

MATHEMATICAL ASPECTS REGARDING THE STATISTICAL - ECONOMIC ANALYSIS OF FINANCIAL AUDIT STRATEGIES

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Abstract: *The paper aims to analyze the decision-making process of financial auditors with regard to the adjustments that can be applied in a model that describes how financial auditors may negotiate decision-making processes. Therefore, the analysis identifies the dependent and interdependent variables comprised within the category of competitive, concession or compromise tactics and distributive strategies. Several aspects are taken into consideration in the case study: socio-demographic, financial and technical positioning, as well as managerial aspects.*

Key words: *audit, correlation, statistics, negotiation*

INTRODUCTION

Through the case study, I want to analyze the decision-making process of financial auditors regarding adjustments, within a highly appreciated and renowned model in the spectrum of specialized literature [4,5,7]. Many studies and researches have been conducted on the applicability and results generated through the lens of this model describing how financial auditors make their negotiation decisions.

The descriptive tests from the statistical processing of questionnaires that reflect the relationship between the auditor and the client with the help of SAS studio analyze the report in question but at the same time identify critical points in the negotiation techniques. Using the processing data and statistical tests improve market knowledge, resulting in better customer experiences and providing employees with more products and services. The result of discussions regarding adjustments following the clarification of some issues with clients involves the use of tactics that lead to the resolution of possible syncope and the assessment of commitment risk [11].

MATERIALS AND METHODS

The socio-demographic aspect of the statistical analysis determined by the 5 independent variables; the position held within the audit firm, the experience in years, gender, the length of time he was a member of the audit team of the same client and the time of the audit firm, found in part of the evaluated questionnaire [3,9].

A total of 97 people accepted the invitation to answer the questions of the questionnaire. 57 are women and 38 are men. The average audit experience is approximately 12-14 years. Regarding the position within the audit firm, 17 people indicated the position of executive director, 35 manager and 45 have the quality of partner or associate. 18 respondents belong to Big 4 member companies, then 13 are members of another international group, 14 are members of another national group and 50 indicated that they are part of companies with Romanian majority capital acting individually [7,8,15].

RESEARCH RESULTS

The position of the respondents within the audit firm or the fact that the auditor is male or female, the length of time he was a member of the audit team of the same client, the experience according to the type of audit firm - represented ways of delimiting distinct groups within the sample. A frequently addressed research topic was to test whether or not different groups led to different responses to questionnaire questions [1,2,12].

Table 1.

Audit experience (years)/Position within the audit team

The position within the audit firm	N	Mediate	Mean squared deviation	Min	Max	N
Executive Director	17	17	10.64	4.09	3	17
Manager	35	35	12.70	5.92	0	34
Partner/associate	45	45	13.56	7.02	1	44

Source: <https://insse.ro/cms/ro/search/node/2023>

Table 2.

Audit experience (years) M-F

Sex	N	Mediate	Mean squared deviation	Min	Max	N
Female	59	12.06	21.82	7.02	30	58
Male	38	13.78	19.73	4.63	22	37

Source: <https://insse.ro/cms/ro/search/node/2023>

Table 3.

The result of the discussions regarding the adjustments following the clarification of some aspects by clients

The position within the audit firm	N	Mediate	Mean squared deviation	Min	Max	N
Big 4 member.	18	11.05	5.37	1	20	18
Member of an international group	13	11.41	6.87	3	21	12
Member of a group	14	12.21	6.87	3	30	14
Company with Romanian majority capital acting individually	50	13.83	6.48	0	26	49

Source: <https://insse.ro/cms/ro/search/node/2023>

The statistical summary indicates the average values of the answers indicated by the respondents for each individual question. Also indicated are the mean squared deviation, the minimum and maximum values, the number of responses, which in some situations indicate incomplete data by some respondents. The module of each series indicates the values resulting from the answers to a certain question, which have the highest frequency of occurrence. These are also found in the attached statistical summary [10].

Table 4.

Statistical summary for the result of discussions regarding adjustments following clarifications by clients

Question code	Mediate	Mean squared deviation	Min	Max	Module	N
Q1a	2.97	1.11	1	5	3	93
Q1b	5.73	0.99	1	5	4	95
Q1c	3.45	1.12	1	5	4	94
Q1d	1.56	0.89	1	5	1	81

Source: *Source: <https://insse.ro/cms/ro/search/node/2023>*

The distribution of results is shown as histograms along with the related boxplots. They indicate the positioning of the minimum and maximum values, the 1st and 3rd quartiles as well as the median of the series.

The agreement regarding the initial position of the auditor, represents the modality appreciated by the answers with the highest average value, while the answers with the lowest average value are related to the solution method without agreement. The agreement regarding the initial position of the client was appreciated in most situations with the middle value on a value scale from 1 to 5, about a third of the respondents presenting this answer [11,14].

The agreement on the initial position of the auditor in relation to the agreement on the initial position of the client was rated in most situations as mid-range on a scale of 1 to 5, with about one third of the respondents presenting this answer.

The result of the discussions regarding the adjustments was accepted, regarding the testing of the mentioned hypotheses, even if group differences appear, they did not prove to be statistically significant, that is, the research hypotheses were accepted.

More precisely, the null hypothesis H_01 is rejected in favor of the research hypothesis according to ANOVA, $p < 0.001$, $F=9.72$ only in the situation where the agreement regarding the initial position of the auditor is different from the position within the respondent's audit firm (director, manager, partner/associate). The corresponding boxplot diagram clearly indicates the values of the answers according to the position of the respondents within the audit firm.

Multiple comparisons between each two groups separately, using the Tukey-Kromer test, reveal statistically significant differences between groups where $p \in [0.003, 0.001]$.

The null hypothesis H_01 is also rejected in favor of the research hypothesis according to ANOVA in the situation of rough agreement of a middle solution between the initial positions.

Table 5.

Correlation coefficients									
Pearson Correlation Coefficients									
Prob > r under H0: Rho=0									
Number of Observations									
	V1	V2	V3	V4	V5	V6	V7	V8	V9
Q1a	0.11953 0.2591 91	0.08704 0.4120 91	-0.10011 0.3424 92	0.08508 0.4226 91	0.25760 0.0132 92	-0.10767 0.3043 93	0.41868 <.0001 93	0.02389 0.8212 92	-0.03272 0.7568 92
Q1b_	-0.11705 0.2665 92	-0.17736 0.0908 92	0.13438 0.1966 94	-0.17977 0.0864 92	0.10909 0.2979 93	-0.04589 0.6588 95	0.04834 0.6436 94	-0.31749 0.0019 93	-0.30482 0.0030 93
Q1c	0.36379 0.0004 90	0.17529 0.0984 90	-0.02617 0.8023 94	0.21984 0.0373 90	0.30931 0.0029 91	0.13111 0.2128 92	0.20583 0.0490 92	0.12203 0.2492 91	0.21840 0.0375 91
Q1d	0.19762 0.0716 84	0.01127 0.9190 84	-0.28846 0.0074 85	-0.04502 0.6824 85	0.14197 0.1950 85	-0.13598 0.2147 85	-0.07170 0.5143 85	0.00124 0.9910 85	0.09814 0.3716 85

Source: *Source: <https://insse.ro/cms/ro/search/node/2023>*

The following section illustrates the negotiation strategies that the auditor can select (dependent variables) given the independent variables. Strategy choices are the dependent variables in this research. In this section, we analyze the effect of auditor choice conceptual framework variables in the light of the decision model. We examine three potential influences of the perception of audit contextual characteristics on the auditor's negotiation strategy: client commitment risk, client pressure, and bargaining power. These possible effects are the independent variables in this research. Table 5 summarizes the theoretical model illustrating how these variables are expected to impact both the auditor's negotiation strategy and his/her judgment of the extent to which s/he will accept the management alternative [6,10,13].

CONCLUSIONS

The result of the discussions regarding the adjustments was accepted, regarding the testing of the mentioned hypotheses, even if group differences appear, they did not prove to be statistically significant, that is, the research hypotheses are accepted

More precisely, the null hypothesis H₀₁ is rejected in favor of the research hypothesis according to ANOVA, $p < 0.001$, $F = 9.72$ only in the situation where the agreement regarding the initial position of the auditor is different from the position within the respondent's audit firm (director, manager, partner/associate). The corresponding boxplot diagram clearly indicates the values of the answers according to the position of the respondents within the audit firm.

Multiple comparisons between each two groups separately, using the Tukey-Kramer test, reveal statistically significant differences between groups where $p \in [0.003, 0.001]$. The null hypothesis H₀₁ is also rejected in favor of the research hypothesis according to ANOVA in the situation of rough agreement of a middle solution between the initial positions.

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