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## THE IMPACT OF INTERACTIVE INTERNAL AUDIT FUNCTION QUALITY DETERMINANTS AND COORDINATION ON AUDIT REPORT LAG

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Audit report lag, Internal audit function independence, Internal audit function competence, Coordination between internal and external auditors

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# THE IMPACT OF INTERACTIVE INTERNAL AUDIT FUNCTION QUALITY DETERMINANTS AND COORDINATION ON AUDIT REPORT LAG

## Abstract

The current study has three main objectives: (1) to investigate the joint impact of internal audit function (IAF) independence factors and competence on the coordination between IAF and external auditor (EA); (2) to examine the effect of coordination on audit report lag; (3) to investigate the joint impact of IAF independence factors and competence on audit report lag. To the best of the researchers' knowledge there is no previous study shed the light on the interactive impact of IAF quality determinants on coordination and on audit delay. In addition, this study is the first that examines the mediating effect of coordination on the associations between the interactive IAF quality determinants and audit report lag. This paper is conducted based on a sample of Lebanese banks operating in Lebanon, focusing on the three-year period from 2016 to 2018. The researchers adopt the Partial Least Square (PLS) 3 for analyzing data and testing the posited hypotheses. The results show that the first and second interactions between IAF independence factors and competence have respectively moderate and weak positive effect on coordination. The outcomes also show that the first and second interactions have respectively weak and moderate negative effect on audit report lag. However, both coordination and bank size (control variable) have no effect on audit report lag. The results also reveal that there is no mediating effect of coordination on the associations between each of interaction (1) and (2) and audit report lag. This study has some limitations that can be used as base for further future research. For example, the current paper is conducted on a small sample size that may limit the power of this research to generalize its findings. The results of this study provide significant insights to the board of directors, audit committees (ACs), IAFs, managements, and EAs of the Lebanese banking sector, and the governmental and regulatory bodies of the banking sector.

## Keywords

Audit report lag, Internal audit function independence, Internal audit function competence, Coordination between internal and external auditors

## 1. INTRODUCTION

Timeliness is one of the main qualitative characteristics of financial statements that enhances the decision making of the users of these statements (IASB, 2018). However, the timeliness of publishing the accounting information relies on the duration spent by the EA to accomplish the audit process (Leventis et al., 2005). More than ever before, EAs are under accelerating pressure to finish their audit tasks and prepare their audit reports in a shorter time (Frag, 2017). Accelerating the release of accounting data, through decreasing the external audit lag is a key to promote the confidence of stockholders in capital markets (Ettredge et al., 2006; Habib & Huang, 2019) and to avoid the unexpected market reactions (Abbott et al., 2012). Audit report lag is defined as the number of days from the end of a company's fiscal year till the signature date of the audit report (Hussin & Bamahros, 2013; Pazzini et al., 2015; Hassan, 2016; Oussii & Taktak, 2018a).

Prior studies revealed that the value of accounting information decreases the longer the audit opinions are belated (Knechel & Payne, 2001). Due to this reason and for the purpose of decreasing audit report lag, many auditing standards (such as ISA 610, the revised ISA 610, AS 2201, and SAS 65), the Institute of Internal auditors (IIA), and SOX 2002 have shed the light on the role the IAF can play on decreasing audit report lag through enhancing the effectiveness of internal control over financial reporting (ICOFR) or through increasing its coordination with the EAs (Hajiha & Rafiee, 2011; IIA, 2012; Pizzini et al., 2015; Oussii & Taktak, 2018a).

The more robust the ICOFR system, the less time it is required by EAs to finish the audit process (Munsif et al., 2012, Pizzini et al., 2015). Through increasing the effectiveness of ICOFR, the EAs would be encouraged to increase their reliance on these controls and decrease the substantive tests that are time consuming, which would decrease the time needed for issuing the audit report (Hajiha & Rafiee, 2011; Pizzini et al., 2015). The IAF must be qualified enough to be able to increase the effectiveness of the ICOFR (Pizzini et al., 2015). The auditing standards (e.g. ISA 610, the revised ISA 610, and SAS 65) have mentioned the characteristics and determinants of a qualified IAF and consider competence and independence among the most important determinants. Besides, these standards encourage the EA to evaluate the quality of IAF based on these determinants to assess the effectiveness of ICOFR. Evaluating the competence and independence of the IAs would provide signs if the ICOFR can detect, prevent, and correct the misstatements in the financial statements or not (Prawitt et al., 2009).

Moreover, the different types of coordination between IAF and EA mentioned in the auditing standards and literature can shorten the external audit lag (Pizzini et al., 2015; Oussii & Taktak, 2018a). The auditing standard AS 2201 (replaced AS 5) and section 404 of SOX Act (2002) encourage EAs to increase their reliance on the work done by the IAF in order to stick to the due date of issuing the audit report (Pizzini et al., 2015). However, the extent of which the EAs may coordinate with and rely on the efforts of internal auditors (IAs) depend on EAs' evaluation of IAF quality (Abbott et al., 2012; Pizzini et al., 2015; Altwaijry, 2017). The competence and independence of IAF are among the most important characteristics of IAF that are considered by the EAs to determine the extent of coordination with IAs (Oussii & Taktak, 2018a).

This study focuses on two IAF independence factors, which are the audit committee's (AC's) influence on IAF versus CFO and CEO influence and the non-usage of IAF as management training ground (MTG). The purpose of the current study is to examine the interactive impact of the IAF independence factors and competence on the internal – external audit coordination and on audit report lag. In addition, the study examines the effect of coordination on audit lag. This research is carried out depending on 75 bank year observations related to 25 Lebanese banks operating in Lebanon and covering the period from 2016 to 2018. The data were collected through annual reports and questionnaires sent to the chief internal auditors (CIAs) and IAs of the Lebanese banks. For Analyzing data, the current study adopts one of the structural equation modeling (SEM) approaches, which is the PLS 3. The results show that the first interaction (AC's influence on IAF and IAF competence) and the second interaction (non-usage of IAF as MTG and IAF competence) of IAF quality determinants have respectively moderate and weak positive effect on coordination. In addition, the first and second interactions have respectively weak and moderate negative effect on audit report lag. However, both coordination and bank size (control variable) have no impact on audit report lag. The outcomes also show that the internal-external audit coordination has no mediating effect on the associations between each of the first and second interactions and audit report lag.

This study adds and contributes to the auditing literature in several aspects. First, it extends the literature (e.g. Suwaidan & Qasim, 2010; Ramasawmy & Ramen, 2012; Altwaijry, 2017) that examined the separate impact of IAF quality determinants on the different methods of coordination between IAs and EAs through examining the interactive impact of these determinants on coordination. Recently, Al-Sukker et al. (2018) investigated the interactive impact of three IAF quality determinants (work performance, competence, and independence) on the reliance of EAs on the work performed independently by IAs. Compared to the study of Al-Sukker et al. (2018), coordination construct in this paper is considered a one single composite measure that encompasses five types of coordination including those addressed by the authors. Second, the current study extends the prior literature (e.g. Hajiha & Rafiee, 2011; Hussin & Bamahros, 2013; Pizzini et al., 2015) that examined the separate impact of IAF quality determinants on audit report lag through considering the interactive impact of these determinants. To the best of the researchers' knowledge, there is no previous study sheds the light on the interactive impact of IAF quality determinants on audit delay. Third, this study extends the previous literature through examining the mediating effect of coordination on the associations between the IAF quality determinants and audit report lag. To the best of the researchers' knowledge, this study is the first that examines the mediating effect of the different methods of coordination gathered in one single score on these associations. In this concern, Pizzini et al. (2015) investigated the mediating effect of IAF contribution to external audit on the association between IAF quality determinants and audit report lag. The authors focused on two methods of coordination (depending on the work performed independently by the IAs or using the IAs as direct assistants working under the supervision of the EAs) out of the five methods addressed in this study.

The remaining of this paper is organized as follows. Section (2) displays background of the main constructs of this research, three streams of studies from which the research hypotheses are derived, and the proposed framework. Section (3) presents the research methodology; the section displays the population and sample of the study, methods adopted for collecting data, and the measurements of constructs. Section (4) shows the results of the current empirical study. Finally, section (5) displays the conclusion and discussions.

## **2. RESEARCH FRAMEWORK AND HYPOTHESES DEVELOPMENT**

The current section presents background of IAF independence factors and competence, background of audit report lag determinants, the studies that the researchers depend on to develop the study's hypotheses, and the research proposed framework.

### **2.1 Background of IAF Independence Factors**

The independence and objectivity of IAF were used in the literature interchangeably (Abbott et al., 2016). The studies (e.g. Messier et al., 2011; Abbott et al., 2016; Altwaijry, 2017) that addressed IAF independence considered outsourcing the IAF's activities, AC's IAF influence vs. management influence and the non-usage of IAF as MTG main factors that affect the independence of IAF. Management's influence in most of these papers is represented by the influence of CEO and CFO. Following these papers, this study focuses on two IAF independence factors, which are the AC's IAF influence vs. management influence and the non-usage of IAF as MTG. The researchers exclude the third factor from investigation because the banks operating in Lebanon are prohibited from outsourcing the activities of their IAFs according to the Basic Circular No 77 issued by the Lebanese central bank (BDL, 2000).

MTG is the recruitment of candidates into the internal audit department to understand the different processes and operations of the firm, in order to move them within a short time to management position (Mubako & Mazza, 2017). IAs accomplish various activities in many functions and departments within the firm, therefore they have chances to learn how those functions perform their tasks and how they are controlled and managed (Sawyer, 1996). Therefore, IAF can be used as a platform for preparing well-cycled managers who understand the different operations and are capable to work in all functions within the firm (Mubako & Mazza, 2017). However, several studies (e.g. Messier et al., 2011; Abbott et al., 2016; Mubako & Mazza, 2017) found that the usage of IAF as a MTG affects negatively the IAs' independence.

If IAF is used as MTG, IAs may hesitate to report the financial misstatements to top managers (Abbott et al., 2016) and to have hostile opinion on issues that emerge if they know that they might be transferred back to the function or department they are currently auditing (Wood & Wilson, 1989).

The oversee and support of the AC to IAF increases the independence of IAs (Suwaidan & Qasim, 2010; Stewart & Subramaniam, 2010; Alzeban, 2015; Abbott et al., 2016; Eulerich et al., 2017). In this concern, Alzeban (2015) found that the good relationship between the IAF and AC encourages the IAs to report any discovered fraud or irregularities done by management. Relatedly, Abbott et al. (2016) argued that if top managers have more influence over IAF than the AC, then the IAF would be afraid from management revenge if reporting the misstatements discovered in the financial statements. In the same vein, Eulerich et al. (2017) argued that the functional dominion over the CIA and the daily internal audit activities are often tied to the executive directors. Although executive directors can affect the IAF independence, the presence of effective AC may reduce the influence of CFO and CEO, increase the independence of IAF, and enhance its quality. The AC's influence on IAF is addressed in literature by the involvement of AC in decisions concerning the CIA appointing and dismissing (Mat Zain et al., 2006; Altwajry, 2017), the AC's revision of IAF work (Mat Zain et al., 2006; Lin et al., 2011), the reporting line of the IAF to the AC (Hajiha & Rafiee, 2011; Pizzini et al., 2015; Oussii & Taktak, 2018b), and the number of meetings conducted between IAF and AC (Mat Zain et al., 2006; Ramasawmy & Ramen; 2012).

## 2.2 Background of IAF Competence

The auditing literature reported that IAs would not be qualified and effective unless they hold the essential competencies (Prawitt et al., 2009; Pizzini et al., 2015; Mubako & Mazza, 2017; Oussii & Taktak, 2018b). "Competence" is stated under the paragraph "Technical competence" in section (c), paragraph 13 of ISA 610. According to ISA 610, "Technical Competence" is defined as "whether the internal auditors have adequate technical training and proficiency" (IAASB, 2010). Moreover, competence is mentioned in ISPPA No. 1210 as "Proficiency". According to this standard, the internal audit team must have skills and knowledge required to fulfill its duties. The competence of the IAs can be indicated through their education, experience, training and certification (IIA, 2013).

## 2.3 Background of Coordination between Internal and External Auditors

Various professional bodies extensively support the point of view that more coordination and collaboration between the IAs and EAs, including the dependence of EAs on the work of IAs, leads to more efficient and efficacious audit (Morrill & Morrill, 2003) and minimizes the audit work duplication (Felix et al., 2001). Indeed, both the American and international auditing standards, such as ISA 610, the revised ISA 640; SAS 65, encourage the two auditors to coordinate their activities while performing their duties during the audit period (AICPA, 1991; IAASB, 2010; IAASB, 2013). For instance, the International Auditing and Assurance Standards Board (IAASB) through the standard ISA 610 promotes the EA to depend on the work performed by IAs if considered reliable. According to this standard, the EA should consider the technical competence of IAs and the objectivity of IAF (IAASB, 2010). The revised ISA 610 includes new guidance related to EA's usage of IAs as direct assistants. The revised standard mentioned the responsibilities of EA if he decides to depend on IAs as direct assistants, which include the EA's revision, direction, and supervision of the work accomplished by the IAs (IAASB, 2013).

The collaboration between IAs and EAs can avoid overlapping and decreases the external audit duplication (Felix et al., 2001). In this regard, Pike et al. (2016) reported that "Coordination can include periodic meetings, scheduling audit work, reviewing working papers, and discussing possible accounting/audit issues. Additional coordination arrangements identified in the academic literature include assigning specific audit work to the IAF, managing the availability of the IAF, conducting joint risk or planning sessions, performing audits of specific processes/locations, and loaning IAF staff to the external auditor".

## 2.4 Background of Audit Report Lag Determinants

The literature reported several factors that may influence audit report lag in addition to IAF quality determinants and coordination between IAs and EAs. Examples of these factors are company size (Khoufi & Khoufi, 2018), performance and financial condition (Durand, 2019), ownership concentration (Hassan, 2016; Khoufi & Khoufi, 2018), board independence (Chan et al., 2016), board size (Hassan, 2016), type of audit report (Leventis et al., 2005; Oussii & Taktak, 2018a), and audit fees (Ettredge et al., 2006). The prior studies revealed that these determinants may affect audit report lag positively or negatively.

## 2.5 The Joint Impact of IAF independence Factors and Competence on Coordination

Following the study objectives, the first part of investigation is the interactive impact of IAF independence factors and competence on the coordination between IAF and EA. The literature that examined the separate impact of IAF independence factors and competence on the different methods of coordination showed that these IAF quality determinants have vital role in enhancing the various coordination methods. For example, the studies that addressed the effect of AC's IAF influence (e.g. Mat Zain et al., 2006; Suwaidan & Qasim, 2010; Ramasawmy & Ramen, 2012; Altwaijry, 2017) and the usage of IAF as MTG (e.g. Messier et al., 2011) on various coordination methods revealed that the two IAF independence factors affect coordination. These studies showed that the usage of IAF as MTG affects negatively the coordination between the two parties; however, AC's influence compared to management influence has a positive impact on this coordination. MTG practice would increase the management pressure on IAF and increase the doubt of the EA about the independency of IAF, which would decrease the trust on the work accomplished by IAs and the reliability of the information provided by them (Messier et al., 2011). However, the presence of an effective AC supports and protects the IAF from the severe intervention of management that impedes its independence. In addition, some studies (e.g. Suwaidan & Qasim, 2010; Ramasawmy & Ramen, 2012; Pizzini et al., 2015) reported that IAF competence may have positive impact on the coordination between IAs and EAs. According to these studies, the presence of competent IAs would encourage the EAs to increase their reliance on IAs and trust more their performance.

Indeed, all the studies displayed before in this subsection concentrated on examining the separate impact of IAF independence and competence on the various methods of coordination, especially the EA's reliance on the work accomplished independently by IAs or using the IAs as direct assistants. However some studies (e.g. Maletta, 1993; Krishnamoorthy, 2002; Abbott et al., 2016; Al-Sukker et al., 2018) considered that the interaction between the IAF quality determinants is essential to increase the strength and quality of IAF, which would increase the likelihood to have coordination between IAs and EAs. In this concern, Maletta (1993) shed the light on the necessity of investigating the interrelationships among the IAF determinants when examining the impact of these determinants on the coordination between IAs and EAs. However, the author focused only on one method of coordination, which is the EAs' usage of IAs' as direct assistants. Similarly, the objective of the study of Krishnamoorthy (2002) was to explore how the IAF quality determinants, including competence and independence, interact in identifying the strength of IAF from the point of view of EAs. The results of the study showed that the significance of these determinants is conditioned by the interrelationships among them. Gramling et al. (2004) mentioned that it is essential to examine the interrelationships among the IAF quality determinants and documented that extra studies are needed to examine the interrelationships among these determinants.

Relatedly, Abbott et al. (2016) argued that each IAF quality determinant is not sufficient alone in affecting the financial reporting quality. The authors considered that within the IAF, "competence and independence are important and distinct constructs that must interact" to increase the strength of IAF. In the same vein, the study of Al-Sukker et al. (2018), provided evidence that there is significant interactive effect of IAs' independence and competence on the EAs' reliance decision, and that EAs do not consider the effect of each individual determinant in isolation.

Based on the previous illustrated studies (e.g. Mat Zain et al., 2006; Suwaidan & Qasim, 2010; Messier et al., 2011; Pizzini et al., 2015; Altwaijry, 2017) that examined the separate impact of IAF competence, AC’s IAF influence, and the non-usage of IAF as MTG on the collaboration between IAF and EA; and the recommendations of Maletta (1993), Krishnamoorthy (2002), Gramling et al. (2004), Abbott et al. (2016) and Al-Sukker et al. (2018) for examining the interrelationships among IAF quality determinants the researchers posit the first and second research hypotheses. Depending on these studies, the researchers suggest that as the AC’s IAF influence increases the likelihood that the EA would better coordinate with a competent IA. A Competent IA may discover misstatements in the financial statements or deficiencies in the internal controls but he/she may not have the courage to share this information with EAs or report these misstatements and deficiencies if the management influence on the IAF exceeds the AC influence. In this case, the EA would be less likely to rely on and coordinate with the competent IA because of his lack of independence. Therefore, the first hypothesis of this study is:

H1: The interaction between IAF competence and AC’s IAF influence is positively associated with the coordination between IAF and EA.

In addition, based on these studies the researchers suggest that not using the IAF as MTG increases the likelihood that the EA would coordinate with a competent IA. If the IAF is used as MTG, even the competent IA might be less encouraged to report any misstatement related to a certain division if he/she feels that the manager of this division may prevent him/her from promoting to a higher managerial position in the company. In this case, the EA would consider the information provided and the work accomplished by the IAs unreliable and would be discouraged to coordinate with the IAF and rely on its work. Therefore, the second hypothesis of this study is:

H2: The interaction between IAF competence and an IAF that is not used as a MTG is positively associated with the coordination between IAF and EA.

Fig.1 clarifies the suggested associations among the variables of hypotheses (H1) and (H2).

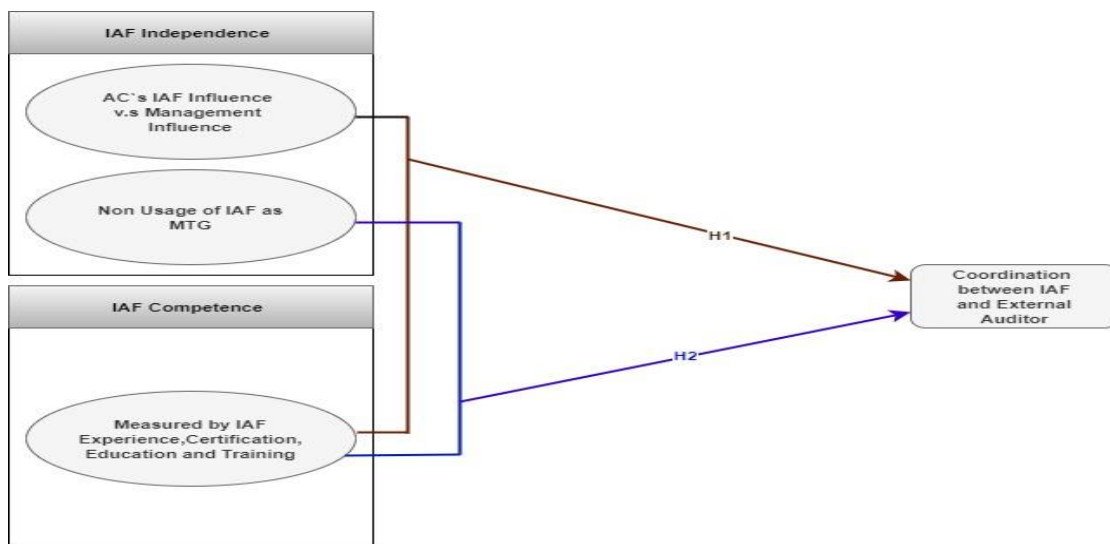


Fig.1: The Developed Hypotheses (H1) and (H2)

## 2.6 The Effect of Coordination on Audit Report Lag

Following the research objectives, the second part of investigation focuses on the impact of coordination between IAs and EAs on audit report lag. Indeed, several studies (e.g. Abbott et al., 2012; Aljaaidi et al., 2015; Pizzini et al., 2015; Oussii & Taktak, 2018a) revealed that the different methods of coordination between IAs and EAs may diminish the external audit work and reduce the audit report lag. The coordination between IAF and EAs may reduce the pressure on EAs and accelerate the issuance of the audit report.

Besides, using the IAs as direct assistants can play a vital role in reducing audit delay through covering the shortage in the personnel availability of EAs and help in conducting the necessary substantive tests at the end of the year (Abbott et al., 2012). In this concern, Oussii and Taktak (2018a) investigated whether the extent of coordination between IAF and EA affects audit report lag. The authors identified coordination as a comprehensive variable that includes five methods of coordination, which are considered in this research. The outcomes of the study revealed that more coordination between IAF and EA leads to timelier financial reporting and reduction in audit report lag.

Depending on the arguments of these studies, the researchers conclude that the coordination between IAF and EA may decrease audit report lag. Thus, the study's third hypothesis is formulated as follows:

H3: Greater coordination between the IAF and EA is associated with shorter audit report lag.

Fig. 2 displays the suggested association between coordination and audit report lag.

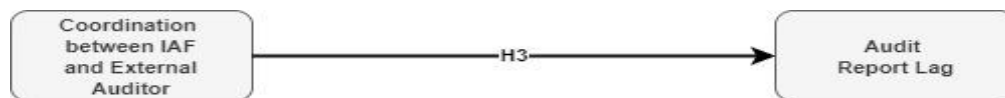


Fig.2: The Developed Hypothesis (H3)

## 2.7 The Joint Impact of IAF independence Factors and Competence on Audit Report Lag

Following the study objectives, the third part of investigation focuses on the interactive effect of IAF independence factors and competence on audit report lag. The independent and competent IAF can have direct influence on audit lag through enhancing the ICOFR and improving the quality of financial reporting (Hajiha & Rafiee, 2011; Hussin & Bamahros, 2013; Pizzini et al., 2015). In the presence of poor internal controls, the EA needs more time and extended efforts to detect and/or correct the misstatements in the financial statements due to the high level of control risks, which would increase audit delay (Hogan & Wilkins, 2008). In this concern, Pizzini et al. (2015) argued that "A higher quality IAF should lead to stronger ICOFR, fewer errors in the financial statements, and less time to complete the external audit".

In fact, most of the papers that investigated the impact of IAF quality determinants on audit report lag showed that IAF quality can have significant influence on decreasing audit lag (e.g. Knechel & Payne, 2001; Hajiha & Rafiee, 2011; Hussin & Bamahros; 2013; Pizzini et al., 2015). In this concern, Knechel and Payne (2001) found that the presence of IAs with low experience is associated with longer audit report lag. Relatedly, the purpose of the study of Hajiha and Rafiee (2011) was to examine the effect of IAF quality on audit report lag. IAF's competence, independence, and internal audit department size were used as measurement of IAF quality. The authors considered that IAF independence can be achieved when the internal audit report is submitted to the AC or BOD. The results of the study revealed that both IAF competence and independence have positive and significant effect on the timeliness of audit reporting.

As well as, Hussin and Bamahros (2013) found a strong negative relationship between the costs invested in IAF (such as the costs incurred for training the IAs) and audit report lag.



The authors explained that more investment in IAF leads to more competent IAs who would help management in establishing stronger ICOFR. With less control deficiencies, EAs are more likely to collect less evidence, which would faster the time of completing the audit work and shorter audit lag.

Relatedly, Pizzini et al. (2015) examined the impact of IAF quality on audit report lag. One single comprehensive measure of IAF quality was used in this study including items related to IAF independence and competence. The authors suggested that a higher level of IAF quality leads to stronger ICOFR, less misstatements in the financial reports, and fewer days to finish the external audit. The results revealed that IAF competence is the main driver for decreasing the audit report lag. Moreover, the outcomes showed that the CIA reporting line to the AC (the indicator of IAF independence) is associated with reductions in audit lag.

Indeed, the previous displayed studies contributed much in examining the relationships among the IAF quality determinants and external audit lag but they did not take in consideration the interactive impact of each of IAF independence factors and competence on audit report lag. However, Maletta (1993), Krishnamoorthy (2002), Gramling et al. (2004), and Al-Sukker et al. (2018) addressed the importance of examining the interrelationships among these determinants. In this concern, Abbott et al. (2016) examined the interactive impact of IAF independence factors (including the AC's influence on IAF vs. the management influence and the non-usage of IAF as MTG) and competence on the quality of financial reports. The authors suggested that the joint effect of competence and IAF independence factors is an essential provision of effective monitoring for IAF over financial statements. The results of the study showed that the answer to the question "what is the effect of internal audit competence (independence) on financial reporting quality?" is "it depends on the independence (competence) of the internal auditor". IAF independence (competence) may be less likely to affect the financial reporting quality in the absence of IAF competence (independence).

Based on the previous illustrated studies that examined the separate impact of IAF quality determinants (independence and competence) on audit report lag (e.g. Hajiha & Rafiee, 2011; Pizzini et al., 2015); the recommendations of Maletta (1993), Krishnamoorthy (2002), Gramling et al. (2004), and Al-Sukker et al. (2018) for examining the interrelationships among these determinants; and the interactive argument of Abbott et al. (2016), the researchers suggest that the interaction between each of IAF independence factors and competence decreases audit report lag. According to the studies that recommended the investigation of the interrelationships among these determinants, each determinant alone is not sufficient and should not be examined separately; these determinants must interact with each other. Even competent IAs may discover misstatements in the financial statements or deficiencies in the ICOFR but they may not have the courage to report these misstatements or deficiencies due to management pressure (resulting from using IAF as MTG or big management influence on IAF compared to AC influence) which impedes their independence. In this case, the EAs would consider the IAs not qualified enough to monitor, evaluate, and improve the ICOFR. Then the EAs' reliance on these controls would decrease and they would increase the substantive audit procedures, which are time consuming, to support their opinions in the audit reports. Based on these arguments the fourth and fifth research hypotheses are:

H4: The interaction between IAF competence and AC's IAF influence is negatively associated with audit report lag.

H5: The interaction between IAF competence and an IAF that is not used as MTG is negatively associated with audit report lag.

Fig. 3 presents the posited associations among the variables of hypotheses (H4) and (H5).

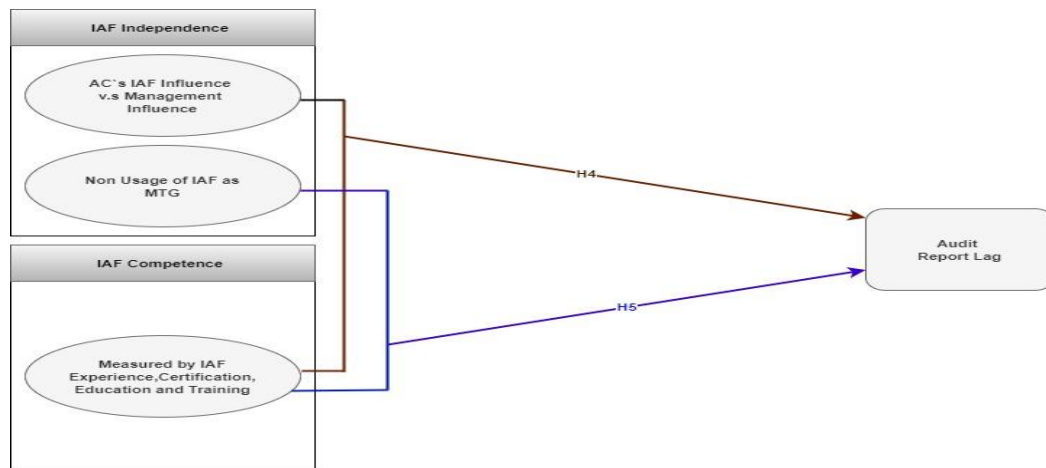


Fig.3: The Developed Hypotheses (H4) and (H5)

### 2.8 The Proposed Research Framework

To investigate the interactive impact of IAF independence factors and competence on coordination and audit report lag and to examine the effect of coordination on audit lag, the researchers propose a framework presented in Fig. 4. The proposed framework reflects all the suggested associations and posited hypotheses of this research.

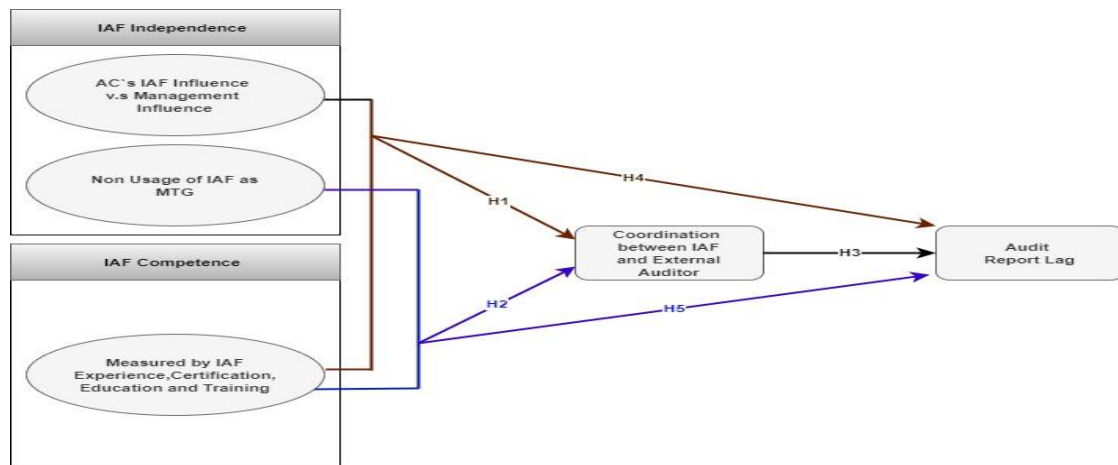


Fig.4: The Proposed Research Framework

## 3. RESEARCH METHODOLOGY

The researchers conduct an empirical study to test the formulated study hypotheses. This section presents the population and sample of the study, ways of collecting data, and the measurements of the research model constructs.

### 3.1 Population and Sample

The current study emphasizes on the Lebanese banking sector, which is composed of 62 banks, including 8 Arab and foreign banks and 54 Lebanese banks (BDL, 2019). The population of this study is the Lebanese banks (54) after excluding the banks whose membership are suspended from Association of Banks in Lebanon (2) and the subsidiaries of commercial banks (12); thus, the population represents 40 Lebanese banks operating in Lebanon (BDL, 2019). Out of these 40 banks, 25 are included in the sample. The rest 15 banks are excluded because they did not publish the annual reports for the three-year period (2016, 2017, and 2018) or their IAs and CIAs did not fill the questionnaires. Thus, the total number of bank-year observations for the three-year period (2016-2018) is 75 observation (25 x 3). Table 1 displays the criteria for selecting the final study sample and the number of observations.

Table 1: The Final Sample Selection Criteria and the Number of Observations

	Total Number
Population banks	40
(-) Banks did not publish the annual reports, published reports with missing data for the three-year period (2016, 2017, and 2018), or banks whose IAs or CIAs did not fill the questionnaires.	(15)
Sample banks	25
Final number of bank-year observations for the period (2016-2018) (25 x3)	75

### 3.2 Data Collection

For this study, two methods were used for collecting data, survey questionnaires and annual reports. Consistent with prior studies (e.g. Hajiha & Rafiee, 2011; Pizzini et al., 2015; Roussy & Brivot, 2016; Oussii & Taktak, 2018a) the target respondents of the questionnaires were the IAs and the CIAs. Following Hajiha and Rafiee (2011) and Oussii and Taktak (2018a), the researchers sent questionnaires to collect data for three previous years (2016-2018). For example, Oussii and Taktak (2018a) conducted their survey on two different periods (2011-2012) and (2013-2014). They sent the first survey in 2013 to the CIAs of all listed companies on Tunis Stock Exchange market requesting information for the years 2011 and 2012.

Then they reran the survey in 2015 requesting information for the years 2013 and 2014. In this study, the researchers sent in 2019 to the IAs and CIAs of the sample banks three-survey questionnaires requesting information for the years 2016, 2017, and 2018. The researchers are interested in these three years because they are the most recent years up to the date of preparing this study that the researchers could collect data about, especially that the annual reports of the year 2018 were the last uploaded reports by the Lebanese banks.

### 3.3 Measurement of Constructs

The current study adopts the PLS3-SEM approach. The application of this approach requires the determination of the type of the latent variable, whether it is formative or reflective. The latent variables are not inherently formative or reflective; this depends on the way of measuring the constructs. The main difference between the measurement of reflective and formative constructs is that reflective construct causes variations in its indicators, while items cause the variations in the formative construct; thus, the direction of causality in formative constructs is totally inverted in reflective constructs (Bollen, 2007).

The reflective variable is a latent variable that exists independently of the effects of its indicators and it is the cause of its observed measures. If an indicator is removed, the correlation of the remaining indicators with the latent variable and the correlation among the remaining indicators do not change (interchangeability effects of indicators) (Simonetto, 2012). However, the formative variable is a latent variable that is determined by its indicators and it is a function of its observed measures (Edwards & Bagozzi, 2000). With formative models, each observed indicator describes a specific aspect of the latent construct. Thus, removing one or more observed measures in the formative construct leads to removing a certain part of the construct (Wilcox et al., 2008).

In fact, sometimes it is not easy to determine whether the construct is reflective or formative. The authors usually depend on the structure of the observed measures to determine the nature of the latent construct (Wilcox et al., 2008). For this study, the IAF competence is considered the only formative variable since its 4 indicators (experience, education, training, and certification) are considered key parts of the construct. Removing any element of the 4 elements will eliminate a specific aspect of competence. The model of this study also includes three reflective variables, which are AC's IAF influence, non-usage of IAF as MTG, and coordination between IAs and EAs. As revealed in appendix I, the indicators of each of these variables are consequences of their latent constructs. Removing any of these indicators would not have significant effect on the nature of the latent constructs. The model also includes two observable variables, which are the dependent variable (audit report lag) and the control variable (banks size).

As shown in appendix I, each of these two observable variables is measured by one single item. Since the PLS 3-SEM allows the usage of single item constructs, it is frequent in research to use observable variables with single measures while running this approach (Ringle et al., 2012). Appendix I presents the abbreviations and measures of the research model variables based on the previous studies.

## 4. EMPIRICAL RESULTS

This section displays the descriptive statistics of the model constructs, evaluation of the measurement model constructs, the structural model figure as developed by the PLS 3 software, the evaluation results of the structural model and outcomes of hypotheses tests, and two extending sections. The first extending section tests the mediating effect of coordination on the associations between the two interactions of IAF quality determinants and audit report lag and the second section sheds the light on the separate impact of IAF quality determinants on coordination and audit lag.

### 4.1 Descriptive Statistics

In this section, the researchers present the descriptive statistics for the study variables (reflective, formative, observable) and their indicators by presenting the mean, minimum, maximum, and the standard deviation (SD) of each variable and its indicators.

#### 4.1.1 Descriptive statistics for reflective variables

##### 4.1.1.1 Audit committee's influence on internal audit function

The Table 2 presents the descriptive statistics for the five indicators of the variable 'AC's influence on IAF'. The means ( $> 4$ ) of the five indicators reveal that the ACs of the majority sample banks have vital influence on the IAFs that exceeds the influence of the CEOs and CFOs, which support the independence of these functions. The means of the first two indicators are close to those reported in Abbott's et al. (2016) study, which were (4.73) and (4.52) respectively. Regarding the third indicator, the authors documented a mean of (3.22); compared to the mean reported for the item in the current study (4.08), the ACs of the Lebanese banks have more authority to determine the IAF annual budget. These outcomes provide evidence that the majority of the Lebanese banks are following the recommendations of the Lebanese central bank stated in the Basic Circular Nos. (77, 118) and the Intermediate Circular No 253. These circulars require from the IAFs of the Lebanese banks to report to the ACs not to the CEOs or CFOs; besides, the ACs have the authority to hire and/or terminate the CIA, to determine the IAF annual budget, and to approve and review the IAF program and plans (BDL, 2000; BDL, 2008; BDL, 2011).

Table 2: Descriptive Statistics for AC's Influence on IAF

	N	Minimum	Maximum	Mean	SD
1- IAF reported to the AC not to the CEO or CFO.	75	2	5	4.60	.717
2- The AC had the authority to hire and/or terminate the CIA, not the CEO or CFO.	75	2	5	4.44	.826
3- The AC determined the IAF annual budget, not the CEO or CFO.	75	2	5	4.08	.969
4- The AC reviewed and approved the internal audit program and plans, not the CEO or CFO.	75	2	5	4.51	.760
5- There were frequent meetings per year between the CIA and the AC	75	2	5	4.55	.741
Average AC's INF	75	2.00	5.00	4.4347	.72587

#### 4.1.1.2 Non-usage of IAF as MTG

The means of the five items of the variable 'non- usage of IAF as MTG' presented in Table 3 range from 2.59 to 3.55, which indicate that the IAFs are used in some banks to prepare the IAs to hold post managerial positions. Compared to the study of Goodwin and Yeo (2001), who used similar indicators to measure the variable 'Usage of IAF as MTG', the authors reported that 55% of the respondents consider experience in internal auditing assist in promoting to advanced managerial position. Moreover, the majority of the participants agreed that there was high probability that an auditee could be the boss of an IA in the future.

Table 3: Descriptive Statistics for Non-usage of IAF as MTG

	N	Minimum	Maximum	Mean	SD.
1- The IAF was not viewed as a stepping-stone to managerial position.	75	1	5	3.24	1.184
2- The IAs were not prepared to be transferred to other positions in the future.	75	2	5	3.19	1.099
3- The experience in internal auditing did not assist in promoting to advanced managerial position.	75	1	5	2.59	1.231
4- The transfer of IAs to post managerial positions was not foreseeable in coming year.	75	1	5	3.44	1.043
5- There was low possibility that an auditee could be the future boss of an IA.	75	2	5	3.55	1.004
Average Non- usage of IAF as MTG	75	1.60	5.00	3.200	.79729

#### 4.1.1.3 Coordination

Table 4 presents the five items used in measuring the coordination construct. The mean (1.85) of the fifth indicator reflects that the EAs do not use the banks' IAs as direct assistants working under their supervision. According to the researchers' knowledge, there is no Lebanese law or circular that recommends the EAs of the Lebanese banks to adopt this method of coordination. However, the USA auditing standard (SAS 65 – section 322.27) and the international auditing standard (revised ISA 610) encourage this method of coordination to decrease the external audit work and to faster the release of the audit report (AICPA, 1991; IAASB, 2013). Regarding the four other ways of coordination, Table 4 reveals that in average, the third method is the lowest adopted method; however, the second is the most adopted. Compared to the study of Oussii and Taktak (2018a) that was conducted on the Tunisian companies, the mean (3.3413) of coordination variable in this study is above that reported by the authors (2.89).

Table 4: Descriptive Statistics for Coordination

	N	Minimum	Maximum	Mean	SD
1- Periodic meetings were conducted between IAs and EAs.	75	2	5	3.89	.879
2- The EAs required information and reports from internal audit department.	75	3	5	4.40	.593
3- The IAs collaborated with the EAs to prepare the external annual audit plan.	75	1	5	3.13	1.070
4- The EAs provided important information for the IAs.	75	1	5	3.43	1.105
5- The EAs used the IAs to provide direct assistance, working under their supervision and direction.	75	1	4	1.85	.849
Average COORD	75	2.20	4.40	3.3413	.61580

#### 4.1.2 Descriptive statistics for formative variable

As shown in Table 5, the second indicator reflects that in average (1.71) 30% to 50 % of the IAs in the Lebanese sample banks possess accounting or auditing certifications (see appendix 1). Regarding the other indicators, the means show that the average auditing experience of the Lebanese banks' IAs is between 5 to 10 years, their average educational level is bachelor, and the average training hours that they completed during the three year period (2016-2018) is between 20 to 40 hours (see appendix 1). The average of the whole construct is 2.1967 and ranges from 1.25 to 3.75. Compared to the results of Suwaidan and Qasim (2010), who reported that a mean of 1.65 and a range between 0.15 and 3.4 of the IAF competence is an evidence that the IAs have adequate qualifications, it can be concluded that the IAs of the Lebanese banks have proper qualifications to fulfill their duties.

Table 5: Descriptive Statistics for IAF Competence

	N	Minimum	Maximum	Mean	SD.
1- The average number of years of external and internal auditing experience of the IAs working in the internal audit department.	75	1	4	2.31	.592
2- The percentage of IAs in the internal audit department who possess one or more of accounting or auditing certification, such as CPA, CIA, etc....	75	1	4	1.71	.767
3- The average educational level of IAs working in the internal audit department.	75	2	3	2.47	.502
4- The average number of annual training hours the IAs completed during the year.	75	1	4	2.31	1.000
Average IAF Competence	75	1.25	3.75	2.1967	.58888

#### 4.1.3 Descriptive statistics for observable variables

The two observed variables included in this research model are the dependent variable (audit report lag) and the control variable (bank size). Although audit report lag is measured in this research by the natural logarithm and not the main value of the number of days between the end of a bank's fiscal year and the date of signing the audit report, the researchers find that it is more useful to present the descriptive statistics for this observed variable depending on its main value. As presented in Table 6, the average audit delay for the 75 bank-year observations is 135.76 days with minimum and maximum intervals of 79 and 273 days, respectively. Thus, the Lebanese banks take in average 4 months and 16 days to be ready to publish the audited financial reports to the stakeholders. The Lebanese central bank requires from the banks operating in Lebanon to submit their external audit reports before September 30 of each year, which means within 273 days from the beginning of the following year (BDL, 1982). Therefore, the maximum (273) of the audit report lag indicates that all the sample banks submitted their annual reports before the due date settled by the Lebanese central bank. The mean of the audit report lag (135.76 days) of the Lebanese banks is higher than the USA firms as reported by Pizzini et al. (2015) (41.94 days) and the French companies as documented by Khoufi and Khoufi (2018) (88 days).

Table 6: Descriptive Statistics for Observable Variables

	N	Minimum	Maximum	Mean	SD.
Audit Report Lag	75	79	273	135.76	39.9
Bank SIZE	75	11.97	18.08	15.6455	1.61147

## 4.2 Evaluation of the Measurement Model Constructs

The researchers conducted a pilot test before distributing the questionnaire to the IAs and CIAs to evaluate the validity of the questionnaire. Six specialists in accounting and auditing (two academics, two practitioners, and two IAs) were asked to check whether there are misleading statements, irrelevant items used to measure certain variables, and difficult or understood terminologies. In general, the participants considered the questionnaire valid to conduct the current research and the questions used to measure each construct are representative and comprehensive. Moreover, to evaluate the measures of the model's variables, the researchers check the reliability and validity of the measurements of both the formative and reflective variables. Based on Wanous et al. (1997), the researchers consider that there is no need to check the reliability and validity of the observable variables, which are measured by one single item. Wanous et al. (1997, p. 247) argued that "it is frequently said that one cannot estimate the internal consistency reliability of single-item measures and this alone is sometimes believed to be a sufficient reason to limit or avoid their use". Especially that the observed variables of the current model are measured based on objective and secondary data that are taken from the annual reports of the sample banks.

### 4.2.1 Evaluation of the measurement of reflective variables

The researchers evaluate the measurement of the model reflective variables by checking the internal consistency, convergent validity, and discriminant validity of their items.

#### 4.2.1.1 Internal consistency

The internal consistency of the model reflective variables are assessed by using Cronbach alpha and composite reliability. Although Cronbach's coefficient alpha is the most widely used indicator of the scales reliability, it has been criticized for underestimating the true reliability. Composite reliability is considered a common alternative to coefficient alpha, which is often used in SEM. Compared to coefficient alpha, composite reliability usually provides more accurate estimates of true reliability (Peterson & Kim, 2013). Appendix II (A) presents the Cronbach's Coefficient alpha and composite reliability for the reflective constructs and they are extracted from the algorithm report of the PLS3 –SEM software. As revealed in this appendix, the Cronbach's coefficient alpha values for all the reflective variables are greater than 0.7 and the composite reliability values are also greater than 0.7, which means that the internal consistency of the reflective constructs is met (Nunnally, 1978; Hair et al., 2014)

#### 4.2.1.2 Convergent validity

The researchers follow Fornell and Larcker (1981) and Hair et al. (2014) to examine the convergent validity of the model reflective constructs through checking the outer loading of each indicator on its construct and the average variance extracted (AVE) from each construct. The outer loading for each indicator on its construct should be greater than 0.7. The indicators that have outer loading between 0.4 and 0.7 can be kept if the AVE from the construct is above 0.5. Nevertheless, the indicators with outer loading less than 0.4 should be removed (Hair et al., 2014). Besides, the AVE from each construct should be more than 0.5 (Fornell & Larcker, 1981).

Appendix II (A) presents the AVE from the model reflective constructs and the outer loadings of their indicators. Since the outer loadings of the AC's IAF influence indicators are all above 0.7 and the AVE from the construct is above 0.5, then the convergent validity of this construct is met. Regarding the non-usage of IAF as MTG, the outer loadings of the indicators M1 (0.608), M2 (0.636), and M5 (0.605) are between 0.4 and 0.7, and the AVE (0.442) from the construct is below 0.5. Therefore, these three indicators are removed. With respect to the coordination construct, the outer loading of the indicator O5

(0.293) is below 0.4; then, it is removed from the measurement of the construct. As shown in appendix II (A), after removing all the invalid indicators, the AVE values of the three constructs become greater than 0.5; thus, the convergent validity for each construct is met.

#### 4.2.1.3 Discriminant validity

The researchers test the discriminant validity of the reflective variables by depending on three methods, the square root of the average variance, cross loading of the indicators, and the heterotrait-monotrait ratio of correlations (HTMT).

According to the first evaluation method, the correlations among the indicators of any two constructs must be less than the square root of the variance shared between a construct and its indicators. In other words, the square root of the average variance partake between a construct and its items should exceed the correlations between the construct and any other construct in the research model (Fornell & Larcker, 1981; Chin, 2010). Appendix II (B) shows that the square root of the AVE from each reflective construct is greater than the correlation between the construct and other constructs in the model. Therefore, the models' reflective constructs meet this criterion of discriminant validity.

According to the second evaluation method, a construct manifests discriminant validity when its indicators load highly on their related construct and have low loadings on other constructs (Hassanein & Head, 2007). An indicator is significant if the value of its factor loading on its construct exceeds 0.5 (Hair et al., 1995) and its loading to its assigned latent variable has order of magnitude larger than any cross loading on other constructs (Gefen & Straub, 2005). The researchers follow Hair et al. (1995) and Gefen and Straub (2005) to examine this criterion of discriminant validity. Appendix II (B) presents the factor loadings of the indicators on their reflective constructs and the cross loadings on other constructs. As revealed in this appendix, except for the indicator O5, all the factor loadings of the items on their constructs are above 0.5. Moreover, their loadings on their constructs exceed the loadings on other constructs by more than 0.1. The factor loading (0.293) of the indicator O5 on its construct (coordination) is less than 0.5; therefore, the item should be eliminated to meet this criterion of discriminant validity. Moreover, as mentioned previously, this item threatens the convergent validity of the coordination construct.

According to the third evaluation method, the value of HTMT for each reflective construct should be less than 0.9 at 95 % confident interval. HTMT checks the estimate correlations among the constructs based on the average of the heterotrait- heteromethod correlation. Moreover, the confidence intervals bias correlation for each construct should not include 1 (Henseler et al., 2015). The outcomes of the PLS 3 report show that the HTMT values of all the reflective constructs are less than 0.9 and their confidence intervals bias correlations do not include 1. Therefore, the reflective constructs of the model confirm this criterion of discriminant validity.

#### 4.2.2 Evaluation of the measurement of formative variable

Since the formative construct is different from the reflective construct, the evaluation criteria for reflective measures cannot be applied on the formative measures. Thus, assessing the convergent and discriminant validity using criteria similar to those associated with reflective measures is not meaningful when formative measures and their weights are considered (Chin, 1998). Following Hair et al. (2014) and Hair et al. (2017), the researchers evaluate the measurement of the formative variable (IAF competence) through checking the collinearity among its indicators plus the relevance and significance of its indicators outer weight.



According to Hair et al. (2017), collinearity problem would not exist among the indicators of the formative construct if the VIF of each indicator is lower than 5. Table 7 reveals that the VIF for the four IAF competence indicators are less than 5. Therefore, there is no collinearity among the items of the construct. Furthermore, the researchers apply the rules of thumbs reported by Hair et al. (2014) to check the relevance and significance of the outer weights of the IAF competence indicators. According to the rules of thumbs, the following points should be considered to take the decision whether to retain or remove an indicator in the formative variable.

- 1) When the outer weight (relative importance) of the indicator is significant, it must be kept (the p value of the outer weight should be less than 0.05).
- 2) When an indicator outer weight is insignificant, and the outer loading (absolute importance) of the indicator to its construct is relatively high ( $> 0.5$ ), the indicator should be kept.
- 3) If both the outer weight and the outer loading of the indicator are not significant, the indicator should be removed.

As revealed in Table 7, the p values of the outer weights of both the certification (0.601) and educational level (0.466) are higher than 0.05. Therefore, the outer weights of these two indicators are not significant. However, the outer loading of the educational level (0.725) is greater than 0.5 but the outer loading of certification (0.5) is not; thus, the educational level should be retained and the certification should be removed to meet the relevance and significance outer weight criterion of the formative construct. Therefore, the researchers eliminate the certification indicator from the measurement of IAF competence variable.

Table 7: Evaluation of the Measurement of IAF Competence

Indicators	VIF values	Outer Weights			Outer Loadings
		Original Sample (O)	T Statistics ( O/STDEV )	P Values	
Certification	1.685	-0.089	0.524	<b>0.601</b>	<b>0.500</b>
Educational Level	1.938	0.105	0.730	<b>0.466</b>	0.725
Experience	1.549	0.399	3.074	0.002	0.788
Training	2.365	0.704	5.227	0.000	0.940

### 4.3 Research Partial Least Square Structural Model

This study adopts the smart PLS 3 – SEM approach for analyzing data and testing the hypotheses. The researchers use this approach for several reasons. First, PLS-SEM provides high accurate estimation since it is prediction oriented approach (Fornell & Cha, 1994). Second, this approach is suitable for researches that have small sample sizes (Fornell & Bookstein, 1982; Gefen et al., 2000). Third, PLS-SEM is convenient for investigating theories in their earlier developing phases (Fornell & Bookstein, 1982). For this study, investigating the interactive impact of IAF independence factors and competence on audit report lag is a new research area. Regarding the size of the sample, both Chin (1998) and Gefen et al. (2000) argued that the minimum acceptable sample size to run the PLS-SEM must be greater than (1) 10 times the number of indicators of the most complicated construct that has the highest number of items, or (2) 10 times the number of independent variables in the largest group of independent variables affecting the dependent construct. In the current research model, the most complicated construct has 5 items and the number of explanatory variables expected to influence the dependent variable is only 4. Therefore, the sample size (75) of this research is more than sufficient for running the PLS 3 technique.

Fig. 5 presents the research model developed by the PLS (3)-SEM statistical software. Interaction (1) reflects the interaction between the AC's influence on IAF and IAF competence; however, interaction (2) presents the interaction between the non-usage of IAF as MTG and IAF competence.

The items that threaten the validity or reliability of each construct- as indicated in the prior section- are removed before running the data and formulating the research model. The values stated in the dependent constructs indicate the model's predictive power and are illustrated in the next section.

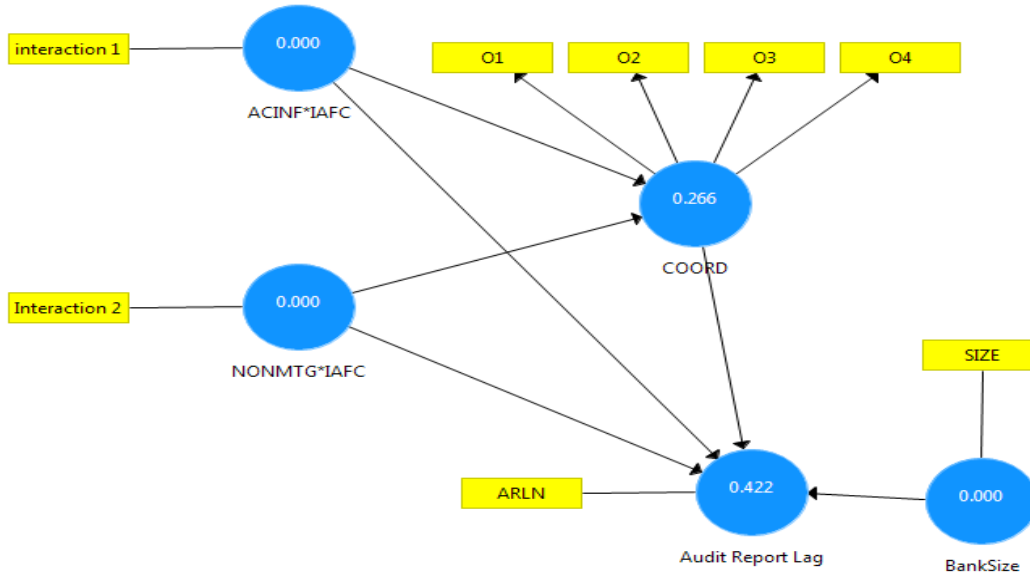


Fig.5: Research Partial Least Square Structural Model

#### 4.4 Results of the Evaluation of the Structural Model and Hypotheses Tests

The researchers evaluate the validity of the structural research model through examining the collinearity among the research variables, path coefficients and hypotheses tests, coefficients of determination ( $R^2$ ), effect size ( $f^2$ ), blindfolding and predictive relevance ( $Q^2$ ).

##### 4.4.1 Results of collinearity assessment plus path coefficients and hypotheses tests

The researchers check for the presence of collinearity problem among the independent and dependent variables of the research model through examining the inner VIF values. As revealed in Table 8, all the inner VIF values are less than 3; thus, there is no collinearity problem (Diamantopoulos & Siguaaw, 2006; Hair et al., 2011).

The values of the path coefficients reflect the hypothesized association between an explanatory variable and the dependent variable and they vary from -1 to +1. The researchers apply several methods to evaluate the significance of the path coefficient for each hypothesis in the research model. First, through examining the weights (values) of the path coefficient, if the path coefficient is close to +1 (-1) this indicates strong positive (negative) association between the two variables. Nevertheless, the very low weight that approximates 0 reflects an insignificant relationship between the variables (Garson, 2016). Second, through performing the t-test and depending on the p-values for determining the significance of the association (Chin, 1998). Third, by comparing the t statistical -value to the critical value for each path; considering that, the hypotheses that are accepted at p-values 0.1, 0.05, 0.001 their t values should be greater than the critical values at 1.65, 1.96, and 2.58 levels respectively (Garson, 2016; Hair et al., 2017). Table 8 shows the weights and the t-test statistical values with their related p-values.

Table 8: VIF Values and Results of Path Coefficients

	Inner VIF	Original Sample (O)	SD	T Statistics	P-Values
ACINF*IAFC → COORD	1.616	0.568	0.077	7.397	0.000
NONMTG*IAFC → COORD	1.616	0.174	0.080	2.162	0.031
COORD → Audit Report Lag	2.201	0.020	0.098	0.202	<b>0.840</b>
ACINF*IAFC → Audit Report Lag	2.231	-0.231	0.124	1.859	0.064
NONMTG*IAFC → Audit Report Lag	1.793	-0.497	0.122	4.071	0.000
BankSize → Audit Report Lag	1.628	-0.058	0.122	0.472	<b>0.637</b>

#### 4.4.1.1 Testing hypothesis (1)

The first hypothesis suggests a positive association between the first interaction and coordination. The weight (0.568) reported in Table 8 shows that the association between the two constructs is moderate and positive (Garson, 2016). In addition, the p-value (0.00) of the t-test reveals that the relationship between these two constructs is significant at 1 %. Moreover, the comparison between the t-statistical value (7.397) of this path with its corresponding critical value (2.58) at significance level 1%, shows that the t-statistical value is greater than its corresponding critical value (Hair et al., 2017). All these outcomes provide evidence that (H1) is accepted and the moderate positive relationship between the first interaction and coordination is highly significant at 1%.

#### 4.4.1.2 Testing hypothesis (2)

The second hypothesis posits a positive relationship between the second interaction and coordination. The weight (0.174) stated in Table 8 reflects that the association between the two constructs is weak and positive (Garson, 2016). Furthermore, the p-value (0.031) of the t-test shows that the association between these two variables is significant at 5%. In addition, the comparison between the t- statistical value (2.162) of this path with its corresponding critical value (1.96) at significance level 5%, reflects that the t-statistical value is greater than its corresponding critical value (Hair et al., 2017). These results provide evidence that (H2) is accepted and the weak positive association between the second interaction and coordination is significant at 5 %.

#### 4.4.1.3 Testing hypothesis (3)

The third hypothesis suggests a negative association between coordination and audit report lag. The weight (0.020), which is close to (0), and the p-value (0.840 > 10 %) of the t-test presented in Table 8 reflects that there is no significant association between the two constructs; thus, (H3) is rejected.

#### 4.4.1.4 Testing hypothesis (4)

The fourth hypothesis posits a negative association between the first interaction and audit report lag. The weight (-0.231) mentioned in Table 8 reveals that the association between the two constructs is weak and negative (Garson, 2016). In addition, the p-value (0.064) of the t-test shows that the relationship between these two constructs is significant at 10%. Besides, the comparison between the t-statistical value (1.859) of this path with its corresponding critical value (1.65) at significance level 10%, shows that the t-statistical value is greater than its corresponding critical value (Hair et al., 2017). Based on these evidences, the researchers accept (H4).

#### 4.4.1.5 Testing hypothesis (5)

The last hypothesis suggests a negative relationship between the second interaction and audit report lag. The weight (-0.497) reported in Table 8 shows that the association between the two constructs is moderate and negative (Garson, 2016). Furthermore, the p-value (0.00) of the t-test reveals that the association between these two variables is significant at 1%. In addition, the comparison between the t-statistical value (4.071) of this path with its corresponding critical value (2.58) at significance level 1%, reflects that the t-statistical value is greater than its corresponding critical value (Hair et al., 2017). These outcomes provide evidence that (H5) is accepted and the moderate negative association between the second interaction and audit report lag is highly significant at 1%.

#### 4.4.1.6 Testing the path coefficient of the control variable

Table 8 shows that there is insignificant association between the bank size and audit report lag. The weight (-0.058) of the path coefficient between the two variables approximates (0) and the p-value (0.637) of the t-statistical test is greater than 10%. This provides evidence that the size of the bank does not have impact on audit report lag.

Table 9 summarizes the results of the path coefficients and hypotheses tests.

Table 9: Summary of the Results of Path Coefficients and Hypotheses Tests

Hypotheses	Path	Accepted/ Rejected	Strength and Sign of the Association	Sig. Level
H <sub>1</sub>	ACINF*IAFC → COORD	Accepted	Moderate and positive	1%
H <sub>2</sub>	NONMTG*IAFC → COORD	Accepted	Weak and positive	5%
H <sub>3</sub>	COORD → Audit Report Lag	Rejected	-	Insignificant
H <sub>4</sub>	ACINF*IAFC → Audit Report Lag	Accepted	Weak and negative	10%
H <sub>5</sub>	NONMTG*IAFC → Audit Report Lag	Accepted	Moderate and negative	1%

#### 4.4.2 Results of coefficients of determination (R<sup>2</sup>) and effect size (f<sup>2</sup>)

Table 10 presents the R<sup>2</sup> values of the endogenous constructs of the research model as extracted from the quality criteria section of the PLS 3 algorithm report. In this concern, Hair et al. (2011) suggested that the values 0.75, 0.5, or 0.25 reflect respectively the substantial, moderate, and weak models. Both the R<sup>2</sup> and the adjusted R<sup>2</sup> of coordination and audit report lag variables, which approximate 0.5, reflect that the model has moderate predictive accuracy.

Table 10: Coefficients of Determination (R<sup>2</sup>), Effect Size (f<sup>2</sup>), and Predictive Relevance (Q<sup>2</sup>)

	COORD	Audit Report Lag
<i>Effect Size (f<sup>2</sup>)</i>		
ACINF*IAFC	0.380	0.045
NONMTG*IAFC	0.035	0.260
COORD		0.000
Bank Size		0.004
<i>Coefficients of Determination (R<sup>2</sup>)</i>	R <sup>2</sup> = 0.475 Adjusted R <sup>2</sup> = 0.460	R <sup>2</sup> = 0.469 Adjusted R <sup>2</sup> = 0.439
<i>Predictive Relevance (Q<sup>2</sup>)</i>	Q <sup>2</sup> = 0.266	Q <sup>2</sup> = 0.422

In addition, the researchers examine the effect of each explanatory variable on the dependent variables based on the  $f^2$  values presented in the quality criteria section of the PLS 3 algorithm report. This study follows the thresholds stated by Cohen (1988) for examining the effect size of each explanatory variable, which are:

- 1) “If  $0.02 < f^2 \leq 0.15$  the effect size is small”
- 2) “If  $0.15 < f^2 \leq 0.35$  the effect size is medium”
- 3) “If  $f^2 > 0.35$  the effect size is large”

As revealed in the Table 10, the first interaction and the second interaction have respectively large ( $f^2 = 0.38$ ) and small ( $f^2 = 0.035$ ) effect on coordination. In addition, the first interaction and the second interaction have respectively small ( $f^2 = 0.045$ ) and medium ( $f^2 = 0.26$ ) effect on audit report lag. However, both coordination ( $f^2 = 0.00$ ) and bank size ( $f^2 = 0.004$ ) have no effect on audit report lag. Indeed, the results of the effect size ( $f^2$ ) are close to the results of the of path coefficients and hypotheses tests.

#### 4.4.3 Results of blindfolding and predictive relevance ( $Q^2$ )

The predictive relevance or power ( $Q^2$ ) reflects the predictive accuracy of the model besides the coefficient of determination ( $R^2$ ) (Stone, 1974). The values of ( $Q^2$ ) presented in Table 10 are taken from the blindfolding report of the PLS 3-SEM software and they are stated in the research model in Fig. 5. Since the ( $Q^2$ ) of coordination (0.266) and audit report lag (0.422) exceed zero then the model has predictive relevance regarding the two endogenous constructs (Geisser, 1974).

### 4.5 Extensions

#### 4.5.1 Testing the mediating effect of coordination

The researchers test the mediating effect of coordination on the associations between each of interaction (1) and (2) with audit report lag through following the approach of Baron and Kenny (1986). The three Tables 8, 11, 12 are used to illustrate the mediating effects. The Tables 11 and 12 are taken from the bootstrapping PLS3 report. Table 12 presents the indirect effect of each interaction on audit lag by passing through coordination; however, Table 8 presents the direct effect. Table 11 reflects the total effect of each interaction on audit lag, considering both the direct and indirect effect of each interaction.

Table 11: Total Effect of Interactions (1) and (2) on Audit Report Lag

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
ACINF*IAFC → Audit Report Lag	<b>-0.220</b>	-0.219	0.122	1.803	<b>0.072</b>
NONMTG*IAFC → Audit Report Lag	<b>-0.494</b>	-0.492	0.119	4.133	<b>0.000</b>

Table 12: Indirect Effect of Interactions (1) and (2) on Audit Report Lag

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
ACINF*IAFC → Audit Report Lag	<b>0.011</b>	0.010	0.056	0.200	<b>0.841</b>
NONMTG*IAFC → Audit Report Lag	<b>0.003</b>	0.006	0.019	0.177	<b>0.859</b>

#### 4.5.1.1 The mediating effect of coordination on the association between the first interaction and audit report lag.

Appendix III (A) presents both the direct and indirect effect of interaction (1) on audit report lag. (P1) reflects the direct path; however, (P2) followed by (P3) reflect the indirect path. The expression “Original Sample (O)” stated in the three Tables 8, 11 and 12 stands for the weights of the paths. Such that, the weight (value) of the total effect (-0.220) of the first interaction on audit lag, shown in Table 11, is the summation of the weights of its direct path (-0.231) presented in Table 8 and its indirect path (0.011) shown in Table 12.

The p-value (0.072) of the first interaction presented in Table 11 reveals that there is significant total effect of interaction (1) on audit report lag at significance level 10%. In addition, Table 8 reflects a significant direct impact of this interaction on audit lag at significance level 10%. However, Table 12 reported that the p-value (0.841) of the indirect path that passes through coordination exceeds 0.1, which means that the indirect effect is insignificant. Since the total effect is the summation of the direct and indirect effects, then the significance of the total effect is all due to the significance of the direct effect. Therefore, it can be concluded that coordination does not mediate the association between interaction (1) and audit report lag.

#### 4.5.1.2 The mediating effect of coordination on the association between the second interaction and audit report lag.

Appendix III (B) shows both the direct and indirect effect of interaction (2) on audit delay. (P1) reflects the direct path; nevertheless, (P2) followed by (P3) reflect the indirect path. The p-value (0.000) of the second interaction mentioned in Table 11 reflects that the total effect of interaction (2) on audit report lag is highly significant at 1%. Moreover, Table 8 shows that the direct effect of this interaction on audit lag is highly significant at 1%. However, the p-value (0.859) of the indirect path, passes through coordination, which is reported in Table 12 reflects insignificant association. Thus, it can be concluded that coordination does not mediate the association between interaction (2) and audit report lag.

#### 4.5.2 Testing the separate impact of internal audit function quality determinants on coordination and audit report lag

Although the purpose of the current study is to examine the interactive impact of IAF quality determinants on audit report lag, the researchers find that it is essential to shed the light on the separate impact of these determinants on audit delay. Fig. 6 presents the separate impact model as formulated by the PLS 3-SEM software. The indicators used for measuring the variables of the separate model are same as those adopted in the interactive model after excluding the items that threaten the variables reliability and validity.

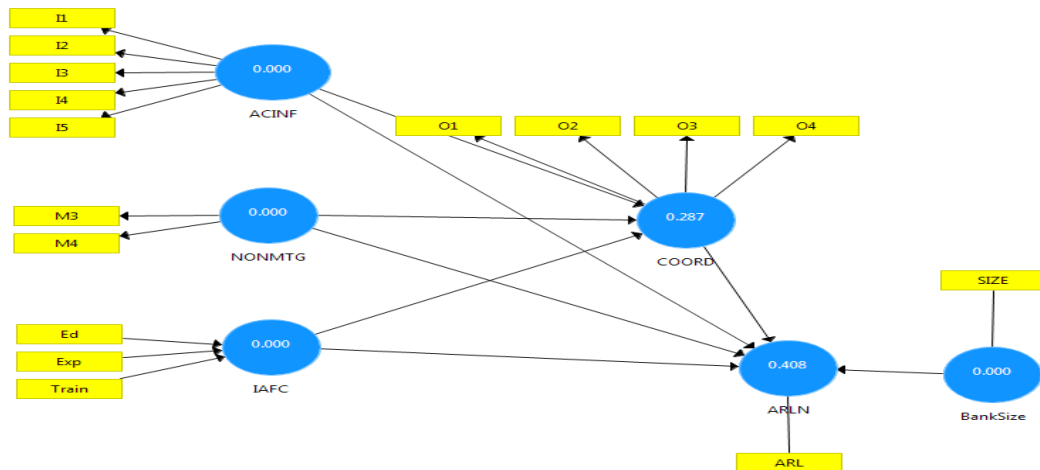


Fig. 6: Separate Impact Partial Least Square Structural Model

4.5.2.1 Results of the evaluation of the separate impact model

Similar to the methods used to evaluate the interactive model, the researchers evaluate the separate impact model through examining collinearity among the research variables, path coefficients tests, coefficients of determination ( $R^2$ ), effect size ( $f^2$ ), blindfolding and predictive relevance ( $Q^2$ ).

The inner VIF values for the separate model variables, which indicate the probable presence of collinearity problem, are presented in Table 13. As revealed in this table all the inner VIF values of the variables are less than 3. Thus, there is no collinearity problem among the independent and dependent variables of the separate model (Diamantopoulos & Sigauw, 2006; Hair et al., 2011). Moreover, the  $R^2$  and adjusted  $R^2$  for both coordination and audit report lag are close to 0.5. Therefore, the separate impact model has moderate predictive accuracy (Hair et al., 2011). Besides, the values of predictive relevance or power ( $Q^2$ ) of coordination (0.287) and audit report lag (0.408) exceed zero; therefore, the model has predictive relevance with respect to the two dependent variables (Geisser, 1974).

As in the interactive model, the researchers adopt the Cohen (1988) criteria to examine the effect size of each explanatory variable in the separate model. Table 13 shows that both AC's IAF influence ( $f^2 = 0.009$ ) and non-usage of IAF as MTG ( $f^2 = 0.003$ ) have no effect on coordination. However, IAF competence ( $f^2 = 0.797$ ) has large impact on the construct. Regarding audit report lag, both AC's IAF influence ( $f^2 = 0.122$ ) and IAF competence ( $f^2 = 0.087$ ) have small effect on the lag. In addition, non-usage of IAF as MTG ( $f^2 = 0.217$ ) has medium impact on the construct. Nevertheless, both coordination ( $f^2 = 0.003$ ) and bank size ( $f^2 = 0.02$ ) do not influence the audit lag.

Table 13: Inner VIF values, Coefficients of Determination ( $R^2$ ), Effect Size ( $f^2$ ), and Predictive Relevance ( $Q^2$ ) of the Separate Impact Model

	COORD		Audit Report Lag	
<i>Inner VIF values and Effect Size (<math>f^2</math>)</i>	<i>Inner VIF values</i>	<i>Effect Size (<math>f^2</math>)</i>	<i>Inner VIF values</i>	<i>Effect Size (<math>f^2</math>)</i>
ACINF	1.157	0.009	1.167	0.122
NONMTG	1.227	0.003	1.240	0.217
IAFC	1.274	0.797	2.316	0.087
BankSize			1.540	0.003
COORD			2.459	0.020
<i>Coefficients of Determination (<math>R^2</math>)</i>	$R^2 = 0.53$ Adjusted $R^2 = 0.51$		$R^2 = 0.471$ Adjusted $R^2 = 0.432$	
<i>Predictive Relevance (<math>Q^2</math>)</i>	$Q^2 = 0.287$		$Q^2 = 0.408$	



#### 4.5.2.2.1 Results of path coefficients of the separate impact model

Similar to the interactive model, the researchers evaluate the significance of each path coefficient presented in the separate model through three methods; (1) examining the weight of each path coefficient (Garson, 2016), (2) performing the t-test and depending on the p-values for determining the significance of the associations (Chin, 1998), (3) comparing the t-statistical value to the critical value for each path (Garson, 2016). Table 14 presents the weight and the t-test statistical value with its corresponding p-value for each path.

##### 4.5.2.2.1.1 The separate impact of the explanatory variables on coordination

Referring to Table 14, the weight of the separate impact path of AC's IAF influence and coordination (0.071), which is close to (0) and the p value (0.367 > 10 %) of the t-test reflect no significant association between the two constructs. In addition, the weight of the separate impact path of non-usage IAF as MTG and coordination (0.045), which approximates (0) and the p-value (0.715 > 10 %) of the t-test reveal insignificant association between the two variables (Chin, 1998; Garson, 2016).

Table 14: Results of Path Coefficients of the Separate Impact Model

Path	Original Sample (O)	SD	T Statistics	P-Values
ACINF → COORD	0.071	0.079	0.903	<b>0.367</b>
NONMTG → COORD	0.045	0.122	0.365	<b>0.715</b>
IAFC → COORD	0.691	0.073	9.493	0.000
COORD → Audit Report Lag	0.063	0.122	0.520	<b>0.603</b>
ACINF → Audit Report Lag	-0.275	0.093	2.948	0.003
NONMTG → Audit Report Lag	-0.377	0.126	2.984	0.003
IAFC → Audit Report Lag	-0.326	0.152	2.148	0.032
BankSize → Audit Report Lag	-0.151	0.113	1.335	<b>0.183</b>

Regarding the path between the IAF competence and coordination, the weight (0.691) reported in Table 14 shows that the association between the two constructs is strong and positive (Garson, 2016). In addition, the p-value (0.000) of the t-test reveals that the relationship between the two constructs is highly significant at 1% (Chin, 1998). Moreover, the comparison between the t-statistical value (9.493) of this path with its corresponding critical value (2.58) at significance level 1%, reveals that the t-statistical value is greater than its corresponding critical value (Hair et al., 2017). All these results provide evidence that there is strong positive highly significant relationship between IAF competence and coordination.

##### 4.5.2.2.1.2 The separate impact of the explanatory variables on audit report lag

Regarding the path between coordination and audit report lag, the weight (0.063) stated in Table 14 approximates (0) and the p-value (0.603 > 10 %) of the t-test reflect that the association between the two constructs is insignificant. Similarly, the results reveal that the association between bank size and audit report lag is insignificant with p-value (0.183 > 10 %) and weight (-0.151) (Chin, 1998; Garson, 2016). Nevertheless, the outcomes included in Table 14 show that the relationships between each of the IAF independence factors and audit report lag are negative and highly significant (P-value < 1%). In addition, the relationship between IAF competence and audit report lag is negative and significant (P-value < 5%).



## 5. CONCLUSION AND DISCUSSIONS

Due to its vital role and significant duties, a qualified IAF can faster the release of financial and audit data to the different stakeholders. This study has three main goals. First, to examine the interactive impact of IAF independence factors (AC's influence on IAF and non-usage of IAF as MTG) and competence on the coordination between IAs and EAs. Second, to investigate the effect of internal-external audit coordination on audit report lag. Third, to examine the interactive impact of IAF independence factors and competence on audit report lag. The study focuses on the Lebanese banking sector and it is carried out on 75 bank year observations related to three-year periods (2016-2018). Depending on (PLS) 3 software, the researchers could analyze the data of the study and test its five hypotheses. The current paper provides evidence that the first and second interactions between the IAF independence factors and competence have significant positive effect on coordination and significant negative impact on audit report lag. However, both coordination and bank size do not have influence on audit report lag.

Moreover, the current study examines the separate impact of IAF independence factors and competence on each of coordination and audit report lag. The separate impact model reveals that neither the AC's influence on IAF nor the non-usage of IAF as MTG separately has impact on coordination; however, the competence of IAF affects the coordination positively and significantly. Compared to the outcomes of the interactive model, which show that the interaction between each of the IAF independence factors and IAF competence has positive and significant impact on coordination, these results provide evidence that the EAs do not consider each determinant of IAF separately to identify the extent of coordination with IAs. The outcomes reflect that the independence of the banks' IAs alone, whether due to the ACs' support or the non-usage of IAF as MTG, is not sufficient to develop coordination between the two parties. However, the independence of IAF with the presence of competent IAs lead to two interaction constructs that have significant influence on increasing the coordination. These results are in line with the findings of Al-Sukker's et al. (2018) study, who reported that the interaction between IAs' independence and competence has significant effect on the EA's decision to rely on the work accomplished by IAs, and that EAs do not consider the effect of each individual determinant in isolation.

In addition, the separate impact model reveals that each of the IAF independence factors has highly significant negative impact on audit report lag (at 1% significance level), and the IAF competence has negative significant influence on audit lag (at 5% significance level). However, the results show that the significance of IAF competence (p-value = 0.032) impact on audit lag increases when it is interacted with the second IAF independence factor (p-value = 0.001) in the interactive model. This outcome provides evidence that the EAs consider the competent IAs are more able to improve the effectiveness of the ICOFR and decrease the misstatements in financial statements if the IAFs of the Lebanese banks are not used as MTG. This situation would encourage the EAs to rely more on the robustness of the bank's internal control system and decrease the time consuming substantive tests at the end of the period, which faster the issuance of the audit report. These outcomes support the arguments of Krishnamoorthy (2002), Gramling et al. (2004), Abbott et al. (2016), and Al-Sukker et al. (2018) who recommended the examination of the interrelationships among IAF quality determinants. Moreover, these results are consistent with the outcomes of Abbott et al. (2016) who suggested that the joint effect of competence and IAF independence factors is an essential provision of effective monitoring for IAF over financial statements.

In addition, this study provides evidence that the internal-external audit coordination has no mediating effect on the associations between the interaction of each of IAF independence factors and competence on audit lag. Indeed, the results reveal that the coordination between IAs and EAs does not faster the issuance of the audit reports of the Lebanese banks; whereas coordination shown to have insignificant effect on audit lag both in the separate and interactive models. This result is close to the outcomes of Pizzini's et al. (2015) study, which found that the mediating effect of two methods of coordination (the dependence of EAs on the work performed independently by IAs or the usage of the IAs as direct assistants working under the supervision of the EAs) on the association between the IAF quality determinants and audit report lag is relatively small. The authors concluded that the decreasing in audit report lag is mainly due to the direct effect of the IAF quality determinants on audit lag, whereas a qualified IAFs lead to stronger ICOFR that reduce the lag.

The results of this study provide significant insights to the board of directors, ACs, IAFs, managements, and EAs of the Lebanese banking sector. In addition, the outcomes would be of interest to the users of the annual reports and the governmental and regulatory bodies of the banking sector.

These results suggest that efforts should be done in order to increase the coordination between the IAs and EAs through enhancing both the independence and competence of the IAFs. The board of directors, ACs, and managements of the Lebanese banks now have evidence that the independence factors of the IAF alone have no effect on the coordination unless they are interacted with the competence of the IAs.

Moreover, the EAs, board of directors, ACs, and managements of the Lebanese banks now have evidence that the presence of both independent and competent IAs can faster the release of the financial and audit data. The results show that the EAs of the Lebanese banks consider both the independency and competency of the IAs when evaluating the effectiveness of the ICOFR for the purpose of identifying the scope of audit. Therefore, one of the approaches that the ACs in the banking sector can adopt to decrease the audit report lag is to enhance both the independence and competence of the IAFs.

Finally, the results of this study may encourage the Lebanese governmental and regulatory bodies, for the purpose of decreasing the audit lag, to issue new circulars or acts to increase the independence and competence of the IAFs. They may enforce restrictions to limit the usage of IAFs as MTG, give more authorities to ACs to support the independence of IAFs, or specify the minimum annual training hours that should be conducted to the banks' IAs.

This study has some limitations. First, it focuses only on two IAF quality determinants (independence and competence), which are among the most common determinants addressed in prior literature. Some studies considered other determinants, such as IAF size (e.g. Hajiha & Rafiee, 2011; Altwaijry, 2017) and IAF work performance (e.g. Pizzini et al., 2015; Al-Sukker et al., 2018). In fact, it is common in the literature related to this field to focus on certain determinants of IAF quality. Second, this study focuses on two factors of IAF independence (AC's influence on IAF and non-usage of IAF as MTG). However, other factors were addressed in some prior studies, such as outsourcing the IAF activities (e.g. Stewart & Subramaniam, 2010; Abbott et al., 2016). The researchers exclude outsourcing the IAF activities from investigation because the Lebanese central bank prohibits the banks operating in Lebanon from this action (BDL, 2000). Third, this study is conducted on a sample of 25 banks with 75 bank year observations. The small sample size may limit the power of this research to generalize its findings. Two reasons are behind the small size of the study sample; (1) the difficulty to access the banks IAs and CIAs and (2) the provision of collecting data for each observation from two different sources, which are the annual reports and survey questionnaires. The failure to collect data from one of these sources led to the removal of the observation from the study sample. Finally, the current study focuses on the three-year periods from 2016 till 2018; however, significant global and local circumstances took place during 2019 and early 2020 that have big effect on all the Lebanese sectors especially the banking sector, which are out of the scope of the current research. The most two important circumstances are the global Covid-19 epidemic and the deterioration of the Lebanese Lira currency. Despite of these limitations, the current study provides evidence on the significant role of the interactive IAF quality determinants in increasing the coordination between IAs and EAs and in decreasing the audit report lag. However, investigators may depend on these limitations as bases for future studies.

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## Appendix I

### Measurement of Variables

<u>Variables</u>		<u>Measures</u>
<u>Formative Variable</u>	<b>IAFC</b> (Internal audit function competence)	<p>Four indicators are used for measuring <b>IAFC</b>, which are IAs' experience, certification, education, and training. <b>Experience (Exp)</b> is measured as the average number of years of external and internal audit experience of the IAs working in the internal audit department (1= below 5 years; 2= between 5 to 10 years; 3= between 11 to 15 years; 4= more than 15 years). <b>Certification (Cer)</b> is measured as the percentage of IAs in the internal audit department who possess one or more of accounting and auditing certification, such as CPA, CIA, etc...(1= below 30%; 2= between 30% and 50%; 3= between 51% and 70%; 4= more than 70%). Education (Ed) is measured as the average educational level of IAs working in the internal audit department (1= Associate degree; 2 = Bachelor; 3= MBA/ Master; 4= DBA/ PHD). <b>Training (Train)</b> is measured as the average number of annual training hours the IAs completed during the year (1= below 20 hours; 2= between 20-40 hours; 3=between 41-80 hours; 4= more than 80 hours).</p> <p><b>References:</b> Based on SAS (65), and by referring to previous studies (e.g. Prawitt et al., 2009; Suwaidan &amp; Qasim, 2010; Lin et al., 2011; Pizzini et al., 2015; Altwajiry, 2017; Oussii &amp; Taktak, 2018b).</p>
	<b>ACINF</b> (Audit committee's influence)	<p><b>ACINF</b> is measured by five items. The 1-5 Likert scale (extremes: 1= strongly disagree and 5=strongly agree) is used to indicate the level of agreement of the respondents concerning the following statements:</p> <ol style="list-style-type: none"> <li>(1) IAF reported to the AC not to the CEO or CFO.</li> <li>(2) The AC had the authority to hire and/or terminate the CIA, not the CEO or CFO.</li> <li>(3)The AC determined the IAF annual budget, not the CEO or CFO.</li> <li>(4) The AC reviewed and approved the internal audit program and plans, not the CEO or CFO.</li> <li>(5) There were frequent meetings per year between the CIA and AC.</li> </ol> <p><b>References:</b> Based on prior studies (e.g. Goodwin &amp; Yeo, 2001; Alzeban, 2015; Abbott et al., 2016; Altwajiry, 2017)</p>
	<b>NONMTG</b> (non-usage of IAF as MTG)	<p><b>NONMTG</b> is measured by five indicators. The 1-5 Likert scale (extremes: 1= strongly disagree and 5=strongly agree) is used to indicate the level of agreement of the respondents concerning the following statements:</p> <p>as follows:</p> <ol style="list-style-type: none"> <li>(1) The IAF was not viewed as a stepping stone to managerial position</li> <li>(2) The IAs were not prepared to be transferred to other positions in the future</li> <li>(3) The experience in internal auditing does not help in promoting to advanced managerial position</li> <li>(4) The transfer of IAs to post managerial positions was not expected</li> <li>(5) There was low possibility that an auditee could be the future boss of the IAs.</li> </ol> <p><b>References:</b> Based on Goodwin and Yeo (2001)</p>
<u>Reflective Variables</u>	<b>COORD</b> (Coordination between IAF and external auditor)	<p><b>COORD</b> is measured by five items. A five Likert scale ranging from "1" (Never) to "5" (Always) is used to capture the extend of achieving each item of the five items. The five items are as follows:</p> <ol style="list-style-type: none"> <li>"(1) Periodic meetings were conducted between internal and external auditors.</li> <li>(2) The EAs required information and reports from internal audit department.</li> <li>(3) The IAs collaborated with the EAs to prepare the external annual audit plan.</li> <li>(4) The EAs provided important information for the internal auditors.</li> <li>(5) The EAs used the internal auditors to provide direct assistance, working under their supervision and direction."</li> </ol> <p><b>References:</b> Based on Oussii and Taktak (2018a) and by referring to the auditing standards (SAS 65 and the revised ISA 610) and previous studies (e.g. Morrill &amp; Morrill, 2003; Prawitt et al., 2009; Lin et al., 2011; Abbott et al., 2012).</p>
	<b>ARLN</b> (Audit report lag natural logarithm)	<p><b>ARLN</b> is measured by the natural logarithm of the number of days between bank's fiscal year-end and the audit report date.</p> <p><b>References:</b> Based on Chan et al. (2016) and through referring to prior studies (e.g. Hussin &amp; Bamahros, 2013; Pizzini et al., 2015; Hassan, 2016; Oussii &amp; Taktak, 2018a) which measured audit lag by the number of days from the end of a bank's fiscal year to the date of signing the external audit report.</p>
<u>Observable Variables</u>	<b>BankSize</b> (Bank Size Control Variable)	<p><b>BankSize</b> is measured by the natural logarithm of a bank's total assets.</p> <p><b>References:</b> Based on prior studies (e.g. Ettredge et al., 2006; Pizzini et al., 2015; Khoufi &amp; Khoufi, 2018; Durand, 2019; Habib &amp; Huang, 2019).</p>

## Appendix II

### Evaluation of the Measurement of Reflective Variables

#### A- Internal Consistency and Convergent Validity

Reflective Constructs	Cronbach's coefficient alpha	composite reliability	AVE	Indicators	Outer loadings			AVE (after removing the invalid indicators)
					ACINF	COORD	NONMTG	
ACINF	0.948	0.960	0.829	I1	0.949			0.83
				I2	0.919			
				I3	0.820			
				I4	0.949			
				I5	0.909			
NONMTG	0.770	0.797	<b>0.442</b>	M1			<b>0.608</b>	0.585
				M2			<b>0.636</b>	
				M3			0.746	
				M4			0.716	
				M5			<b>0.605</b>	
COORD	0.720	0.814	<b>0.485</b>	O1		0.799		0.606
				O2		0.750		
				O3		0.742		
				O4		0.768		
				O5		<b>0.293</b>		

#### B- Discriminant Validity

##### Latent Variables Correlations and the Square Root of the AVE

	ACINF	NONMTG	IAFC	COORD	ARLN	BankSize	$\sqrt{AVE}$
<b>ACINF</b>	1.000	0.022	0.225	0.184	-0.302	0.128	0.911
<b>NONMTG</b>	0.022	1.000	0.302	0.224	-0.459	0.296	0.765
<b>COORD</b>	0.184	0.224	0.735	1.000	-0.494	0.563	0.778

##### Factor and Cross Loadings of the Reflective Constructs Indicators

	ACINF	NONMTG	IAFC	COORD	ARLN	BankSize
<b>I1</b>	<b>0.949</b>	-0.017	0.200	0.126	-0.197	0.117
<b>I2</b>	<b>0.919</b>	0.082	0.208	0.168	-0.295	0.052
<b>I3</b>	<b>0.820</b>	-0.011	0.239	0.160	-0.337	0.112
<b>I4</b>	<b>0.949</b>	0.018	0.185	0.205	-0.261	0.160
<b>I5</b>	<b>0.909</b>	0.020	0.180	0.160	-0.240	0.145
	<b>ACINF</b>	<b>NONMTG</b>	<b>IAFC</b>	<b>COORD</b>	<b>ARLN</b>	<b>BankSize</b>
<b>M1</b>	0.184	<b>0.608</b>	0.084	-0.073	-0.170	0.172

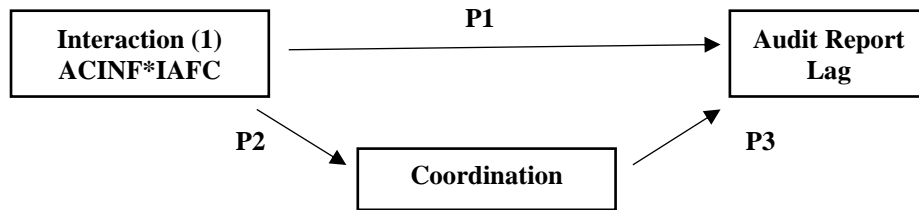


<b>M2</b>	0.222	<b>0.636</b>	0.089	0.007	-0.165	0.121
<b>M3</b>	-0.225	<b>0.746</b>	0.428	0.380	-0.429	0.219
<b>M4</b>	0.131	<b>0.716</b>	-0.096	-0.153	-0.284	0.179
<b>M5</b>	0.239	<b>0.605</b>	0.085	0.087	-0.252	0.249
<b>O1</b>	0.236	0.108	0.559	<b>0.799</b>	-0.281	0.453
<b>O2</b>	0.391	0.240	0.550	<b>0.750</b>	-0.435	0.408
<b>O3</b>	0.070	0.148	0.603	<b>0.742</b>	-0.322	0.499
<b>O4</b>	0.020	0.137	0.563	<b>0.768</b>	-0.274	0.437
<b>O5</b>	-0.243	0.138	0.166	<b>0.293</b>	-0.455	0.037

### Appendix III

#### The Mediating Effect of Coordination

**A- The Mediating Effect of Coordination on the association between the First Interaction and Audit Report Lag.**



**B- Mediating Effect of Coordination on the association between the Second Interaction and Audit Report Lag.**

