Coaching and Mentoring Study Hypothesis Testing
with the SPSS Software

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Abstract

The data presented in this paper are part of a larger study that tests various hypotheses to determine the extent to which managers' and performers' opinions affect the general opinion that various factors identified above influence coaches' and mentors' performance. To achieve the proposed goal, the statistical software SPSS was used. Now we will test Hypothesis: Respondent profile (manager or performer) affects the opinion on whether the regulation of the coaching or mentoring profession influences their performance

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J.E.L. classification: J21, J23, J24, M12, M53

1. Introduction

This paper is a continuation of a previous study entitled "Designing the coaching and mentoring strategy in Romania under the pressure of the pandemic caused by SARS-Cov2 virus" which aimed to create a strategy for the sustainable development of human resources through coaching and mentoring programs.

2. Theoretical background

In the Romanian market there is a need to implement coaching and mentoring strategies to mitigate discrimination effects. The results of the Angajez 45+ programme are brought into discussion as a basis. From the data provided, it followed that in 2020, 46% of job refusals were aimed at people in the 45-54 age segment. On the other hand, in terms of gender analysis, it followed that age is a discriminatory criterion for women, as the percentage of refusals for women is 63% and for men 37%. One of the aspects invoked in the case of refusals relates to the lack of digital skills. (Angajez 45+)

To deal with the human resources problem, various organisations are partnering with colleges and universities to attract qualified staff immediately after graduation. Nuclearelectrica participates in the Dual School programme and has a collaboration with Ovidius University in Constanta to attract junior engineers to the workforce. (Nicuţ, 2021)

An important aspect to be taken into account regarding the human resources crisis is that of artificial intelligence. Soon, more and more companies will turn to this solution to fill the labour shortage. Edenred has launched the chat-bot Felicia, capable of taking customer requests. (Edenred). Uniqa Insurance has deployed a claims support bot called Ana, capable of providing advice to the company's customers. (Uniqa). Banca Transilvania has developed an artificial intelligence-based assistance program. The bank's customers receive online assistance from the chat-bot Ino. (Banca Transilvania). Perhaps one of the boldest projects to automate HR processes is that initiated by Provident. The Arya HR robot replaces HR specialists. It has the ability to identify candidates, can

carry out the entire hiring process as well as the liquidation process. (Tudorică, 2021) Another HR product that replaces the human workforce is the Games for Business product, developed by Aims International, which has been launched in Romania. Given that the remote work has gained significant importance in the current context, various HR processes can be solved much more easily through this IT platform. (Games for Business) Another example of products aimed at automating processes within HR departments are the solutions developed by Romanian Software. (Romanian Software) Following the demand for process automation in HR departments, Total Soft has improved its product portfolio, launching a module for continuous feedback for employees during the pandemic. (Total Soft)

3. Research methodology

Quantitative analysis can be used to describe the behaviour of a population in relation to a problem. Using statistical methods of quantitative analysis, a representative sample can be analysed, and then the measured results can be extended to define the whole population under study. (Pop, 2011)

The SPSS software solution was used to perform this analysis. It has been used since 1986, and today it is widely used in marketing because along with other similar applications it works with a complete package of statistical functions. (Ansari, 2014)

In this case statistical tests were conducted using methods such as: ANOVA, Chi-Square test, regression, Person R and Spearman. The goal was to test the hypothesis that the correlation between the respondent's opinion, according to the hierarchical level, and the antecedent condition - the regulation of the coach or mentor profession - previously used in the QCA analysis, influencing performance, was revealed. It should be noted that SPSS analysis was used for the sample of coaching and mentoring providers. Initially, a questionnaire was circulated to 161 respondents, 91% were managers and 9% were performers. In order to be able to analyse the data using SPSS, a new questionnaire was circulated only to respondents with an executive profile. This resulted in an additional 73 data sets. In the end, 147 data sets provided by managers and 87 provided by performers were available for analysis. With a fairly balanced sample in terms of respondent profile, quantitative analysis was started using SPSS.

Figure 1 shows the overall conceptual model of the whole test.

Figure no. 1. Conceptual Model
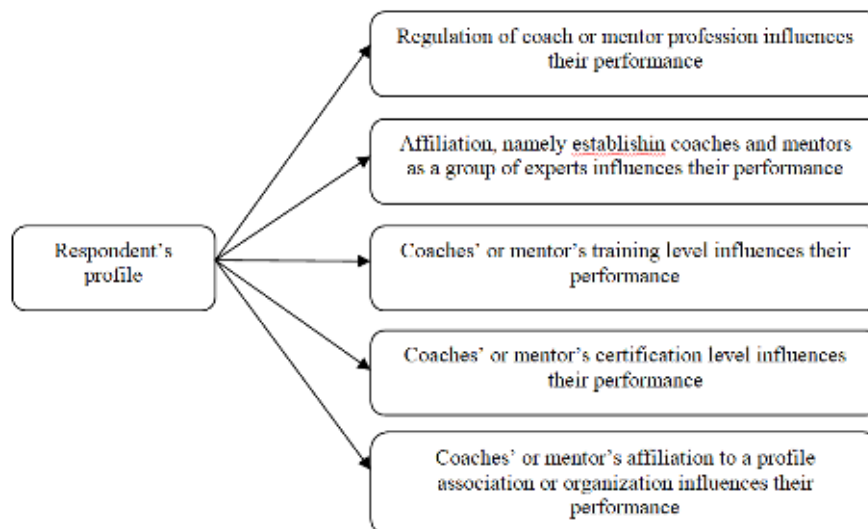
Source: Figure made by the authors

4. Findings

The approach to test the hypothesis was started: the profile of the respondent (manager or performer) affects the opinion on whether the regulation of the coaching or mentoring profession influences their performance. Thus, in Table 1 we have the centralization of the results obtained from the survey.

Table no. 1. Summary of the results

		Regulation of coach or mentor profession influences their performance				Total
		Disagree	Neither agree nor disagree	Agreement	Entirely agree	
Respondent's profile	Management	10	45	60	32	147
	Execution	6	20	28	33	87
Total		16	65	88	65	234

Source: Table resulting from the use of SPSS application

Within the presented hypothesis, the first operation was to perform the Chi-Square test, the results of which are illustrated in Table 2. In this case, the asymptotic significance must be analysed. Thus, it is observed that the coefficient's value is greater than 0.05 (the reference threshold), therefore, Hypothesis 1 is not validated. Further analysis shows that the value of the Pearson Chi-Square coefficient, which is 7.367 (column 2), in the context of 3 degrees of freedom (column 3) is lower than the reference value of 7.81. Since the values obtained are outside the reference ranges, but still very close to the limits, we can conclude that the hypothesis analysed is validated to a very small extent.

Table no. 2. Chi-Square test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.367[a]	3	0.061
Likelihood Ratio	7.243	3	0.065
Linear-by-Linear Association	3.74	1	0.053
N of Valid Cases	234		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.95.

Source: Table resulting from the use of SPSS application

Table 3 shows the results of the Pearson (parametric coefficient) and Spearman (non-parametric coefficient) correlation coefficient tests. It should be noted that the relationship between the two coefficients is given by the approximate formula Spearman = Pearson · 10%. The coefficients take values between -1 and 1. The closer to 0 the correlation degree decreases. For a higher accuracy of the final result the conventional interpretation will be used instead of applying Colton's rules. Given that the two coefficients fall in the range [0;0.2] it can be stated that there is a very weak correlation between the two factors analysed, almost non-existent, so the trend of the previous test holds, Hypothesis 1 being validated to a very small extent. The fact that the Spearman index is positive means that there is a direct relationship between the two variables analysed, both increasing simultaneously.

Table no. 3. Pearson R and Spearman correlation coefficient test values

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	0.127	0.066	1.945	.053[c]
Ordinal by Ordinal	Spearman Correlation	0.136	0.066	2.093	.037[c]
N of Valid Cases		234			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

   Source: Table resulting from the use of SPSS application

Regression analysis will follow. The aim is to determine the equation expressing the dependence between the two variables included in the analysed hypothesis. In general, the linear regression equation of the form $y = a \cdot x + b$ is used, where y represents the dependent variable and x expresses the value of the independent variable. For a high accuracy of the result, the regression equation that best expresses the relationship between the variables under analysis should be chosen. The parameters 'a' (slope) and 'b' (intercept) are determined by the least squares' method.

In Table 4 the value of the correlation coefficient - R and the coefficient of determination - R2 are determined. The low value of the correlation coefficient R of 0.127 is observed, which means that the hypothesis is validated to a very small extent, the correlation being very weak according to the interpretation criteria. The R^2 value shows the extent to which the total variation of the dependent variable (Regulation of profession) can be defined by the predictor (Respondent's profile). It can be seen that the weight is very small - only 1.6%.

Table no. 4. Regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.127[a]	0.016	0.012	0.897

a. Predictors: (Constant), Respondent's profile

   Source: Table resulting from the use of SPSS application

As to the running of the ANOVA test, the results of which are detailed in Table 5, the value of asymptotic significance is of interest. It can be seen that the value is 0.053, slightly above the significance threshold of 0.05. Therefore, it can be stated that the regression model to be constructed predicts, but not statistically significant, the dependent variable.

Table no. 5. ANOVA[a] test correlated with the regression model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.044	1	3.044	3.784	.053[b]
	Residual	186.58	232	0.804		
	Total	189.624	233			

a. Dependent Variable: Regulation of coach or mentor profession influences their performance

b. Predictors: (Constant), Respondent's profile

   Source: Table resulting from the use of SPSS application

Table 6 helps to establish the regression model, as the data contained therein are defining in the construction of the regression equation, but also provides clues on the validation of the relationship between the predictor and the dependent variable. It is noted that the value of the asymptotic significance of the constant is 0, so the regression equation predicts the dependence between the two variables.

Table no. 6. Coefficients associated with the regression model for Hypothesis 1

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.54	0.176		20.062	0
	Respondent's profile	0.236	0.121	0.127	1.945	0.053

a. Dependent Variable: Regulation of coach or mentor profession influences their performance
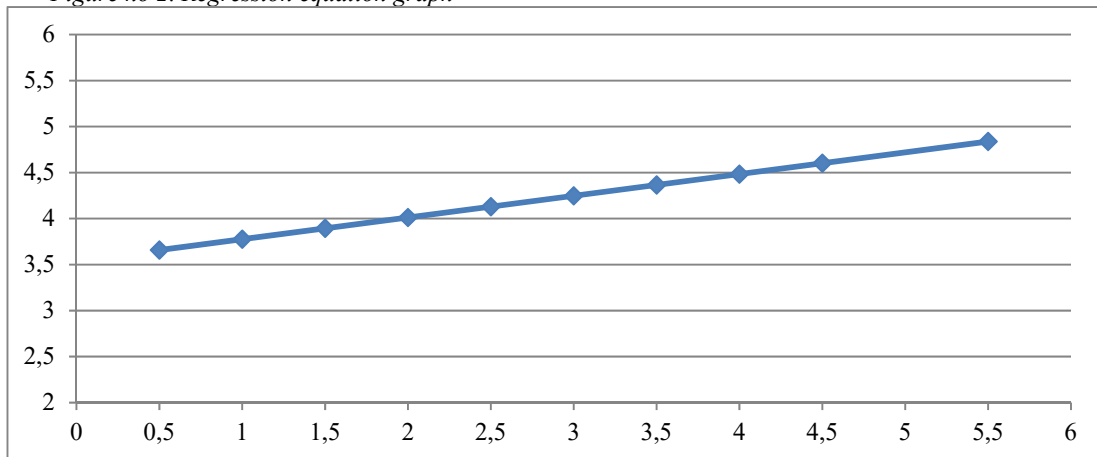
Source: Table resulting from the use of SPSS application

The regression equation for Hypothesis 1 has the form below, and the graph generated by it has the form in Figure 2:

$$RPC = 3.54 + 0.236 \cdot PR$$

Where: RPC = Regulation of the coach or mentor profession;
PR = Respondent's profile

Figure no 2. Regression equation graph

Source: Figure made by the author

5. Conclusions

As can be seen, Hypothesis 1 is validated to a very small extent. As a substantiation, it should be noted that the Chi-Square test results are outside the permissible limits, but not by much. Once we go further with the testing we notice a recovery of the situation, so it can be considered that the decision made in the case of this hypothesis is justified.

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