

IMPACT OF AUDITOR'S COMPETENCE, INDEPENDENCE AND REPUTATION ON THE JOINT-AUDIT QUALITY: THE TUNISIAN CONTEXT

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ABSTRACT

The present work aimed to investigate the determining factors of the joint audit quality, as observed through a sample of two hundred and fifty Tunisian companies. The data collection procedure was achieved via a questionnaire survey. Three essential determining factors were predictably identified: competence, independence and reputation. Here, we used, the principal component analysis then the measurement model was tested by means of the multiple correspondence analysis approach. Finally, the multinomial logistic regression was implemented. The results demonstrate that the joint audit quality is effectively defined through the three tested factors.

Keywords: Joint Audit Quality, Competence, Independence, Reputation, Tunisia.

INTRODUCTION

The global financial crisis has led to the emergence of questions about the quality and scope of independent audits. The major concerns were raised by the threat of creating a monopoly market after Enron's scandal and the collapse of the Arthur Anderson Audit Institute. Besides, requests for further supervision have been made to improve auditors' independence. The ultimate goal was to restore confidence in the audited financial statements. Several regulations were passed to restore investors' confidence in the integrity of the audit. One of the measures taken in this area is the publication of the Green Paper by the European Commission (EC) entitled Audit Policy, which highlights ways that improve the audit rules to ameliorate the audit quality and create a competitive market. There are several regulatory approaches in this area, for example, joint audit, auditor's rotation, training of the audit committee as well as the restrictions on non-audit services. Joint audit aims to strengthen the auditors' independence and improve the services they provide. It can be defined as an audit in which financial statements are audited by two independent auditors with one single auditing report signed by both of them. It also imposes joint liability for both auditors (Lesage et al., 2017). Arguments supporting the mandatory or voluntary joint audit include increased confidence in the audit because both parties have to agree on the report before signing it (Mazars, 2010). Accordingly, the audit quality is boosted and failure becomes rare (Bisogno & De Luca, 2016). According to the Tunisian, joint audits are necessary only for listed banks, insurance companies, companies that prepare consolidated accounts as well as those with liabilities exceeding a certain limit. The regulation concerning joint audits in Tunisia are inspired from the French regulations. Nevertheless, contrary to France, Tunisia has no laws that organize how work is shared among the two auditors. Several research works have dealt with the subject of joint audit in European countries, such as France (Haak et al., 2018), Denmark (Holm & Thinggaard, 2016), Sweden (Ittonen & Trønnes, 2015), Germany (Velte & Azibi, 2015) and Italy (Bianchi et al., 2019). However, these studies are scarce in Tunisia which is why our study aimed to fill this gap

by studying the determining factors of the joint audit quality in the Tunisian context. The present work aimed to outline the determinants of the quality of the joint audit through interviews with joint auditors. The research on these determinants was motivated by the non-observance and the intangibility of quality. This paper is organized as follows: First, we will outline a review of the literature that led to formulating the hypotheses to be tested. We will then present the research methodology and discuss the findings. Finally, we conclude the paper and highlight the implications of our research.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In this second section, we start with the presentation of the theoretical framework of this research work. Then, in the subsequent part, we introduce the previous research that dealt with our topic to identify the determining factors of the joint audit quality and formulate the hypotheses to be tested.

The Research Theoretical Framework

The research area under focus involves the checking, the audit and the statutory facets of the audit mission. In fact, the theories that best govern this area lie mainly in the positive agency theory and, more specifically, the contractual and delegation theory. Indeed, the positive agency theory emanates from the interest conflict hypothesis, which concerns an entity involving different implicated parties, namely the principal and the agent or the owner and the manager. These two major parties are bound by a contractual agency relationship, as constructed upon an explicit or implicit contract. Unable to manage the entity, the owner assigns part of his property rights to the agent in the form of intelligent delegation. Most often, the agent is skillful at making decisions instead of the owner. His stewardship of the entity confers him a set of private information exclusively known to him. The positive agency- theory information asymmetry (Charreaux, 2000) relies heavily on such a practice.

Competence

Competence is the initial characteristic of the auditor's behavior during a Statutory Auditing mission. In the mind of the legislator, it tends to promote knowledge based, first and foremost, on education (Flint, 1988; Manita & Elommal, 2010) embodied by the notion of formal knowledge and second, on the know-how defined by Flint (1988) as the product of experience. (Mandour & Mokhtar, 2018). A probable lack of experience of the auditor at the beginning of a mission can be alleviated in the context of a joint audit if the rotation of the assigned audit firms does not occur at the same time (Lesage et al., 2017). Peterson (2019) envisaged that the implementation of joint audit would help audit firms access large clients and allow for a crosscheck on the audit quality. Furthermore, such firms would need the services of personnel who are skilled in tendering procedures (Lobo et al., 2017). Accordingly, the following hypothesis can be formulated:

H1: Firms hiring joint auditors assess the joint audit quality through each auditor's competence.

The advantages of joint audits are seen in the potential reinforcement of auditor independence and strengthening of the positions of the non-Big 4 firms in the audit market (Haak et al., 2018). An auditor's independence can certainly be improved because he will have lower

economic dependence on the client, and it will be more difficult for managers to convince two auditors to remain silent on any discovered problem (Zerni et al., 2012). Each of the joint auditor’s respective independence, representing one of the profession’s basic pillars, has been determined and assessed through several definitions (Benacib, 2004). For instance, Manita & Elommal (2010) state that independence reflects the auditor’s ability to withstand the pressures exerted by company managers (Velte, 2017). Similarly, Bédard et al. (2016) conclude that an auditor is considered as independent once he/she can make objective judgments free from the influence of their clients (Febrianto et al., 2017; Khasharmeh & Desoky, 2018). Hence our second hypothesis:

H2: Firms hiring joint auditors assess the joint audit quality through each auditor’s independence.

Reputation

Reputation plays the role of the regulator (in favor) of independence. According to Richard (2000), the objective of the auditor is to be chosen by the shareholders and then to maximize his profits (Barghathi et al., 2020). Moreover, the audit firm’s reputation is also based on the fees it receives. This study, along with that of Krishnamurthy et al. (2003), found that reputation (measured by the audit firm’s size) is based on the perception of the delivered service quality (Loba et al., 2017). The works of Naslmosavi et al. (2013) showed that the quality of the delivered service depends on the size of the audit firm (Mokoaleli-Mokoteli & Iatridis, 2017). Kermiche & Piot (2016) supported the view that a joint audit is effective in maintaining market openness and mitigating the domination of the Big 4 firms in the long run. They concluded that reputation has an impact on the joint audit quality (Holm & Thinggaard, 2016; Moctezuma & Benau, 2017). Thus, our third hypothesis is as follows (Figure 1).

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H3: Firms hiring joint auditors assess the joint auditors’ quality through each auditor’s reputation

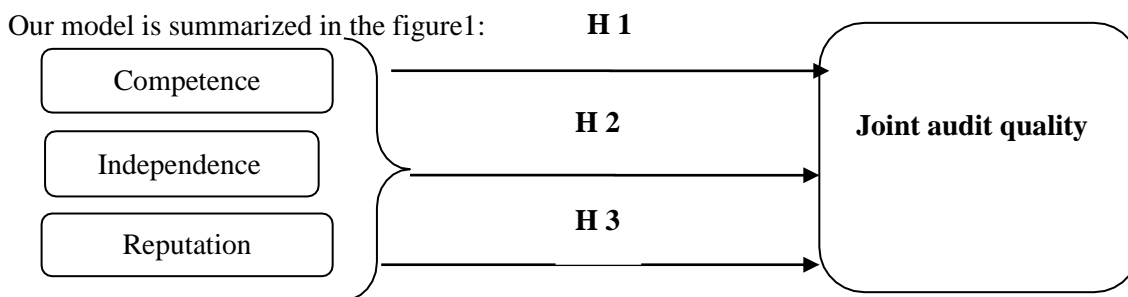


FIGURE 1
MAJOR DETERMINANTS OF JOINT AUDIT QUALITY

METHODOLOGY

In what follows, we will begin with a description of the study sample before introducing the approach adopted for the data collection procedure. Subsequently, we present the data analysis method applied. Our selected sample involved 250 Tunisian companies (130 insurance companies and 120 banking institutions). The objective of this research was to identify the joint audits’ mission quality. In a first step, we applied the principal component analysis (PCA); then, the

measurement model was tested using the multiple correspondence analysis (MCA) approach (classify the ideas in a space or a factorial plane and show that there is variability between the dimensions). Finally, the multinomial logistic regression was implemented.

Variables Measurements

The companies, subject of our study sample, were classified according to their joint audit quality level. Following Lhériaux (2005), we maintained that an auditing mission quality comprised between 0.5 and could testify for its adequacy. For this reason, we considered dividing our sample into three groups. The first group included companies assumed to have a bad joint auditing quality ($QMC < 0.5$). As for the second group, it involved companies that have an adequate joint auditing quality ($0.5 < QMC \leq 0.7$) while the last group included companies having an over joint auditing quality (i.e., a high quality) ($QMC > 0.7$). The results highlight that companies characterized by a good joint auditing quality are, on average, more skilled than those having a poor joint auditing quality (Table 1).

The Independent Variables

Variables	H	Measurements	Authors
Competence	H1	Request, Board, Staff qualification, ICT use, Satisfaction, specialization.	Flint, 1988; Manita & Elommal, 2010; Lesage et al., 2017.
Independence	H2	Seniority in the mandate, The beyond the statutory auditor, work distribution, The size asymmetry between the joint auditors.	Benacib, 2004; Khasharmeh & Desoky, 2018.
Reputation	H3	Reputation, disciplinary punishment, size: national/BIG 4	Richard, 2000; Kermiche & Piot, 2016.

RESULTS AND DISCUSSION

Principal Component Analysis and Multiple Correspondence Analysis

Our first step was to check the validity, the internal consistency and the reliability of the selected items for the variables related to competence, reputation and independence. Therefore, based on these ideas, three factorial axes were retained since the percentage of inertia they explain is of the order of 87.2% with eigenvalues greater than 1. This percentage implies that the eigenvalues of the selected axes represent a good proportion of the analysis since the sum of the inertia explained by each of the axes represents a significant part of the total inertia. Figure 2 supports this choice as the first 3 axes have dominant eigenvalues. In other words, the percentage sum of 87.2% reflects the reliability of the models' reading (mappings) and, therefore, of the good overall explanatory quality of the analysis. Moreover, the factor analysis, conducted on the 13 items, shows that the first-factor axis is essentially represented by the 6 items related to competence. Each of these items has at least one factor weight of about 0.458 while it explains 40.2% of the total explained variance. However, the variables related to "reputation" and "independence" form the other two factorial axes that explain respectively 24.3% and 16.7% of the total explained variance. Besides, the minimum factorial weight of the items specific to these

variables is 0.528. The mapping mentioned above shows that the items for each of the 13 variables are generally close to each other but relatively far from the center. This point cloud reflects a good representation quality. This result also shows a Cronbach coefficient of 0.747, which is satisfactory as it exceeds the acceptance threshold set in our study and, therefore, reflects the reliability of the 13 selected items. Consequently, all the items were retained.

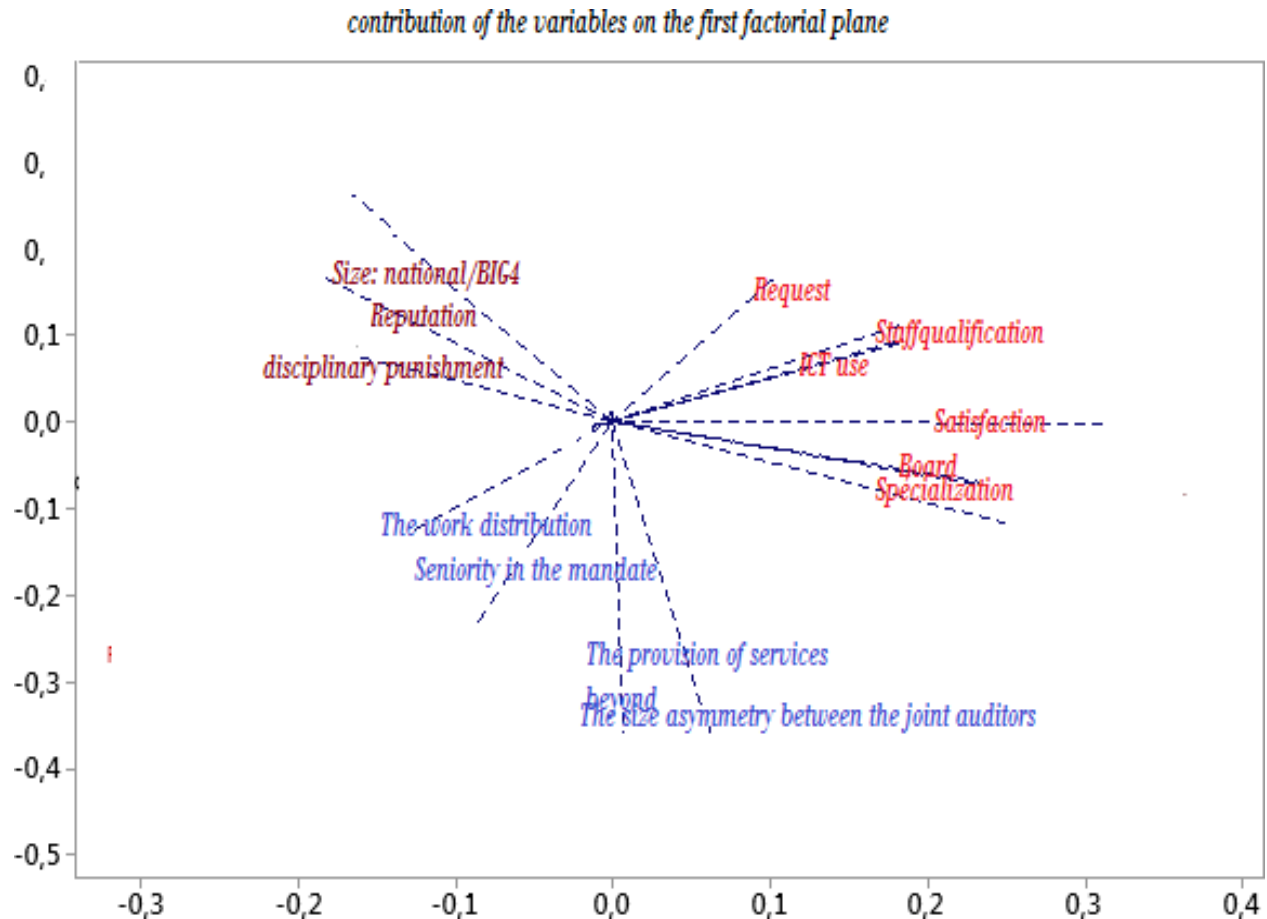


FIGURE 2
CONTRIBUTION OF THE VARIABLES TO THE FIRST FACTORIAL PLANE

To discretize the variables resulting from the Principal component analysis, based on a K-Means cluster classification analysis, the 250 companies were classified according to their value compared to the average values of the other companies. In our study, multiple correspondence analyses were relevant because they included categorical data and allowed us to produce an overall score for each company of our sample. The objective of our research was to emphasize and describe the relationship between the three variables resulting from the principal component analysis (PCA), between modalities of different variables and ultimately between the 250 companies of our sample. In our case, the MCA is based on a complete disjunctive table or a Burt table. Technically, the MCA makes it possible to project and, therefore, represent a cloud of points initially located in a very large space (the number of modalities minus the number of the variables under study) in an optimal subspace of a smaller dimension by retaining only the most essential information. In relation to our objectives, the MCA would allow estimating the weighting

coefficients of the modalities of the various indicators used for the quality of the joint audit firms and the coordinates predicted for each company on the chosen axis. Figure 3 shows the contribution percentage of each of the indicators according to their respective axes. The sum of the relative contributions of each of the indicators for each axis equals 100%. The percentage of the information held by axis 1 is 24.42% compared to 20.24% for axis 2. This MCA is, thus, based on 9 variables. We first presented the selection of the axes and then the actual results of the confirmatory MCA, taking into account the weights of the modalities of the selected indicators. The MCA general results, which are presented in the scree plot (Figure 3), suggest that we consider only the first three axes, i.e. those preceding the slope change. These axes represent respectively 24.42%, 20.24% and 14.75% of the total inertia. Figure 3 provides a graphical representation of the MCA factorial design. As can be seen from axis 1, competence 1 (modality 1) and independence 1 (modality 1) are strongly associated with a good quality of the joint audit. Nevertheless, the joint audit independence level is associated with a poor quality of the joint audit mission. Therefore, these graphical results reveal that the indicators related to competence and independence play an important role in the quality of the joint audit. The second axis of the factorial plane takes into account the modalities positively linked to the forms of the joint audit mission and those related to the following dimensions; competence 2 (modality "2"), independence 2 (modality "2") and reputation 2 (modality "2"), which are positively associated with the different forms of the joint audit mission. According to this graphical representation, the MCA allows obtaining the contribution of each of the 13 selected indicators to the form and quality of the joint as well as that of their modalities audit mission.

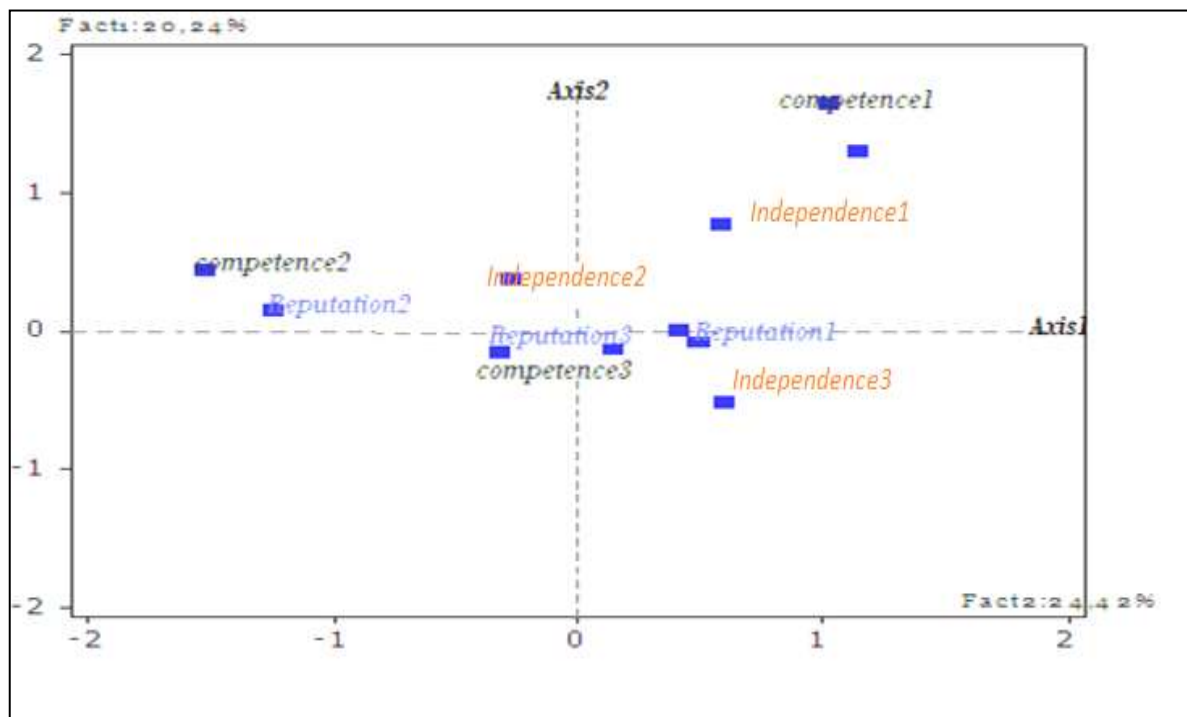


FIGURE 3
FACTORIAL PLANE REPRESENTATION

Multinomial Logistic Regression as Implemented on The Various Variables

The variance homogeneity Test (Levene test)							
	F	Sig	Statistics	Sig			
Competence	28.54	0.000	78.26	0.000			
Independence	9.38	0.044	136.14	0.000			
Reputation	11.10	0.005	14.96	0.022			
<i>Comparison Test</i>							
	Group1	Group2	Group3	Total	G1vs G2	G1vsG3	G2vsG3
Variables	N=107	N=62	N=47	N=342			
Competence					-0.0234***	-0.03**	-0.019
Independence					0.0047**	-0.0222*	-0.021***
Reputation					-0.129**	-0.163***	- 0.046

*, ** and *** significant at the thresholds of 10, 5 and 1 per cent, respectively

Concerning companies characterized by high-level joint auditing quality, the related competence, independence and reputation items are superior to those marking companies belonging to groups 1 and 2 of the joint audit qualities. To test the significance of the joint audit firms' competence, independence and reputation, we conducted a one-way analysis of variance (one-way ANOVA). Indeed, the administered Levene's test indicates that no variable proves to comply with the homogeneity of variance hypothesis at a maximum significance threshold of 5%. Additionally, the implemented Welch test, which is known to be more powerful than the F-statistics once the equal variance hypothesis is rejected, has helped us check the soundness of the ANOVA results. In fact, for the sake of establishing intergroup comparisons, the Tamhane's test was administered with regard to the competence, independence and reputation factors. The results depicted in Table 2 indicate that companies characterized by over-quality ($QMC > 0.7$) are significantly more competent and independent than those belonging to groups 1 and 2. However, no significant difference is observed regarding the reputation of both firm categories. Hence, by applying a structural response model (probabilistic with 3 alternatives) of multinomial logit type, this section aims to explain the quantification of the effects of competence, independence and reputation on the joint auditing quality to reduce the information asymmetry levels. More specifically, we aimed was to analyze the joint audit quality as a dependent variable through the relationship between the probability of a poor joint auditing quality and adequate quality along with over-quality counterparts. Accordingly, the presentation of the main econometric evaluation results, via the multinomial logit model, was initially inconclusive. Thus, a subsequent step, in which we compare these results to the prediction of the tested model regarding the effect of each explanatory variable on the joint-audit quality, needed to be under taken. To this end, and for an effective analysis of our model, the implementation of various econometric techniques seems crucial. Indeed, such a procedure should provide a thorough explanation of the relationship between our variables and the probability of achieving a high joint auditing quality. Economically, the final model subject of estimation, which stands as the major focus of our research analysis, should be formulated as follows:

$$\log\left[\frac{Pr(QMC = 3)}{Pr(QMC = 1)}\right] \beta_{\text{competence}} * \text{Competence}_i + \beta_{\text{independence}} * \text{Independence}_i + \beta_{\text{reputation}} * \text{Reputation}_i + \xi_i$$

$$\log\left[\frac{Pr(QMC = 2)}{Pr(QMC = 1)}\right] \beta_{\text{competence}} * Competence_i + \beta_{\text{independence}} * Independence_i + \beta_{\text{reputation}} * Reputation_i + \xi_i$$

$\log\left[\frac{Pr(QMC=3)}{Pr(QMC=1)}\right]$: stands for the logarithm of the probability of achieving a high joint audit quality with respect to the probability of poor quality of the joint auditing mission.

$\log\left[\frac{Pr(QMC=2)}{Pr(QMC=1)}\right]$: task contributing to the probability of attaining a poor auditing mission quality.

The statistical quality of the multinomial logit model is axed on the independence axiom, along with the computation of the odds ratios, marginal effects as well as the predicted probabilities.

The Independence of Irrelevant Alternatives (IIA)

It is worth noting that such an approach is liable to evoke a problem associated with the prevalence of certain bias in the estimation, requiring, as a solution, the administration of an independence test among the three alternatives. As a result, it is convenient to implement the Hausman & Small Hsiao (1984) approach, whereby the presence or absence of any significant link could be effectively tested and detected. To verify the existence or absence of any link between the three joint-audit quality alternatives, we conducted the Hausman (HM) and the Small Hsiao (SH) tests.

Equations	Hausman Test (1984) (p-value)	Small-Hsiao (1984) (p-value)
Bad QMC=1 as a reference Adequate QMC=2 Strong/High QMC=3	24.25 (0.47) > 0.1 12.3 (0.936) > 0.1	1.45 (0.6247) > 0.1 1.33 (0.755) > 0.1
Adequate QMC=2 as a reference Bad QMC=1 Strong/High QMC=3	22.5 (0.332) 17.8 (0.845)	4.78 (0.554) 1.47 (0.11)
Strong QMC=as a reference Bad QMC=1 Adequate QMC=2	33.4 (0.45) 24.3 (0.902)	187 (0.214) 234 (0.55)
H0: Accept the independence hypothesis (the three alternatives are distinct) H1: Accept the independence hypothesis (the three alternatives are dissimilar) p-value: the likelihood of accepting the IIA, which should be higher than 10%.		

Indeed, both tests are generally based on measuring the difference between the entire model estimated parameters and those of a restricted alternative model. Accordingly, should the variation be statistically significant, the independence of irrelevant alternatives (IIA) hypothesis is rejected (Baltas-Doys, 2001) taking into consideration the independence axiom and as semblable of non-concerned alternatives, based on the statistics of Hausman & Fedden (1984). Therefore, as illustrated in Table 3, the estimation results prove the independence among the three alternatives. The Hausman test, based on the Chi2- statistic, shows that the null hypothesis of independence between the three alternatives (p-value=0.47 and 0.93) may well be accepted. Moreover, the Small-Hsiao test proves that the present model is an IIA (p-value=0.62 and 0.75); otherwise, these alternatives would not be dissimilar.

Overall, this model was found to depend on quality as an efficient estimator. Here, two

alternatives can be weighed, i.e., whether to calculate the opportunity or the risk ratio (odds ratio), which measure the likelihood ratio relevant to the achievement of either an adequate or bad joint auditing quality. Consequently, we set RRi: $RR = \frac{Pr[(QMC=i)/x]}{Pr[(Retard=i)/x]}$.

It follows that the two hypotheses need to be accounted for to justify the existence of an opportunity to achieving an adequate and high quality regarding the joint audit mission of our model. Thus, for the odds ratio of reaching an adequate QMC (RR2), it is necessary to formulate and check the following hypotheses: H0: RR2 > 1 and H1: RR2 < 1. However, concerning the odds ratio of reaching a high QMC (RR3), the following assumptions should be tested: H0: R3 > 1 and H1: R3 < 1. Nevertheless, the acceptance of the IIA should justify the increasing effect of the explanatory variable (xi) on the possibility of reaching a high and adequate joint-audit quality (Table 4).

Variables	Coefficient (Z-stat)			
	QMC = 1			
Competence, Independence, Reputation	An alternative of Ref			
Variables	QMC=2		QMC = 3	
	Coefficient	(Z-stat)	Coefficient	(Z-stat)
Competence	2.51***	(5.28)	2.97***	(5.39)
Independence	-0.57 <1	(-1.04)	1.09***>1	(3.72)
Reputation	1.27**	(4.04)	1.31***	(4.09)
Number of observations	88			
likelihood L	-75.355575			
Chi-square LR	35.38			
P-value	0.0004			
R2	0.22			

A review of our estimation results, as based on the risk ratio coefficient, indicates that hypothesis (H1), stating that competence significantly affects the joint audit quality, is validated. The administered test reveals the impact of an increasing competence level on the odds ratio of achieving an adequate joint auditing quality compared to bad quality. Nevertheless, the effects of competence differ according to the level of joint auditing quality.

$$RR2 = \frac{Pr [(QMC=2)/competence]}{Pr [(QMC=1)/competence]} = 2.51 \quad RR3 = \frac{Pr [(QMC=2)/competence]}{Pr [(QMC=1)/competence]} = 2.97$$

This indicates that if the competence score is improved by one unit, the opportunity ratio of achieving an adequate joint-audit quality, will record an increase of 2.51 at a significance threshold of 1%. This finding is consistent with that documented by Peterson (2019). Moreover, the higher the joint auditors' competence level is, the higher their mission quality will be. Therefore, the odds ratio of achieving a higher joint-audit quality would be improved. Our estimation results, based on the risk ratio coefficient, prove that hypothesis (H2), positing that independence has a significant effect on the joint audit quality, is validated. It is also worth mentioning that the implemented test reveals the significant impact of independence on the odds ratio of achieving an over-quality of the joint audit compared to poor quality. As expected, this result confirms our advanced hypothesis outlining the importance of independence in achieving a

more effective joint auditing quality, though there is a risk ratio inferior to 1. This finding corroborates the results found by Manita and Elommal (2010).

$$RR2 = \frac{Pr[(QMC=2)/Independence]}{Pr[\frac{QMC=1}{Independence}]}$$

More specifically, this last finding highlights that the impact of independence on the possibility of achieving an adequate joint auditing quality is statistically insignificant in the case of poor quality. Finally, an examination of our estimation results, relying on the risk ratio coefficient, demonstrates that hypothesis (H3), postulating that reputation has a significant effect on the joint audit quality, is also validated. Indeed, for every single unit increase in reputation, the odds ratio of achieving an adequate joint audit quality would increase by 1.27 at a significance threshold of 5 %; however, the odds ratio of achieving an over quality would increase by 1.31 at a threshold of 1 %. This result is in line with that found by Kermiche & Piot (2016).

CONCLUSION

The present study aimed to examine the effects of several factors and their role in enhancing the joint auditing mission quality. The major objective of the present work lies in highlighting the main joint- audit quality determinants and the extent of their impact on the concerned practitioners, through an interview administered with the joint-audit firms. It is worth noting, however, that the determinants related to the investigation are motivated by the notional and intangible aspect of quality. Based on our selected model, the joint-audit mission quality proves to contribute to the prediction process through three relevant factors, namely competence, independence and reputation, that significantly affect it.

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