of managers' communicativeness.*

Keywords: *Managerial competences, communication skills, competence development, regression analysis, cluster analysis.*

JEL Classification: *M2, M51.*

Article type: *Research article.*

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1. Introduction

The modern labor market is looking for people who quickly adapt to changes, are innovative, think analytically, can cooperate in teams, solve problems, can deal with stress and, above all, communicate (Stevenson and Starkweather, 2009; He *et al.,* 2019; Report 2020; World Economic Forum, Pater *et al.,* 2019; Lyon *et al.,* 2018). Clutterbuck and Hirst (2002) found that managers who do not communicate well are not leaders at all, and Heldman (2011) adds that the more the project manager communicates, the smoother the project will run.

Therefore, the need to use communication competences occurs in all working conditions (Babbar-Sebens, 2019), at all management levels (Bjekić *et al.,* 2015; Feyz *et al.,* 2020) and with the use of all available techniques and conditions (Kiełtyka 2016; Westerman *et al.,* 2018). Many institutions prepare programs that educate people in this area. Universities also propose curricula aimed at the development and improvement of soft skills (Barker *et al.,* 2018).

Both in the labor market and at the stage of education, particular attention is paid to ensuring that employees meet the company's requirements related to the currently desired and forecasted competences (Graczyk-Kucharska *et al.,* 2018, McCoshan, 2008; Valente, 2014; Morreale *et al.,* 2015). When carrying out the literature analysis, it is noticed that social competences are the competences of the future; their usefulness has no time limits and does not depend on the dynamics of technological and economic changes (The Adecco Group, 2018; Graczyk-Kucharska *et al.,* 2020).

A lot of research is conducted in improving communicativeness among students (Verdecho *et al.,* 2020; Halizah and Zawawi, 2015; Spychała and Branowska, 2017; Iksan *et al.,* 2012 Szafrański *et al.,* 2017; Graczyk-Kucharska *et al.,* 2019). The authors of these studies prove that there is a competency gap regarding communicativeness, they present methods and techniques that affect the improvement of these skills.

The empirical and literature studies of the authors show that communication skills are very important for every manager to be able to effectively implement projects in organizations. Therefore, it is justified to develop a model of improving communicativeness for future managers. To achieve this goal, in the years 2014-2015 research on the competences of students at a technical university was carried out. A total of 593 future managers from various technical fields were examined.

Using the survey method, the authors of the article identified the factors influencing the improvement of students' communication skills. Then, each of them was statistically analyzed to distinguish the dominant factors shaping the communicativeness of future employees, and based on literature and empirical research, a model for developing the communicativeness of managers was developed.

2. Literature Review

Communication, communication processes and interactions are the leading social force for creating, understanding, accepting, and establishing new relationships in all spheres of social life (Morreale *et al.,* 2015). A developed communication system is necessary both within the organization and between the organization and the environment for the organization to function as an integrated unit focused on common goals (Purhonen, 2007, Robbins, and De Cenzo, 2005). Referring to the manager's communication competences, it is believed that they are the most important skills for optimal business management at all levels in the organization (Markaki *et al.,* 2013).

In the literature on the subject, there are many studies in which the factors influencing the level of managers' communicative competences are characterized:

Culturalism - a communication efficiency model for the development of international relations was developed (Griffith 2002). Subsequent studies show a correlation between managers' communication skills and school culture (Sabanci *et al.,* 2016). It has also been shown that the influence of cultural factors is of average importance in accelerating the acquisition of transversal competences, including communicativeness (Graczyk *et al.,* 2019).

Communication environment - (Ihmeideh *et al.,* 2010; Cleland *et al.,* 2005) it has been proven that a positive communication environment gives students the opportunity to learn to communicate and thus better communication skills.

Gender - it has been shown that women have a talent for cooperation, integrating people and creating good relations between them, flexibility, and enduring failures (Ben-Yoseph and Gundry, 1998; Majewska-Opiełka, 2012). Subsequent scientists have shown that women have a higher level of face-to-face communication skills (Westerman *et al.,* 2018), and the ability to communicate using technology in female managers may increase stress (Karr-Wisniewski and Ying, 2010).

Year of study - the levels of achievement of communication competences vary depending on the year in which the student is studying (Verdecho *et al.,* 2020)

The main conclusion from the literature analysis is that there is a causal relationship between learning adequate communication behaviour and effectiveness in professional performance (Purhonen, 2007). Students must try to develop their communication skills to be successful in their chosen profession (Ihmeideh *et al.,* 2010).

Developing effective communication among future managers will depend on many factors, including the culture of a given school, effective conditions in which the communication process takes place and the duration of improving these skills. It has also been shown that communication competences are strongly correlated with the ability to work in a team (Graczyk *et al.,* 2019). It is necessary to systematically strengthen these competences by organizing appropriate training programs for working managers as well as future student managers during their initial education.

3. Research Methodology

3.1 Sample Characteristics

As part of the survey, responses were received from 593 respondents. About 64% of the respondents are women, while the remaining part (36%) are men. Most respondents (89.5%) are people under 25. Among the surveyed people there are students of four fields of study, of which about 60% are first-cycle students. The statistical description of the demographic characteristics of the respondents is presented in Table 1.

Table 1. *Descriptive characteristics of the sample*

Demographic characteristics		Percentage (%)
Gender	Woman	64.0
	Man	36.0
Age	under 20 years old	6.5
	20-24 years	83.1
	over 24	10.4
Place of permanent residence	Village	28.4
	a small town	25.6
	a large city (over 500,000 inhabitants)	46.0

Source: *Own study.*

3.2 Data Analysis Techniques

The analysis of the collected data was carried out with the use of the R (R Core Team, 2020) environment and the IBM SPSS Statistics 27 program. attitudes related to a given competence: K1 - the ability to convey information clearly and precisely, K2 - the ability to listen to others, K3 - the ability to communicate non-verbally, K4 - the ability to speak, K5 - the ability to convince others. These indicators were described in detail and were assessed by students on a scale of 1-8 according to the developed rules.

In the first stage of the analysis, the Mann-Whitney-Wilocxon test and the Kruskal-Wallis test were used to examine the differences in the development of communication skills due to selected socio-demographic characteristics. The second step of the considerations is to study the relationship between individual communication skills and between the level of internal communication skills and other social competences and forms of education through the Spearman's rank correlation coefficient. Then, using the stepwise method, a multiple regression model was built, which explains the shaping of internal communication skills on the basis of other social competences.

The last stage of the analysis is an attempt to distinguish homogeneous groups of skills and / or forms of education related to the shaping of managerial competences. Hierarchical cluster analysis was used to distinguish homogeneous classes of variables, in which the Ward method with the Euclidean distance was used to determine the inter-class distances.

4. Results

4.1 Shaping Internal Communication Competences Among Students

The conducted research makes it possible to analyze the level of development of individual internal communication skills. The distribution of self-assessment results for each of the internal communication skills included in the study is shown in Figure 1.

Figure 1. *Distribution of students' self-assessment regarding individual components of internal communication competences*
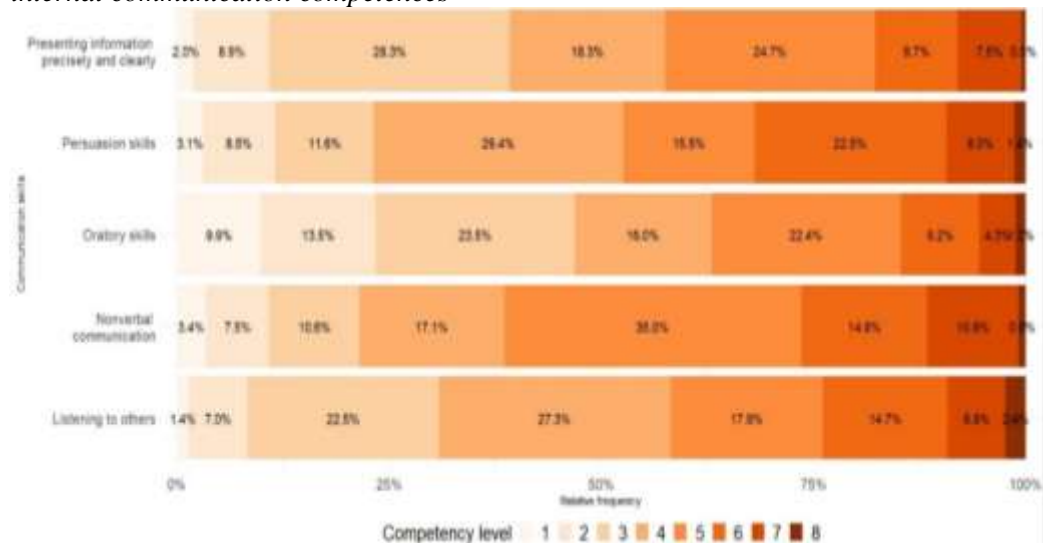
Source: Own study.

Among the 5 analyzed communication skills, students made the highest self-assessment for non-verbal communication skills (more than 60% of students declare a good or higher level) and for the ability to convince others (almost 50% of indications at least good). On the other hand, the lowest rated competence by students is the ability to speak - only 5.5% of respondents declare an excellent or expert level, and at the same time almost every fourth student declares no or only its basic level.

Table 2 presents the matrix of Spearman's rank correlation coefficients between individual communication skills. All values of the correlation coefficients are statistically significant at the significance level $\alpha = 0.001$. There are positive relationships of moderate strength between the analyzed skills.

The most correlated pair of skills is the ability to convince others and the ability to speak ($r\_S = 0.54$), while the weakest correlation among the competences studied was observed between the ability to listen to others and the ability to speak/make speeches ($r\_S = 0.33$).

Table 2. *Matrix of Spearman's rank correlation coefficients between individual communication skills*

Variable		K1	K2	K3	K4	K5
K1	Presenting information clearly and precisely	-				
K2	Listening to others	0.49	-			
K3	Non-verbal communication	0.51	0.46	-		
K4	Oratory skills	0.50	0.33	0.44	-	
K5	Persuasion skills	0.52	0.45	0.48	0.54	-

Source: *Own study.*

In addition to the relationship between individual communication skills, the impact of selected socio-demographic characteristics on the average level of this group of skills was also examined. The analysis considered the sex of the respondents and the class of the place of residence. The obtained results are presented in Figure 2.

Figure 2. *Box plots of the level of communication skills by the gender of students and their place of residence*
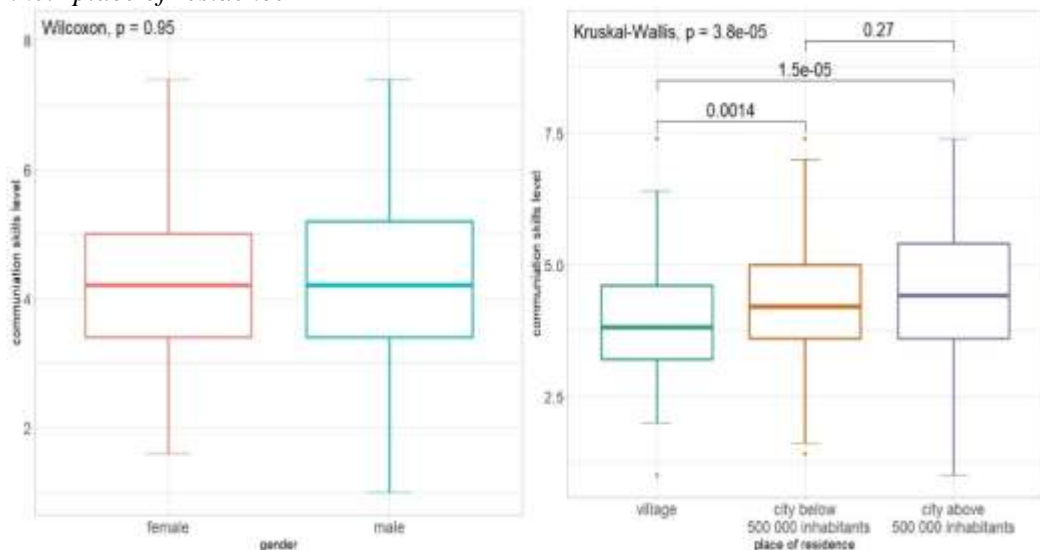
Source: *Own study.*

The constructed box plot broken down by gender of the respondents shows no significant differences between men and women in terms of internal communication skills. In the case of the groups of respondents distinguished according to the class of the place of residence, the Kruskal-Wallis test shows significant differences between the groups (p <0.001).

The conducted post-hoc comparisons show a significantly lower level of internal communication skills among people living in rural areas compared to people living in cities with up to 500,000 inhabitants. (p <0.01) and people living in cities with more than 500,000 inhabitants (p <0.001). There were no statistically significant differences between small and large cities.

4.2 Model of Shaping Communication Competences

The construction of the model explaining the development of communication skills was preceded by an analysis of the relationship between the level of communication skills and other social skills studied, as well as the forms of education that played the greatest role in the development of managerial competences for the respondents. Table 3 presents the matrix of Spearman's rank correlation coefficients between these variables. Internal communication skills are most strongly correlated with communication skills with the environment. A positive relationship with moderate internal communication skills are also characterized by conflict resolution skills, negotiation skills and strategic thinking skills.

The last three lines of Table 3 contain basic descriptive statistics for each of the analyzed variables, the value of the median and its mean estimation error determined by the bootstrap method (Stachurski, 2014) and the measure of variable differentiation – interquartile range. Among the social skills, communication skills (internal and with the business environment) are characterized by the highest average level. Among the analyzed competences, students assessed their organizational skills and the ability to think creatively as the lowest.

Table 3. *Matrix of Spearman's rank correlation coefficients and basic descriptive statistics for the level of social competences and the importance of individual forms of education*

Variable		SC01	SC02	SC03	SC04	SC05	SC06	SC07	SC08	SC09	FE01	FE02	FE03	FE04	FE05	FE06	FE07
SC01	Internal communication skills	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SC02	Communicating with the environment	.83*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SC03	Creative thinking	.48*	.49*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SC04	Managing a team	.60*	.61*	.60*	-	-	-	-	-	-	-	-	-	-	-	-	-
SC05	Conflict resolution	.69*	.66*	.55*	.70*	-	-	-	-	-	-	-	-	-	-	-	-
SC06	Organizational skills	.53*	.51*	.43*	.50*	.57*	-	-	-	-	-	-	-	-	-	-	-
SC07	Negotiation skills	.66*	.64*	.52*	.63*	.73*	.58*	-	-	-	-	-	-	-	-	-	-
SC08	Strategic thinking	.62*	.64*	.50*	.60*	.62*	.59*	.61*	-	-	-	-	-	-	-	-	-
SC09	Managing information	.48*	.43*	.46*	.53*	.55*	.36*	.44*	.57*	-	-	-	-	-	-	-	-

Code	Variable																
FE01	Professional work	.24*	.26*	.22*	.27*	.24*	.22*	.19*	.19*	.26*	-	-	-	-	-	-	-
FE02	Internship/ apprenticeship	.12*	.14*	.14*	.15*	.15*	.03	.08	.12*	.07	.36*	-	-	-	-	-	-
FE03	Workshops/ training	.22*	.19*	.26*	.22*	.23*	.15*	.15*	.16*	.18*	.21*	.33*	-	-	-	-	-
FE04	University classes	.06	.07	.08	.14*	.12*	.04	.05	.08	.07	-.03	.12*	.31*	-	-	-	-
FE05	Outside work	.13*	.13*	.14*	.12*	.12*	.11*	.14*	.08	.05	.04	.08	.33*	.32*	-	-	-
FE06	Family life	.20*	.22*	.08	.16*	.19*	.13*	.19*	.19*	.13*	.12*	.08	.19*	.28*	.41*	-	-
FE07	Social activity	.20*	.16*	.13*	.15*	.15*	.06	.13*	.06	.11	.06	.15*	.37*	.16*	.32*	.22*	-
Median (Me)		4.20	4.33	3.33	3.83	4.00	3.50	3.67	3.75	4.00	6.00	5.00	5.00	5.00	5.00	5.00	4.00
Standard error of the median (SE)		.08	.06	.04	.09	.04	.21	.14	.25	.12	.50	.00	.37	.22	.03	.41	.19
Interquartile range (IQR)		1.80	1.66	1.66	1.67	1.50	2.50	2.00	2.00	2.00	4.00	3.00	3.00	3.00	2.00	3.00	5.00

Note: *. Correlation is significant at the 0.05 level (2-tailed).
Source: *Own study.*

In order to build an econometric model explaining the development of internal communication skills, as a set of potential explanatory variables, the variables were adopted, the relationship of which was analyzed in Table 3. Next, the linear model was estimated using the least squares method. For the selection of regressors, the stepwise regression method was used, which consists in iterative inclusion in the model of one explanatory variable, not yet included in the equation, the inclusion of which in the equation will to the greatest extent improve the quality of the model fit to empirical data. Finally, the model parameters were estimated in the following form: $(SC\_01)\hat{} = \beta\_0 + \beta\_1 SC\_02 + \beta\_2 SC\_05 + \beta\_3 SC\_06 + \beta\_4 SC\_04 + \beta\_5 SC\_09$.

The estimates of the parameters of this model are presented in Table 4. The value of the coefficient of determination is $R^2 = 0.728$. This means a very good fit of the model to the empirical data, as 72.8% of the variation in the level of communication skills was explained by the estimated regression equation. The model has been comprehensively verified. All variables included in the model have a significant impact on the development of internal communication skills. The Shapiro-Wilk test (Shapiro and Wilk, 1965) confirmed the normal distribution of the random component ($W = 0.996$, $p = 0.5293$) and the conducted White's test (White, 1980) confirmed the presence of homoscedasticity ($LM = 9.46$, $p = 0.489$).

The values of the standardized coefficients of the regression model indicate that the ability to communicate with the environment has the greatest impact on the development of internal communication skills, while the ability to manage information has the lowest impact.

Table 4. *Evaluation of the parameters of a linear regression model explaining the level of students' communication skills*

Parameter	Unstandardized coefficients		Standardized coefficients $\hat{\beta}$	t	p.value
	b	Std. error			
Intercept	0.337	0.145		2.329	0.020
SC02 Communicating with the environment	0.565	0.039	0.570	14.380	0.000
SC05 Conflict resolution	0.105	0.048	0.107	2.197	0.029
SC06 Organizational skills	0.120	0.035	0.146	3.446	0.001
SC04 Managing a team	0.088	0.039	0.094	2.240	0.026
SC09 Managing information	0.060	0.030	0.070	1.986	0.048

Source: *Own study.*

As part of in-depth analysis of the relationship between individual social competences and forms of education that enable the development of managerial competences, a hierarchical cluster analysis was carried out. An agglomeration algorithm was used, in which the clusters were bound using the Ward's method. The results of the classification are presented in the form of a dendrogram (Figure 3).

Based on the Mojena's criterion (Mojena, 1977), the variables were divided into two clusters. The first cluster consists only of social skills, while the second cluster consists of variables that are forms of training managerial competences. The analysis of the dendrogram shows a high similarity of social competences of SC-01 (internal communication skills) and SC-07 (negotiating skills). Among the forms of education, the shortest distance separates the training of managerial competences during classes at the university (FE-04) and in social life, e.g., organizing events, trips (FE-05).

5. Discussion

The goals set at the beginning of the article referred to two areas: a) factors influencing the development and improvement of communicativeness of future managers, and b) proposing a model of improving communication among managers. The main research aspects of the article related to the possibility of developing the discussed skills have been included in the developed model. The large number of students who provided

information for building the model is a reliable premise for implementing the obtained model.

Figure 3. Dendrogram of hierarchical division of analyzed variables into clusters
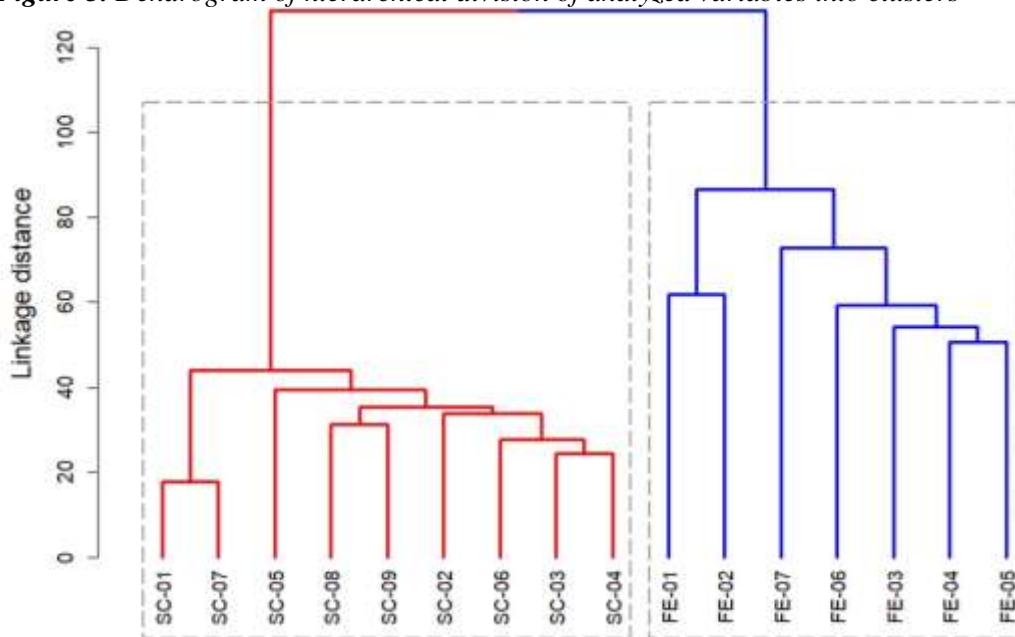
Many publications listed in the literature review extensively describe the current needs for the development of transversal competences, including those related to communicativeness. After analyzing our results, we can conclude that narrowing down the improvement of the factors most correlated with communicativeness (conflict resolution skills, negotiation skills and strategic thinking skills) may constitute an effective approach to the development of the necessary competences.

The research confronted two research areas - practical and theoretical - the self-assessment of students in terms of the level of their own competences in connection with the factors included in the questionnaire, which resulted from literature studies.

6. Conclusions

In the organizations of the future, effective human resource management will only be possible if the company's goals are correlated, effective human team management, as well as mutual motivation, trust, and the development of communication competences (Luong *et al.,* 2019). Therefore, students must be able to communicate so that after graduation they are better prepared to enter the labor market (Ihmeideh *et al.,* 2010).

The research results presented in the article are based on data obtained from a large group of students of management-related faculties. The research showed no significant differences between men and women in terms of internal communication skills. In the

case of groups of respondents distinguished according to the class of place of residence, a significantly lower level of internal communication skills was found among people living in rural areas compared to people living in cities (up to 500 thousand inhabitants). The ability to communicate with the environment has the greatest impact on the development of internal communication skills, while the ability to manage information has the least power of influence.

The research showed that future managers, while still studying, must develop their potential by investing in various forms of education in terms of their future professional career. The legitimacy and practical use of the model presented in the article is also demonstrated in other studies conducted by the authors of this article (Goliński and Spychała *et al.,* 2021; Graczyk *et al.,* 2019; Spychała and Branowska, 2017).

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