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The Analysis of the Representativeness of Results Obtained after Applying the Method of Job Evaluation through Tasks

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Abstract. *The results obtained by applying a new job evaluation method are reviewed in this paper. The research aims to highlight the extent to which job evaluation methodology through tasks ensures the obtaining of appropriate data. The study is applied in three fields – human resources, financial accounting and ointments production. I used two samples of professionals (holders of the positions evaluated) and laypersons from different companies. Analyses show that the methodology for assessing the tasks gets good results in the job evaluation.*

Keywords: method; evaluation; jobs; tasks; results.

JEL Codes: J33, M52.
REL Code: 14C.

1. Introduction

The definition of "job evaluation" was widely debated in the specialized literature. Doverspike et al. (1983, p. 476) define job evaluation as a series of procedures by which the organization seeks to measure the value of a job in order to scientifically determine wage levels. Armstrong (2003, p. 569) considers job evaluation as a process which establishes the relative values of jobs within an organization. Analyzing the definitions, we can identify the essential element of the process, namely determining the relative value of jobs.

We orient our research towards this area because we can consider the objectives to be met by carrying out such a process, to be true virtues of organizational ethics. Davis (1993) lists some of these objectives: minimizing the grievances of employees, increase of job satisfaction, wage-setting tool for new employees. Even if the targets are more than respectable, a number of critics, including Gilbert (2005, p. 9), point out that no job evaluation system, even the analytical one, has succeeded in the task for which it was designed in an objective manner. Looking to increase the objectivity of the process, we identified a new methodology of evaluating jobs: "evaluation through tasks". A comprehensive analysis of the results obtained by the new method of evaluation is discussed in this article.

2. Method of job evaluation through tasks

A brief method for assessing the burden is initially needed to be done. The proposed evaluation method takes place from a prior evaluation and ranking of activities. The comparison is made only between the activities of the same area (human resources, financial accounting, production, and so on).

For each occupation, there can only be selected the criteria which ensure a real differentiation between the activities performed. An alternative method of hierarchizing is to achieve a comparison of activities without using criteria. The method is similar to that of comparison, the difference consisting in its application to the tasks, not jobs.

For each criterion, all activities specific to an occupation are ranked. It answers the question: Is activity X more important than activity Y only in terms of the Z criterion? Subsequently, the importance of each criterion coefficient is established. To do this, the activities that came first for each criterion are chosen, assessed, and then the process moves on to the awarding of the rates of importance. In this way, different weights are assigned for each occupation separately. To understand the reason for this approach we can use an example: accountants will confer a relative importance to both the necessary knowledge

and working conditions, clearly different from the relative importance chemists would have assigned to the two criteria, assuming that they would work in a toxic environment. Finally, the hierarchy of activities is achieved, taking into account the importance and assessments of each criterion. Specifications mentioned in this passage do not apply to the alternative by which the hierarchy is achieved through a comparison between activities, without using criteria.

We note that in the case of the ointments production specialists, a change in the methodology of data collection took place. Originally, a first ranking was done by an employee. The other two employees whose views were collected made changes to the existing hierarchy according to their own considerations. The method used by experts in production, although not fully consistent with the way the ranking was done in other areas, we believe that it is very important because it provides ideas for future improvements. The method, causing a large reduction in the averages of the standard deviation, shows that through the application of other data collection techniques significantly improved results can be obtained.

After obtaining this piece of information, we can proceed to determine the average pay for a person occupying a certain position.

3. Computing the mean, the standard deviation as well as the variation of confidence limits against the mean

The values presented in table 1, in the columns "averages", were determined as the mean of the job evaluation indirectly computed by assessing the activities of each subject according to the formula:

$$M_{if} = \frac{\sum (M_{ij})}{n}, \tag{1}$$

where:

M_{if} – average or the final value of job i;

M_{ij} – average or the value given by each evaluator (j) job i;

N – number of subjects who rated the post, i (through activities).

Standard deviations were determined according to the classical formula, except that the data taken into consideration are considered relative values, related jobs evaluated.

The motivation to determine the variation confidence limits from the mean lies in the relativity of values obtained from stations evaluated. Therefore, we believe that the value of a job should not be limited to a fixed value, requiring the use of a range. Given the fact that what interests us is the confidence interval of the average and not the values composing it, we applied the formula:

$$L_i = \bar{x} \pm t(n-1)x\frac{\sigma}{\sqrt{n}}, \quad (2)$$

where:

L_i – confidence interval limits;

$\bar{x}$ – average;

t(n-1) – t distribution with n-1 degrees of freedom;

N – number of subjects who rated item i.

Confidence limit values are relative values which do not express a certain salary level, so as a result in the subsequent steps it would have been necessary to determine three elements – the average and the two limits of the salary range. To avoid unnecessary complication and to compare the data obtained, we determined the variation of confidence limits against the average, according to the formula:

$$V = \frac{t(n-1)x\frac{\sigma}{\sqrt{n}}}{\bar{x}}, \quad (3)$$

Where:

V – variation of the confidence interval limits against the mean.

Indicator values for confidence limits variation against the mean can be applied to salaries computed by different methods for each position in order to determine the limits of the salary confidence interval. The confidence interval was calculated in order to be able to estimate with a 80% probability that the relative values (averages) related to the evaluated jobs will be within the determined interval.

4. Defining the population and sampling

If we consider that by the implementation of job evaluation methodology through tasks it is intended to assess any position, regardless of the field of activity or geographical area, then we define people as the total of all jobs existing worldwide at a given time.

Due to the extensive range of the population, the complexity of the methodology, the need to provide advice on how to work with the software used and time constraints, the sample was limited to three areas of activity, respectively financial accounting, human resources and production, and the geographical area was limited to Romania. If in areas such as financial accounting and human resources, the jobs selected consist of support activities

that take place in the same way, regardless of the economic branch they support, in the case of production there was no such opportunity. However, for the reasons previously stated, the area had to be restricted. In this case, we opted for the drug manufacturing industry and more specifically for the production of ointments. Please note that the jobs in production that we have selected cannot be assimilated at a national or international level with other jobs, because of technological and organizational features specific to the ointments and suppositories plant of Antibiotice company.

The positions selected belong to the following fields:

1. In financial accounting – chief accountant and three positions of accountants which are distinguished by the complexity of the activities carried out.

2. HR – human resources specialist, human resources assistant, recruitment specialist, inspector human resources, payroll administrator.

3. In production – department manager, technologist and six positions of operator, jobs that are distinguished by the complexity of the tasks performed.

The selection of jobs was made starting from the original setting of activities to be evaluated, so that later it can be determined to which jobs those tasks belong. A final verification of the representativeness of activities for the selected jobs has been conducted.

In view of assessing the positions, it was resorted to the selection of a number of people to express their opinion. For each area there were selected two groups of people. A group considered to be the specialists, consisting of employees who have performed the activities evaluated and a group of laypersons, consisting of persons who have not fulfilled the respective responsibilities.

The selection of the two groups was aimed at infirming or confirming that the nature of the subjects affects the final results.

The number of participants for each of the three areas was:

1. Human resources – a total of five specialists and four laypersons.

2. For financial accounting, the group of experts consisted of three employees, while the laypersons group counted five people.

3. For the ointments production, three employees within the ointments and suppositories plant formed the experts' group and other four people formed the laypersons group.

In statistical terms, the number of opinions collected can be considered insufficient to determine the correct values ł–#–ª˘#°˝–ĘółŁ˘¹#and afterwards of the jobs in the case study. The small number however brings us close to the real situations encountered in practice. Conducting an evaluation of positions within any company is faced with a series of problems in the number of employees

who can be used in the process. The small number of staff that may be involved may be due either to natural causes (some areas have a small number of employees), either because of an inability to involve all staff in a particular field out of multiple reasons: the costs of closure, inexperienced staff, employees who know their own activity only, employees recognized as "opportunists", who aim to deliberately overstate their position.

5. Analysis of data obtained on the sample of laypersons

Analyzing the data in Table 1, the following findings can be highlighted:

Table 1

Relative values for each position (average), standard deviation, variation coefficient and confidence limits variation from the mean, computed according to the values given |by lay persons, for the evaluation criteria

Position	Field	Criteria-free evaluation				Criteria-based evaluation			
		Average	σ	*v*	V	Average	σ	*v*	V
Technologist	Ointments manufacturing	475056	203683	0.43	0.35	495440	78585	0.16	0.13
Operator 1	Ointments manufacturing	908285	83084	0.09	0.07	780615	96931	0.12	0.10
Operator 2	Ointments manufacturing	472546	412426	0.87	0.71	655006	124954	0.19	0.16
Operator 3	Ointments manufacturing	564158	268443	0.48	0.39	432674	221448	0.51	0.42
Operator 4	Ointments manufacturing	453235	289719	0.64	0.52	408084	233794	0.57	0.47
Operator 5	Ointments manufacturing	708761	266119	0.38	0.31	662518	164965	0.25	0.20
Operator 6	Ointments manufacturing	773731	218633	0.28	0.23	782230	95188	0.12	0.10
Plant manager	Ointments manufacturing	313302	356877	1.14	0.93	304102	161264	0.53	0.43
Accountant 2	Financial accounting	459202	109696	0.24	0.16	412343	126998	0.31	0.21
Accountant 3	Financial accounting	547011	155331	0.28	0.19	469706	140007	0.30	0.20
Accountant 1	Financial accounting	661238	277701	0.42	0.29	679514	127963	0.19	0.13
Chief accountant	Financial accounting	235403	69771	0.30	0.20	218813	50776	0.23	0.16
HR Specialist	Human resources	196634	64222	0.33	0.27	248295	139308	0.56	0.46
Payroll administrator	Human resources	765969	73961	0.10	0.08	666665	62035	0.09	0.08
Human resources inspector	Human resources	745664	138813	0.19	0.15	666484	83120	0.12	0.10
Human resources assistant	Human resources	703238	248427	0.35	0.29	724696	230154	0.32	0.26
Recruitment specialist	Human resources	544444	367019	0.67	0.55	288376	78728	0.27	0.22

1. The highest mean square deviation is common in the evaluations that don't use criteria, for the Operator 2 position, and has a value of 412,426. The

following value obtained by the square mean deviation, which is higher (367,019), is commonly met with recruitment specialists, on the same criterion. The minimum standard deviation obtained is 64,222 on the human resources specialist position.

2. The maximum value of standard deviations in the evaluation using criteria is 233,794, for the position of Operator 4. It differs from the situation encountered in the analysis performed on total subjects because, in this case, several values related to the mean square deviations exceed 200,000. The minimum standard deviation obtained is 50,776 for the chief accountant position.

3. In the criteria-free assessment, the biggest difference between the values of square mean deviations is obtained in the ointments production, between Operator 2 and Operator 1 positions, these being 329,342 (412,426 – 83,084), and the smallest difference is obtained in the financial accounting field with a value of 179,083 (277,701 – 69,771), the resulting difference between the values related to positions accountant 1 and chief accountant.

4. In the criteria-based evaluation, the biggest difference between the values of square mean deviations, is obtained in human resources, between the HR assistant and payroll manager jobs and amounts to 168,119 (230,154 – 62,035), while the smallest difference is obtained in financial accounting with a value of 89,231 (140,007 – 50,776), the resulting difference between the values for the positions of accountant 3 and chief accountants.

5. The maximum and minimum variation coefficients obtained are not necessarily found on the same jobs where there were recorded the minimum and maximum standard deviations. For example, the highest value of the variation coefficient is 1.14 encountered in the criteria-free assessment, for the plant manager position. The Operator 2 position, which had the highest value of mean square deviation, now occupies the second position, with a significant difference compared to the first place, the coefficient being 0.87. For minimum values, the situation is similar. The human resources specialist position, which had the lowest mean square deviation, is, in terms of the variation coefficient, far from Operator 1 (the position with the lowest computed value for the coefficient of variation 0.09). The situation is similar if we analyze the variation coefficients obtained by the assessment using criteria for the minimum but not the maximum values where the position that recorded the highest mean square deviation, also records the highest value of the variation coefficient. Because there is a close correlation between the coefficients of variation and variations of the confidence interval limits from the mean, that we will analyze in detail below, we believe that a detailed analysis of the results is not necessary.

6. The highest value of the confidence interval limits variation from the mean is 0.93, found in the criteria-free evaluation, the position of department manager, the lowest being 0.07 for an Operator 1 position.

7. The highest value of the confidence interval limits variation from the mean is 0.47 in the evaluation using criteria, Operator 4 job, and the minimum value is 0.08 for a payroll administrator.

8. The biggest difference between the variations of the confidence interval limits from the mean is 0.85 (0.93 to 0.07) and it is obtained by the evaluation not using criteria, in the ointments production, between plant manager and operator 1, and the smallest difference is obtained in financial accounting and is 0.13 (from 0.29 to 0.16), as the difference between the values ″łſ§ˇ¹ølı ˛ŁıÆ#ł#positions accountant 1 and accountant 2.

9. The biggest difference between the variations of the confidence interval limits from the mean is obtained by the evaluation using criteria, in the field of human resources, between the recruitment specialist positions and payroll administrator, this being 0.38 (0.46 to 0.08), and the smallest difference of 0.08 (from 0.21 to 0.13) is obtained in financial accounting, as the difference between the values for positions accountant 2 and accountant 1.

In conclusion we can say:

Standard deviation values, coefficients of variation and confidence interval limits variation from the average are significantly reduced in the criteria-based assessment compared to values obtained in the criteria-free assessment.

Analyzing the average of standard deviations presented in Table 2, we can draw the following conclusions:

The maximum value of the mean square deviation is 262,373 and it is obtained on the sample of non-specialists, the criteria-free evaluation, in the area of ointments production. The minimum value attached to the criteria-free evaluation is 153,125 obtained in the field of financial accounting.

Table 2

Standard deviations averages relative to positions (calculated for the sample of laypersons) and determined for the two types of assessment in each area of competence

Criteria-free/ Criteria-based evaluation	Field	σ
Criteria-free evaluation	Ointment production	262,373
Criteria-free evaluation	Human resources	178,488
Criteria-free evaluation	Financial accounting	153,125
Criteria-free evaluation	Ointment production	147,141
Criteria-free evaluation	Human resources	118,669
Criteria-free evaluation	Financial accounting	111,436

The maximum value on the sample of laypersons in the criteria-based evaluation of the standard deviation is 147,141 and it is obtained in the human resources area. The minimum value is 111,436, obtained in financial accounting. We notice that the interval between minimum and maximum values obtained in the criteria-free evaluation does not overlap on the interval between the highest and lowest values obtained in the criteria-based evaluation, and therefore we can issue the following hypotheses:

H0: The mean square standard deviation calculated on the sample of laypersons, in the criteria-free evaluation, isn't equal to the mean square standard deviation determined on the laypersons' group, in the criteria-based evaluation.

H1: The average standard deviation determined on the sample of laypersons in the criteria-free evaluation is different from the average standard deviation determined on the same sample, but using the criteria-free evaluation.

Analyzing the data obtained, we can say, given the value of t = 3.266 with sig = 0.005 <0.05, with a 95% probability, that between the average standard deviation determined on the sample of laypersons, in the criteria-free assessment, differs from the average standard deviations determined using the criteria-based evaluation This assertion is demonstrated by our lack of value 0 in the confidence interval. In conclusion, we reject the hypothesis H0 and accept H1. It demonstrates that the use of job evaluation criteria ensures better results in terms of confidence in the final results (square deviations with a significantly lower value).

In the next step, we consider it very important to answer the question: To what extent can the relative values with respect to the jobs evaluated be considered representative? To conduct the research, we used the coefficient of variation. The results are presented in tables 3 and 4. Analyzing the data, the following conclusions can be drawn:

Table 3

Analysis of job distribution, according to representativeness of the average (criteria-free evaluation, the sample of laypersons)

Field	[0 – 17]	(17 – 35]	(35 – 50]	(50 – ∞)	[0 – 50] / [0 – ∞) (%)
Ointments production	1	1	3	3	62.50
Financial accounting		3	1		100.00
Human resources	1	2	1	1	80.00
Total	2	6	5	4	76.47

We first observe that the percentage of representative means at least in the broad sense, obtained in the criteria-free evaluation, on the sample of non-

specialists, is the same with the result gained in the evaluation using criteria, namely 76.47%.

Although no variations were recorded in the final results, one can see an improvement in the positioning of the averages. Thus, in the range (35, 50], for the criteria-free evaluation, there were five positions that get to be redistributed in the case of average deviations on criteria, to the ranges [0-17] by an increase from two to five positions, respectively range (17-35], where the number of positions records an increase from 6 to 8.

Table 4

Analysis of job distribution, according to representativeness of the average (criteria-free evaluation, the sample of laypersons)

Field	[0 – 17]	(17 – 35]	(35 – 50]	(50 – ∞)	[0 – 50] / [0 – ∞) (%)
Ointment production	3	2		3	62.50
Financial accounting		4			100.00
Human resources	2	2		1	80.00
Total	5	8	0	4	76.47

In conclusion, we can say that the use of job evaluation criteria, when analysing a group of laypersons, will provide better results in terms of their significance, compared with a criteria-free evaluation.

6. Analysis of data obtained on the sample of experts

Analyzing the data in Table 5, the following findings can be highlighted:

1. The highest mean square deviation is common in the criteria-free evaluations, for the accountant 3 position, and has a value of 319,923. The following value obtained by the mean square deviation, which is higher (311,083), is commonly met with recruitment specialists, on the same criterion. The minimum standard deviation obtained is 1,417, for a technologist job.

2. The maximum value of standard deviations in the evaluation using criteria is 306,639, for the position of recruitment specialist. The result obtained for recruitment specialist can be considered an exception because the next value in descending order is 194,865 for an accountant 1 position. The minimum standard deviation obtained is 10,657 for the position of plant manager.

3. In the criteria-free assessment, the biggest difference between the values of mean square deviations is obtained in financial accounting, between accountant 3 and chief accountant, these being 246,436 (319,923 – 73,487), and the smallest difference is obtained in the ointment production with a value of 42,822 (44,239 – 1,417), the resulting difference between the values related to positions operator 3 and chief accountant and technologist.

4. In the criteria-based evaluation, the biggest difference between the values of mean square deviations is obtained in human resources between the recruitment specialist and HR specialist and is 241,281 (306,639 – 65,358), while the smallest difference is obtained in the ointments production with a value of 13,096 (23,753 – 10,657), the resulting difference between the values for positions of operator 5 and plant manager.

5. The maximum and minimum coefficients of variation are not found on the same positions that recorded the minimum and maximum standard deviations. For example, on the position of accountant 3 which reported the highest mean square deviation in the criteria-free assessment, the variation coefficient is 0.63, far from the maximum value of 1.06. For minimum values, the situation is similar. The technologist position, which had the lowest mean square deviation, is, in terms of the variation coefficient, far from Operator 2 (the position with the lowest computed value for the coefficient of variation 0.02). The situation is similar if we analyze the variation coefficients obtained by the criteria-based assessment for the minimum but not the maximum values, where the position that recorded the highest mean square deviation also records the highest value of the variation coefficient. Because there is a close correlation between the coefficients of variation and variations of the confidence interval limits from the mean which we will analyze in detail below, we believe that a detailed analysis of the results is not necessary.

6. The highest value of the confidence interval limits from the mean is 0.73, found in the criteria-free evaluation, the post of recruitment specialist, the lowest value being 0.02 the position of operator 2.

Table 5

Relative values for each position (average), standard deviation, variation coefficient and confidence limits variation from the mean, computed according to the values given by lay specialists, for the evaluation criteria

Position	Field	Criteria-free evaluation				Criteria-based evaluation			
		Average	σ	v	V	Average	σ	v	V
HR Specialist	Human resources	234658	121756	0.52	0.36	240611	65358	0.27	0.19
Payroll administrator	Human resources	604009	132694	0.22	0.15	590984	116315	0.20	0.13
Human resources inspector	Human resources	659663	177447	0.27	0.18	707801	156102	0.22	0.15
Human resources assistant	Human resources	679808	214572	0.32	0.22	710798	170419	0.24	0.16
Recruitment Specialist	Human resources	294057	311083	1.06	0.73	403788	306639	0.76	0.52
Accountant 2	Financial accounting	527479	275721	0.52	0.57	503466	100578	0.20	0.22
Accountant 3	Financial accounting	511209	319923	0.63	0.68	534212	86229	0.16	0.18
Accountant 1	Financial accounting	686654	200596	0.29	0.32	733465	194865	0.27	0.29
Chief accountant	Financial accounting	254811	73487	0.29	0.31	139603	59488	0.43	0.46
Technologist	Ointment production	27367	1417	0.05	0.06	309834	13872	0.04	0.05
Operator 1	Ointment production	459071	14535	0.03	0.03	509646	18982	0.04	0.04
Operator 2	Ointment production	595605	13108	0.02	0.02	600539	13390	0.02	0.02

Position	Field	Criteria-free evaluation				Criteria-based evaluation			
		Average	σ	v	V	Average	σ	v	V
Operator 3	Ointment production	445854	44239	0.10	0.11	543490	23427	0.04	0.05
Operator 4	Ointment production	480160	18248	0.04	0.04	551137	16294	0.03	0.03
Operator 5	Ointment production	510215	37966	0.07	0.08	546250	23753	0.04	0.05
Operator 6	Ointment production	499614	34430	0.07	0.08	606778	12014	0.02	0.02
Plant manager	Ointment production	17353	1776	0.10	0.11	212566	10657	0.05	0.05

7. The highest value of the confidence interval limits variation from the mean is 0.52 in evaluation using criteria, recruitment specialist, and the minimum value is 0.02 for operator 2.

8. The biggest difference between the variations of the confidence interval limits from the mean is 0.85 (0.93 to 0.07) and it is obtained by the criteria-free evaluation, in human resources, between the recruitment specialist and payroll administrator positions, and the smallest difference obtained in the production of ointments is 0.09 (0.11 to 0.02), as the difference between the values ˝łßS˘¹øłı ¸ĿıÆ#ł#þł¹ĿĿłı¹#operator 3/plant manager and operator 2.

9. The biggest difference between the variations of the confidence interval limits from the mean is obtained by the evaluation using criteria, in the field of human resources, between the recruitment specialist position and payroll administrator, this being 0.39 (0.52 to 0.13), and the smallest difference of 0.03 (0.05 to 0.02) is obtained in ointment production, as the difference between the values for operator 2 or operator 6.

The conclusions drawn after analyzing the sample of laypersons remain valid, so far as the data offered by the sample of specialists is concerned.

Analyzing the standard deviation averages presented in Table 6, the following conclusions can be drawn:

The maximum standard deviation is 217,431 and it is obtained on the sample of experts, in a criteria-free evaluation, in financial accounting. The minimum value resulting from the criteria-free evaluation is 20,715, determined in the field of ointments production.

Table 6

Standard deviations averages relative to positions (calculated for the sample of specialists) and determined for the two types of assessment in each area of competence

Criteria-free/ Criteria-based evaluation	Field	σ
Criteria-free evaluation	Financial accounting	217.431
Criteria-free evaluation	Human resources	191.511
Criteria-free evaluation	Human resources	162.967
Criteria-free evaluation	Financial accounting	110.290
Criteria-free evaluation	Ointments production	20.715
Criteria-free evaluation	Ointments production	16.549

The maximum mean square deviation on the sample of experts in the evaluation using criteria is 110,290 and is obtained in human resources. The minimum value resulting from the criteria-free evaluation is 16,549, obtained in ointments production. We notice, in contrast to data given by the sample of non-specialists, an overlap between the values obtained in the criteria-free evaluation and the ones obtained in the criteria-based evaluation. These results are considered to be influenced by the different data collection methodology, used exclusively in the ointment production on the specialists' sample. However, we consider it is necessary to analyze whether the standard deviations mean related to the data presented by the criteria-free evaluation differs or not from the criteria-based evaluation Therefore, we issue the following hypotheses:

H0: The mean square standard deviations calculated on the sample of experts, criteria-free evaluation, is equal to the mean square standard deviations determined on the sample of experts, in the criteria-based evaluation.

H1: The average standard deviations determined on the sample of experts in the criteria-free evaluation is different from the average standard deviations determined on the same sample, but using the criteria-based evaluation.

Analyzing the data obtained, we can say, given the value of t = 2.197 with sig = 0.043 <0.05, and a probability of 95%, that the average standard deviation determined on the sample of laypersons, criteria-free evaluation, is different from the average standard deviation determined in the criteria-based evaluation. This assertion is demonstrated by the fact that the value 0 is not comprised within the confidence interval. In conclusion, we reject the hypothesis H0 and accept H1. It demonstrates that the use of job evaluation criteria ensures better results in terms of confidence in the final results (square deviations significantly reduced in terms of value).

Similar to the analysis conducted on the sample of laypersons, we consider it necessary to answer the question: To what extent can be considered representative the relative values with respect to the jobs evaluated? To conduct the research, we used the coefficient of variation. The results are presented in tables 7 and 8. Analyzing the data, the following conclusions can be drawn:

First, there is a significant increase in the percentage of representative averages at least in the broad sense, from 76.47%, the result obtained in the criteria-free evaluation, on the sample of experts, to 94.12%, the criteria-based evaluation. The data are identical to those recorded on total subjects.

Table 7

Analysis of job distribution, according to representativeness of the average (criteria-free evaluation, the sample of experts)

Field	[0 – 17]	(17 – 35]	(35 – 50]	(50 – ∞)	[0 – 50] / [0 – ∞) (%)
Human resources		3		2	60.00
Financial accounting		2		2	50.00
Ointment production	8				100.00
Total	8	5	0	4	76.47

Secondly, the variation is determined by both the positions in financial accounting (an increase from 50% to 100%) as well as those in human resources (an increase from 60% to 80%). An improvement in results can be seen in the job distribution on intervals.

Table 8

Analysis of job distribution, according to representativeness of the average (criteria based evaluation, the sample of experts)

Field	[0 – 17]	(17 – 35]	(35 – 50]	(50 – ∞)	[0 – 50] / [0 – ∞) (%)
Human resources		4		1	80.00
Financial accounting	1	2	1		100.00
Ointment production	8				100.00
Total	9	6	1	1	94.12

In conclusion, we can say that the use of job evaluation criteria, when studying a group of specialists, will provide better results in terms of their significance, compared to an evaluation without criteria.

Note: the very good results obtained in the production of ointments are due to a different data collection methodology on the sample of specialists.

7. Conclusions

Taking into account the results of the tests on the two samples (professionals and lay persons), we reached the following conclusions:

Regardless of the sample, we can say that the use of job evaluation criteria will ensure the achievement of better results in terms of standard deviation, variation coefficient and variations of the confidence interval limits from the mean.

The data collection methodology essentially influences the final results. Our conclusion is demonstrated by much better results obtained by specialists in production, for the whole range of indicators used in this analysis.

The high values obtained for the computed indicators, regardless of the sample used (except for the sample of specialists in ointments production)

shows a mismatch between subjects' opinions, whatever category they belong to, which shows the existence of diametrically opposed views on the importance of certain tasks in the business activity. We consider the differences of opinion to be due to the lack of information and the preconceptions in the case of laypersons, while in the case of professionals we consider the differences in terms of the company's policies to be the main reason. For example, in the case of firms where the selection for several jobs becomes formal, the human resources staff will significantly reduce the importance of this activity. Things would happen differently in the case of a company where recruitment and selection are considered vital.

The maximum and minimum values recorded by the coefficients of variation and thus by the variations of the confidence interval limits from the mean occur on different positions than those where the standard deviations obtained maximum and minimum values. The motivation is due to the denominator, namely the relative value of the job. In normal conditions (data should be obtained as a result of real measurements, for example distances, size of certain objects, etc.) the values ascribed to the numerator wouldn't have been a problem. In the present situation the results can be erroneous, however. For example, the post of chief accountant, which reported the lowest value on the sample of specialists, the criteria-free assessment, with a standard deviation of 59,488, registers a 0.43 coefficient of variation. The methodology, as it has been established, assumed that the more the relative value increases, the lesser the value of the job becomes and vice versa. Suppose the methodology would have established that as the relative value increases, the job is becoming more valuable. Under these conditions, the value of the chief accountant position could be 860,397 (1,000,000 – 139,603) instead of 139,603. Suppose that the mean square deviation remained the same (because an increase in job's relative values does not imply an increase in variation), the coefficient of variation calculated would be 59,488/860,397 = 0.07 and it would fit the range which determines us to consider the average as strictly representative.

Significant differences between the results obtained on the laypersons' sample compared to the professionals' demonstrate the impossibility of replacing the staff trained for the positions subject to evaluation with other categories of employees.

For the future we recommend an improvement in the assessment methodology in order to diminish the impact of the relative value the positions have on the variation coefficient.

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