

Internal audit effectiveness: operationalization and influencing factors

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Internal Audit Effectiveness: Operationalization and Influencing Factors

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Abstract

- *Purpose:* Internal audits have become one of the key practices for organizations to control the adherence of their processes to standard procedures and regulations. The benefits of conducting internal audits are well acknowledged in the literature. However, it is difficult for organizations to assess the effectiveness of internal audits and to understand the factors that influence audit effectiveness.
- *Methodology:* A systematic literature review was conducted to identify relevant publications, and collect and synthesize evidence on the operationalization of internal audit effectiveness, and the factors that potentially influence the effectiveness of internal audits.
- *Findings:* The thorough analysis of the relevant studies resulted in a comprehensive list of indicators used for the operationalization of audit effectiveness, and a list of potentially influencing factors. The results of the systematic review are synthesized into a framework.
- *Research implications:* The researchers should consider this study as a comprehensive source that offers pointers on the factors investigated in the literature and a basis for future research in this field to address the gaps that are identified.
- *Practical implications:* The awareness about how the effectiveness of internal audits can be measured, and the factors that can potentially influence this effectiveness can help organizations to understand their current performance and ultimately improve it in the future.
- *Originality/Value:* The contributions of this study will help in better understanding the state of the research on internal audit effectiveness, including the influential factors, and gaps and opportunities for future research.

Keywords: Internal audit; Effectiveness; Quality; Measurement; Factors; Systematic literature review.

1 Introduction

Internal audit (IA) is considered as an important tool to control the governance and operation of an organization (IIA, 2010). Initially, IA function focused on compliance assurance, financial control, and assets safeguarding (Allegrini, D'Onza, Paape, Melville, & Sarens, 2006; Dellai, Ali, & Omri, 2016). In the recent years, IA has experienced changes which have resulted in the extension of the area of involvement and the increase of its value adding potential. The Institute of Internal Auditors (IIA) has elaborated a definition of IA which is now widely accepted: *"Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes"* (IIA, 2017).

Nowadays, the added value of IA draws attention from all audit stakeholders due to the increase in regulatory requirements and focus on governance and risk management (Cohen & Sayag, 2010). The requirements assigned to the IA function by internal and external stakeholders are constantly increasing and changing the attention given to this function. Previously, the roles, responsibilities, contributions to internal and external stakeholders, and the recognition by the organization were the focuses of IA, whereas now, it has shifted to how IA can bring value to the organization (Allegrini et al., 2006; Erasmus & Coetzee, 2018). However, the extent of added value that the IA can bring to the organization depends on how effectively it is managed in the organization (Dittenhofer, 2001; Mihret & Yismaw, 2007).

A typical evaluation of IA performance is a comparison of the actual performance with the predefined objectives, including the measurement of the achieved effectiveness and efficiency (Beckmerhagen, Berg, Karapetrovic, & Willborn, 2004; Shu, Li, Wang, & Zhang, 2010). The term "effectiveness" has been defined as *"the capacity to obtain results that are consistent with target objective"* (Arena & Azzone, 2009). Dittenhofer (2001), however, defined the term as *"the achievement of a desired condition"*. Although this condition is often not well defined, it can be measured in degrees. Efficiency, on the other hand, relates to the degree that the organization utilizes its resources in producing measurable outputs (Dittenhofer, 2001). Aligned with the common understanding of the terms, effectiveness is *"doing the right thing"*, while efficiency is *"doing it well"* (Chambers, 1993).

Beckmerhagen et.al (2004) argue that the effectiveness and efficiency have to be measured separately, as there is a possibility that the audit is effective but not efficient and vice versa. For instance, all objectives have been achieved but with a great amount of expense. In contrast, it is possible that the audit is efficient and the auditors spend little time on audit activities, but the objectives are not achieved. Bednarek (2018) argues that the effectiveness is more important aspect than efficiency because if the IA is not effective, it is worthless regardless of how efficient the audit is. If the IA quality is maintained, it will contribute to the adherence of the process and operations to the regulation or standard, and thus IA contributes to effectiveness of the auditee in particular, and the organization as a whole (Dittenhofer, 2001).

Despite these arguments on the benefits of IAs, it is challenging for organizations to assess how effective the IA activities are and whether the benefits have been achieved. There is a need for accurate, realistic and simple indicators that would help organizations to measure the effectiveness of the IAs, as it is a key aspect in understanding the drivers of IA quality (Beckmerhagen et al., 2004; Cohen & Sayag, 2010; Dittenhofer, 2001; IIA, 2016). IA should establish performance metrics and related measurement criterion according to its business environment to measure the degree of objective achievement or -in another words - the effectiveness of internal audits (IIA, 2016).

The literature offers a considerable body of knowledge on the concept of IA effectiveness and a number of literature reviews that discusses influential factors (M. S. Badara & Saidin, 2013; Dittenhofer, 2001; Endaya & Hanefah, 2013; Gramling, Maletta, Schneider, & Church, 2004; Lenz & Hahn, 2015; Lenz, Sarens, & Jeppesen, 2018). Some of these studies [e.g., (Dittenhofer, 2001; Gramling

et al., 2004)], however, require an update to reflect the state of the art and practice emerged through recent empirical works. More recent reviews [e.g., (Endaya & Hanefah, 2013; Lenz & Hahn, 2015; Lenz et al., 2018)], on the other hand, do not apply systematic methods in locating and analyzing the sources and published material, thus, miss a number of significant empirical works. The works that study these factors do not necessarily converge into an agreed-upon conclusion regarding the impact of the influential factors. In addition, these works focus their attention on the influential factors [e.g. (M. S. Badara & Saidin, 2013; Lenz & Hahn, 2015)], and do not consider how the effectiveness of IAs are quantified or operationalized in relevant empirical works. This is important particularly from the point of view of the practice. Organizations should be expected not only to consider potentially influential factors of IAs, but also to assess their actual impact in the organization through well-defined indicators. The professional standards of the Institute of Internal Auditors (IIA, 2017) provide limited help on this. Therefore, there is a need to extend our understanding of the state of the research on the effectiveness of IAs, examine the indicators or metrics used for operationalizing/quantifying the effectiveness of IAs, and understand the factors that influence the IA effectiveness as a synthesis of existing literature.

To address these objectives, the following research questions are formulated:

RQ1: What indicators do the studies in the existing literature use to operationalize the effectiveness of an internal audit?

RQ2: What factors are considered in the literature to influence the effectiveness of an internal audit?

To answer these research questions, a systematic literature review (SLR) was performed taking as the basis the studies that empirically evaluated the influence of a set of factors on the IA effectiveness and secondary studies that reviewed the existing literature.

The studies published between the years 2000 and March 2019 were searched in a comprehensive set of academic digital libraries. Within a large set of articles that were retrieved, 37 were finally selected in accordance to the selection procedure and criteria. Afterwards, these studies were thoroughly analyzed to identify their research design, applied methods, factors considered and the achieved results. Based on the analysis of the overall results and key findings, a framework that involves the factors influencing the effectiveness of IAs, as well as their operationalization was proposed. Such a framework can help organizations to understand their current condition and ultimately improve their audit performance in the future.

The remainder of this paper is organized as follows: Section 2 describes the design and method we used in conducting our systematic literature review. Sections 3, 4, and 5 present - respectively - the findings, analysis, and the results in studying and comparing various sources on IA effectiveness to answer our research questions. Section 6 provides a discussion of the findings, which is followed by the conclusions including the gaps for future research.

2 Research Design

In this SLR, the guideline provided by (Kitchenham & Charters, 2007) is followed. The guideline is originally developed to help researchers to conduct systematic literature reviews in the software engineering field, but recently adopted by review studies in several research domains (e.g., (Dikici, Turetken, & Demirors, 2018; Kitchenham et al., 2010; Tarhan, Turetken, & Reijers, 2015; Wohlin, 2014). Figure 1 shows the SLR protocol that was derived from the guideline. In the remainder of this section, the steps of the protocol are described.

In *step 1*, the research problem was defined as discussed in the introduction section of this paper. Based on the research problem, the research objective and related questions were defined and

formulated in *step 2*. In *step 3*, pilot searches were conducted to review the scope and refine the search string to be used for the subsequent comprehensive searches.

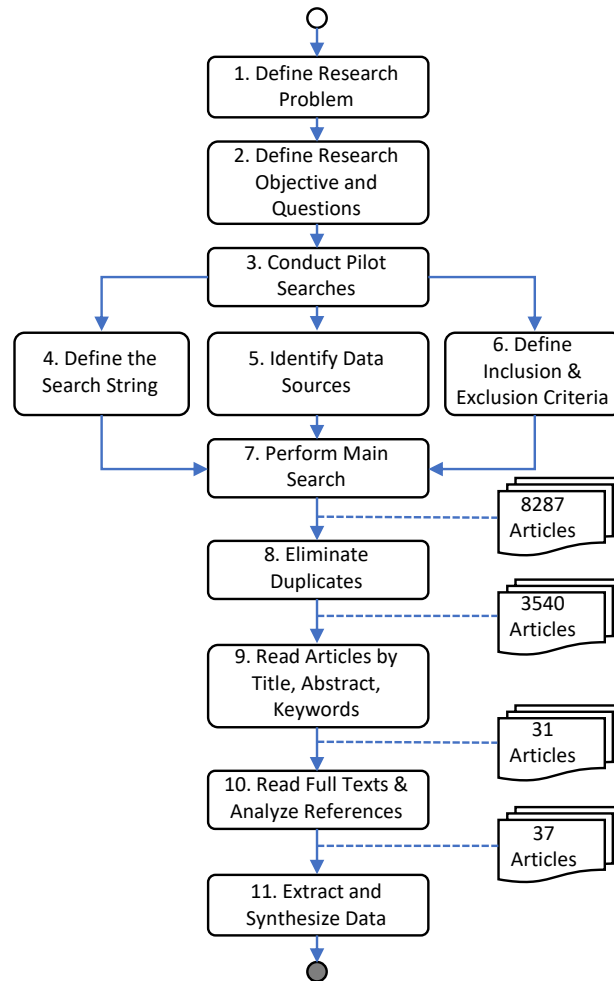


Figure 1. SLR steps and resulting number of publications

Based on the results of prior steps, in *step 4*, the search string was derived. Aligned with the definition given in the Institute of Internal Auditors' (IIA) International Professional Practices Framework (IPPF) (IIA, 2017), we emphasized the terms 'effectiveness' and 'efficiency' and focused our attention on the studies that use this term to refer to the 'degree to which established IA objectives are achieved'. In the literature, however, there are studies that use the terms 'IA quality' and 'IA effectiveness' interchangeably [e.g., (Abbott, Daugherty, Parker, & Peters, 2016; Trotman & Duncan, 2018)]. Hence, the following string was used for the retrieval from the data sources (electronic libraries):

((effectiveness) OR (quality)) AND ("internal audit")

In *step 5*, the following major electronic libraries were identified as the data sources of relevant studies. These libraries cover a broad range of relevant accessible publishers (Kitchenham & Charters, 2007):

1. Scopus (<http://www.scopus.com>)
2. ScienceDirect (<http://www.sciencedirect.com>)
3. ACM Digital Library (<http://dl.acm.org>)
4. Web of Science (<http://apps.webofknowledge.com>)
5. IEEE Xplore (<http://ieeexplore.ieee.org>)
6. SpringerLink (<http://link.springer.com>)
7. Emerald Insight (<http://www.emeraldinsight.com>)

In *step 6*, the inclusion and exclusion criteria, which were applied on the resulting publications to identify those that are relevant to the primary research, were defined. These criteria were aligned with the research objective and questions, and defined as follows:

Inclusion Criteria:

- Inc1- Publications that are published in English language.
- Inc2- Publications that are published between 2000 and 2019 (March).
- Inc3- Publications related to the topic of IA.
- Inc4- Publications that present quantitative analyses with measurements or indicators regarding the effectiveness (or quality) of IAs.
- Inc5- Publications that present qualitative analyses including factors that influence the effectiveness (or quality) of IAs.

By including the studies that investigate *qualitative* analyses (Inc5), we aimed to enrich the findings and strengthen the conclusions derived from the literature.

Exclusion Criteria:

- Exc1- Publications in the grey literature; e.g., papers without bibliographic information (such as publication date/type, volume and issue numbers), working papers, white papers, or report published by audit firms or IA related organizations.
- Exc2- Publications that do not explicitly relate to IAs.
- Exc3- Publications that study specific sub-topics regarding financial or accounting audits.
- Exc4- Publications that investigate measures, indicators, analyses, or evaluations on IAs' *efficiency* (instead of effectiveness).
- Exc5- Publications that have recent versions which enhance, complete, and offer a larger extent of the contribution of the original paper.

In *step 7*, we performed the main search in electronic libraries for the studies published in academic journals, conference proceedings, and scientific books between the years 2000 and 2019 (March). As each library provides slightly different search features, specific query strings and strategy were developed for each library taking the main search string formulated in step 4 as the basis. As a general rule, the query strings were applied to the title, keywords, and abstracts of the publications residing in the libraries. This is with the exception of Springer Link, which supports searching only full-texts and titles. The search result in this online library resulted over 5000 publications, which were sorted by relevance. The first 80 publications were considered relevant, as further examination of publications between 80 and 100 did not identify any additional relevant work. In total, 8287 publications were initially retrieved.

Before applying the inclusion and exclusion criteria, in *step 8*, duplicate entries resulting from the search of multiple electronic libraries were removed to generate a list of unique publications. After a careful review of 3097 publications, 4447 were marked as duplicate, leading to 3540 (unique) publications. In *step 9*, each publication was reviewed based on the information provided in the title, abstract and keywords. Inclusion and exclusion criteria were applied in this step for selecting relevant publications. As a result, 31 publications were identified for thorough investigation.

In *step 10*, the full-texts of 31 publications were read. Re-applying the inclusion and exclusion criteria to these publications led to a refined list of 22 publications. The references of these publications were also analyzed leading to 15 additional publications following a *snowballing* approach proposed in (Wohlin, 2014). This step led to a final list of 37 primary studies. Accepting a publication as a *primary study* meant that it would be used as a source to be used to answer the research questions in this SLR.

In *step 11*, first, a data extraction scheme was constructed to help extract, analyze and synthesize the key evidence from each publication. This involves the information about the research methods that were used in the study, the dependent and independent factors that were investigated, the way these

factors were operationalized and the metrics that used to indicate these factors including the audit effectiveness, and the results of the experiments that were reported. For each independent factor investigated in a study, the information regarding the statistical relation/correlation between the independent and the dependent factor - i.e., audit effectiveness- is recorded in terms of types such as 'no effect', 'partially supported effect', or 'significant effect'.

3 General Findings

This section provides an overview of the general findings obtained from the analysis of the primary studies, focusing on the year and type of publications, the research type, analysis method, research participants, organization sectors, as well as the measurement analysis used in the research study. Figure 2 shows the distribution of primary studies by year (from 2000 to 2019 March). The number of publications reached the highest number (5) in 2018. The figure indicates an increasing interest on the topic of IA effectiveness.

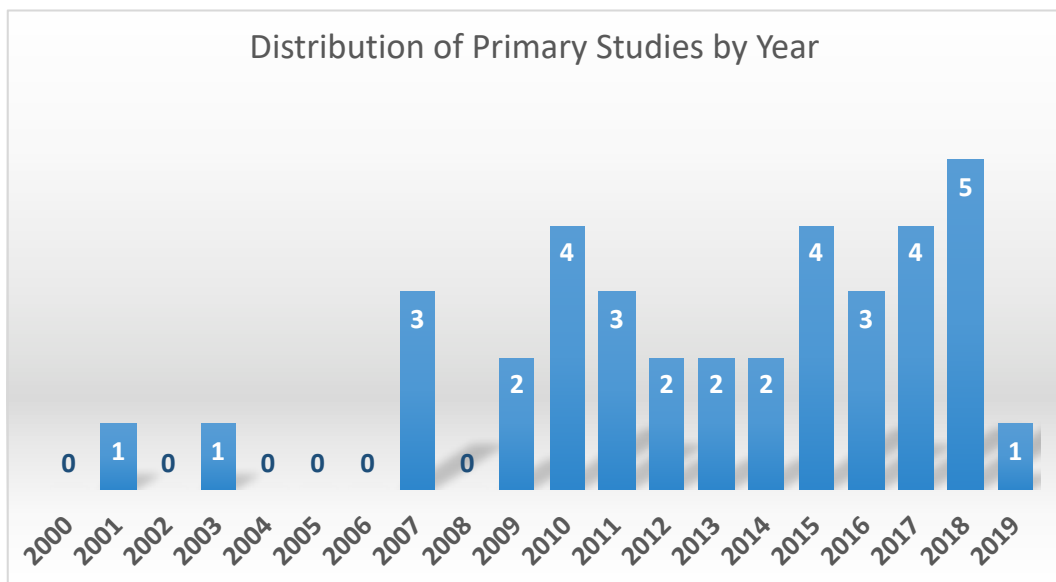


Figure 2. Distribution of Primary Studies by Year

Among 37 primary studies, the majority (34 out of 37) is journal publications. Table 1 lists the sources and number of primary studies published in these sources. Seven publications appeared in the Managerial Auditing Journal, which corresponds to the highest number among the journals, followed by 3 publications in the International Journal of Auditing. The rest of journal publications are spread in 23 journals. The percentage and variety of journal publications on this topic indicate that the IA has evolved and become a topic of multidisciplinary research with relatively mature contributions.

Table 1. List of Sources of Primary Studies

Source	# of Studies
Managerial Auditing Journal	7
International Journal of Auditing	3
International Journal of Finance and Accounting	2
Annals of Faculty of Economics	1
Australian Accounting Review	1
BMJ - Health Services Research	1

Source	# of Studies
Critical Perspectives on Accounting	1
Economic Research	1
EDPACS	1
Efficiency in Business and Economics (Scientific Book)	1
Engineering Economics	1
European Research Studies Journal	1
Indian Journal of Science and Technology	1
International Conference on Software Process (Conf.)	1
Int. Journal of Academic Research in Accounting, Finance and Management Sciences	1
International Journal of Economic Sciences and Applied Research	1
International Research Journal of Finance & Economics	1
Journal of Accounting, Auditing & Finance	1
Journal of Business and Management	1
Journal of Business and Policy Research	1
Journal of Contemporary Accounting and Economics	1
Journal of Engineering and Applied Sciences	1
Journal of International Accounting, Auditing and Taxation	1
Journal of Modern Accounting and Auditing	1
Middle-East Journal of Scientific Research	1
Pacific Accounting Review	1
Proceedings of the Second American Academic Research Conference on Global Business, Economics, Finance and Social Sciences (Conf.)	1
The Annals of the "Stefan Cel Mare" University of Suceava	1

Majority of the publications report empirical studies (29 publications), while 8 publications are secondary studies that involve literature reviews. The data collection method used in empirical studies are listed in Table 2. Majority of the empirical studies used surveys for data collection from various audit stakeholders, including both internal and external ones. Some examples of internal stakeholders include the auditees or internal auditors, while examples of external stakeholders include the external auditor or management board. Moreover, there are 5 primary studies that used both survey and interviews to gather data for their empirical research.

Table 2. Empirical Research Method in Primary Studies

Empirical Research Method	# of Studies	Primary Study
Survey	24	[S1], [S3], [S4], [S5], [S7], [S9], [S10], [S11], [S12], [S13], [S14], [S16], [S18], [S19], [S21], [S22], [S24], [S28], [S29], [S31], [S32], [S33], [S34], [S35]
Interview	6	[S4], [S13], [S16], [S18], [S22], [S26]
Reported Data	3	[S25], [S30], [S36]

Figure 3 shows the number of participants involved in each empirical study. (The studies [S4] and [S36] did not report on the number of participants.)

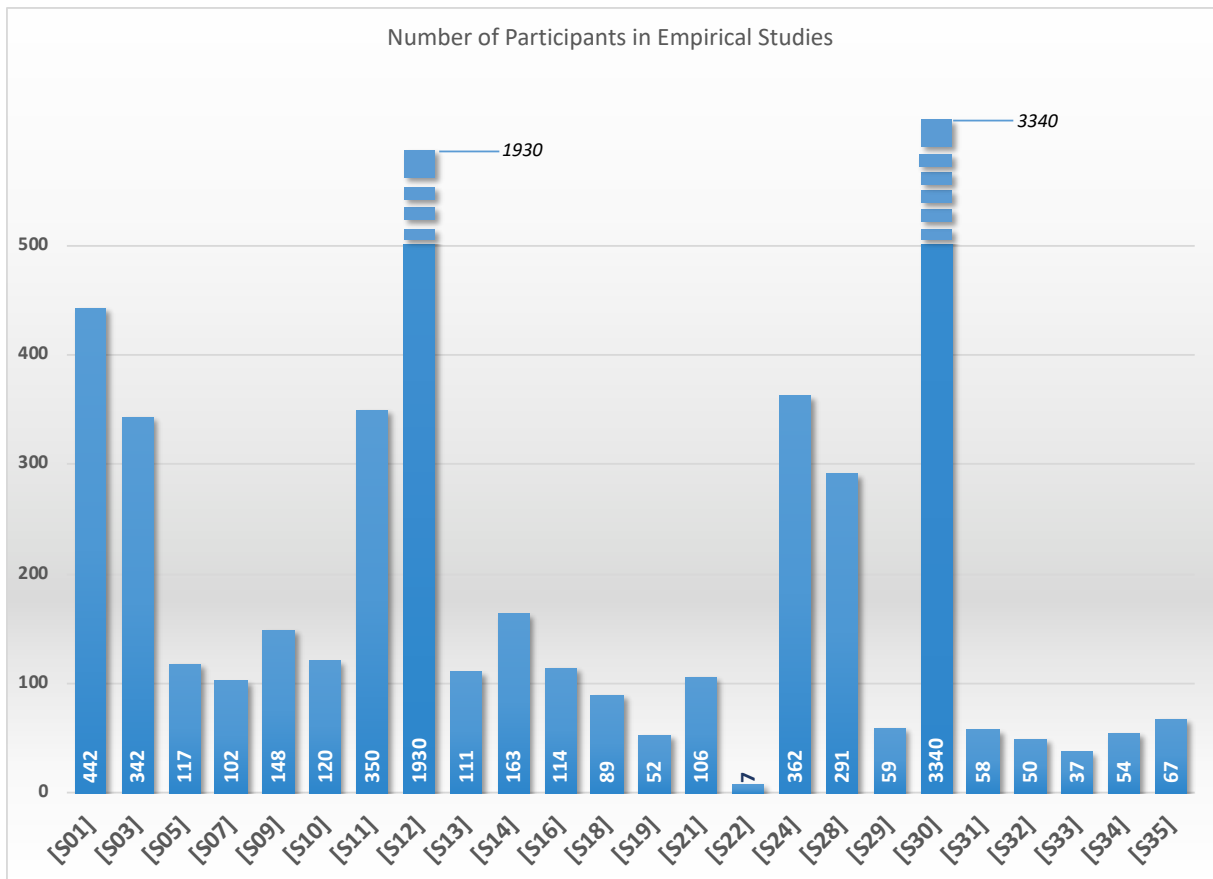


Figure 3. Number of participants in the empirical studies

Figure 4 presents the type of organizations that the primary studies took as the field of their research – in particular: public institutions, private companies, or both. In general, the figure indicates a balanced focus regarding the type of organizations.

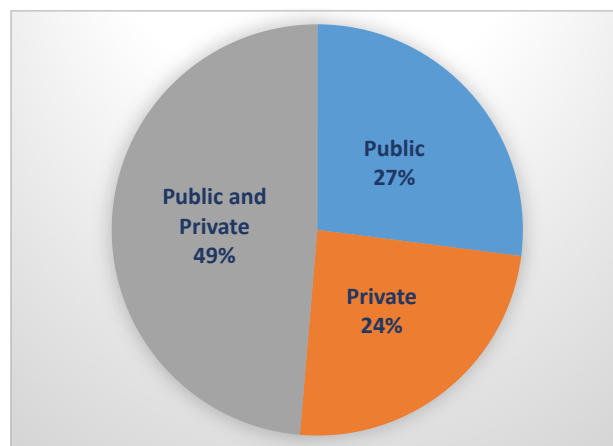


Figure 4. Type of Organizations focused in the Primary Studies

Among the 29 publications that report empirical studies, about half of them used regression analysis to investigate the factors that influence IA effectiveness. As mentioned above, in addition to these empirical studies, there are also secondary studies that discuss the influence of various factors that are considered to influence the audit effectiveness based on literature reviews (i.e., [S02], [S06], [S08], [S15], [S17], [S23], [S27], [S37]).

4 Indicators for IA Effectiveness

Operationalization involves the development of indicators, which are observable and measurable entities that serve to define a concept in a practical way (Sarantakos, 2013). Given the limited extent of academic work on the effectiveness of IAs, only few indicators are proposed in the literature, that are validated and tested for their reliability (Cohen & Sayag, 2010). As a consequence, majority of the studies observed the factors that influence the IA effectiveness, but do not present the actual indicators or metrics used in quantifying IA effectiveness. Only few studies explicitly describe the indicators that were used. In addition, as we discuss in this section, the literature has not converged into a set of commonly accepted indicators that that can be used to quantify the effectiveness of IAs. This section synthesizes the indicators used in the primary studies in order to answer our first research question.

Table 3 shows the identified indicators used for the operationalization of IA effectiveness together with the perspective taken in their measurement, the entity of measurement, and the list of primary studies that use them. The indicator perspective distinguishes between the objectively measured indicators, and the “perceived” effectiveness which follow the subjective opinions of various stakeholders (i.e., the effectiveness as perceived by them).

Table 3. IA Effectiveness Indicators and Related Primary Studies

	IA Effectiveness Indicator	Entity Type	# of Studies	Primary Studies
OBJECTIVELY MEASURED EFFECTIVENESS				
IAEM 1	Fulfillment Degree of IA Plan	Process	3	[S6], [S26], [S27]
IAEM 2	Time required to complete audit plan	Process	2	[S26], [S27]
IAEM 3	Recommendation Implementation Rate	Output	7	[S3], [S5], [S14], [S20], [S26], [S27], [S34]
IAEM 4	Time to Issue IA Report	Output	2	[S6], [S27]
IAEM 5	Time to Solve IA Findings	Output	3	[S6], [S25], [S27]
IAEM 6	Time Management	Output	1	[S6]
IAEM 7	Number of Audit Findings	Output	8	[S12], [S25], [S27], [S29], [S30], [S36], [S17], [S25]
IAEM 8	Audit Value	Outcome	5	[S5], [S13], [S25], [S26], [S27]
PERCEIVED EFFECTIVENESS				
IAEM 9	Perceived IA Effectiveness	Output	17	[S1], [S2], [S4], [S7], [S9], [S10], [S11], [S13], [S18], [S21], [S22], [S24], [S28], [S31], [S32], [S33], [S34]
IAEM 10	Stakeholder’s satisfaction	Output	3	[S5], [S16], [S27]
IAEM 11	Perceived Added Value to Organization	Outcome	3	[S5], [S12], [S16]

The indicators of IA effectiveness can also be categorized based on the type of the entity that is being measured. These are *process*, *output*, and *outcome* indicators (Arena & Azzone, 2009). Process indicators are based on the evaluation of the activities performed by the auditor, such as the adherence to the standards, the ability to plan and execute audit activities and communicate audit findings. Output indicators are related to the expectations of IA stakeholders. These indicators appeared more consistent with the need to consider the changing of stakeholder expectations (Dittenhofer, 2001).

Outcome indicators use the impact of a certain outcome of the audit process to the organization. These indicators cover a wide range of aspects, for example the cost savings generated due to the

implementation of recommendations made by internal auditor or contribution to organization's performance, such as profit, revenue, or share price. Although the outcome indicators are tangible and interesting, measuring them is often difficult and problematic, due to challenges faced regarding data availability and time delay (Arena & Azzone, 2009).

Below is a brief description of each IA effectiveness indicator.

IAEM1. Fulfillment Degree of IA Plan

Bednarek (2018) defines the fulfillment degree of IA plan as the ratio of IA activities that are actually performed according to IA plan in a certain period of time to those that are planned. This indicator can be measured by counting the number of realized activities at a certain period of time and compare them against the initial plan. Studies [S6] and [S27] that report on the research conducted by Ernst & Young in 2007 and 2008, respectively, use this indicator for measuring IA effectiveness.

IAEM2. Time Required to Complete Audit Plan

A set of studies argues on the influence of the time required to complete the audit plan on the IA effectiveness [26]. Similarly, study [S27] included the necessary time to fulfill the audit mission as another instrument to indicate the IA effectiveness. However, these studies do not present the specifics of how the time required to complete the audit plan can be measured.

IAEM3. Recommendation Implementation Rate

As indicated in Table 3, there are 6 studies that use recommendation implementation rate as one of the indicators to represent the IA effectiveness. This indicator specifies the ratio between the number of audit recommendations that are approved or agreed by the auditees or management and that have been implemented, and the total number of recommendations proposed by the internal auditor (Bednarek, 2018). Although this method has certain limitations, it helps the auditee to determine -to some extent- the impact of the IA (Bednarek, 2018). One of the limitations -as highlighted in study [S14]- is how the time required to implement the recommendations can be determined and when the auditee can measure the impact. Study [S3] also argues about the limitations of this indicator for it is not controlled solely by the IA activities.

The primary studies apply different techniques in measuring this indicator. In study [S5], the survey participants were asked to indicate with values from 1 to 5; 1 indicating 'never implemented the recommendation' and 5 indicating 'always implemented all recommendations'. Similarly, study [S14] used a 4-point Likert scale, where 1 corresponds to the lowest level implementation (below 20%) and 4 indicates the highest level of implementation (above 80%). Study [S3] uses a two-item scale, where 0 refers to a low recommendation implementation rate (below 80%) and 1 refers to a high rate of recommendation implementation (above 80%). Different than the abovementioned studies, the study in [S20] considered the total number of recommendations from the previous reports that had been implemented. This study used Analytic Hierarchy Process (AHP) method to evaluate the effectiveness of IAs. The AHP method is often used to rank multi-criteria alternatives where expert opinion is used to compare between alternatives (Mizrahi & Ness-Weisman, 2007). For their experiment, they used AHP method to rank the importance of the recommendation and assign different weight values for each recommendation. This ensures that each recommendation has a different weight and can penalize more if it has not been implemented.

IAEM4. Time to Issue IA Report

As presented in studies [S6] and [S27], the time to issue an IA report is a commonly used indicator for measuring IA effectiveness. The study [S27] also argues that, for an effective IA, the issuance of an audit report has to be within 10 days from the last day of the fieldwork.

IAEM5. Time to Solve IA Findings

The study in [S6] argues on the importance of monitoring the time incurred in solving IA findings. The study proposes a set of metrics to operationalize the indicator: the number of findings solved in a certain time, the number of findings solved with delay, and the number of findings unsolved. Similarly,

the study [S25] categorizes the time required to solve IA findings into two categories: the time required to analyze and validate the finding until it becomes a real problem, and the required time to solve the real problem.

IAEM6. Time Management

The study in [S6] proposes 'time management' as an indicator of IA effectiveness. This indicator distinguishes the time required to perform the main IA activities and the time required to do other activities, such as the administrative activities. The measurement is done through monitoring of daily activities by logging the actions performed by the internal auditor each day during the IA period.

IAEM7. Number of Audit Findings

According to ISO 19011, an audit finding is defined as a "result of the evaluation of the collected audit evidence against audit criteria" (ISO, 2011). The audit findings can also indicate the conformity or nonconformity to the established procedure and can lead to the identification of improvement recommendations (ISO, 2011). The study in [S25] uses the number of audit findings as the metric to measure the IA effectiveness. Moreover, this study differentiates the number of initial findings with the number of actual problems after validation. This study also measures the ratio between the number of initial findings and the number of actual problems to check the quality of internal auditor's work. However, Badara et al. (2013) argues against using solely audit findings to indicate the effectiveness, and supports a combination between the quality and the sustainability of the audit plan, execution, and follow up. The same view is also supported by [S12], which argues that the number of findings is more into the efficiency rather than the effectiveness as the quality of the audit finding itself still has to be verified. Furthermore, this metrics can be misleading as some internal auditors may feel pressured to find audit findings instead of targeting for process improvement.

Apart from the number of findings and validation, study [S27] also argues on the importance and severity of the audit findings as part of the IA effectiveness metrics. Accordingly, the more important or severe the IA findings are, the more effective the IA activities will be. In addition, study [S12] also relates the severity of audit findings with a certain standard or regulation. They used the notion of noncompliance to refer to the audit findings if the objective of the IA is to examine the adherence of the process to a certain standard.

IAEM8. Audit Value

The studies in [S13] and [S26] define the concept of 'value tracking' as the cost savings and/or revenue enhancements due to IA activities. Specifically, these two studies use cost-benefit analysis to track and calculate the value that the IA brings to the organization. In addition, the impact of the implementation of audit findings or recommendations can also be used to measure the effectiveness of the IA. The study in [S25] also tracks the cost and efficiency for each non-compliance finding. Aligned with this, the data presented in study [S27] also reveals that some companies use the cost-benefit indicator to quantify the IA effectiveness.

IAEM9. Perceived IA Effectiveness

Perceived effectiveness of IA is defined as the degree (as recognized by the audit stakeholders) to which predefined objectives are achieved by performing an IA (Tackie, Marfo-Yiadom, & Oduro Achina, 2016). Dittenhofer (2001) complements this definition by arguing that the perceived effectiveness is achieved if no underlying issues are revealed in other audits that take place after the IA activities. Furthermore, Alzeban et al. (2014) argue that measuring the effectiveness is one of the key aspects to examine the drivers of IA effectiveness. This is reflected in majority of the primary studies, which use this indicator to investigate the influence of certain factors on the IA effectiveness. These studies (e.g., [S1], [S9], [S11]) propose several questionnaire items to operationalize and quantify this indicator. Some of the items that are used to capture the stakeholder's perception of IA effectiveness include the following:

- IA evaluates and improves the effectiveness of risk management (Alzeban & Gwilliam, 2014),
- IA evaluates and improves the effectiveness of governance process (Dellai et al., 2016), or

- The audit findings are in line with the established objective (M. azu S. Badara & Saidin, 2014).

IAEM10. Stakeholder's Satisfaction

The main objective of this indicator is to detect the overall satisfaction rate of the IA stakeholders with the IA activities and identify the potential root causes of the dissatisfaction (Bota-Avram, Popa, & Stefanescu, 2010; Cohen & Sayag, 2010). Some of the primary studies use survey questionnaire items to operationalize this metric, while others use interviews. Bota-Avram et al. (2009) also suggest to apply qualitative methods to understand the level of satisfaction of the clients of IAs. In this context, the clients refer to the stakeholders of the IA, both internal and external. The study in [S5] measures this indicator using a 5-point Likert scale for satisfaction, whereas [S16] uses the number of complaints related to the IA activities.

Furthermore, there are debates on the metrics used for this indicator [S5]. On one hand, researchers argue that various stakeholders' interests are always compromised or balanced against each other. On the other hand, there can be conflicts between the needs of stakeholders. Thus, it can be assumed that these contradicting needs of the stakeholders can have an effect on how they perceive the IA effectiveness. This is also supported by Lenz et al. (2017) where they highlight the disadvantage of using stakeholder's satisfaction as the only metric to measure the IA effectiveness, as the expectations may vary among stakeholders in practice and for some cases it may be demanding or contradicting to each other.

IAEM11. Perceived Added Value to Organization

According to the official definition of the IA, the ultimate goal is to contribute to creation of added value to the organization (Dellai et al., 2016), (Mihret & Yismaw, 2007). However, it is difficult to directly correlate between the financial impact and the IA activities which cause the added value that IA can bring to the organization (D'Onza, Selim, Melville, & Allegrini, 2015). Some studies propose survey questionnaire items that can be used to gather stakeholders' perception about the added value of IAs. This include, for example:

- IA improves organizational performance (Alzeban & Gwilliam, 2014).
- IA makes appropriate recommendations for improving the organizational processes (Dellai et al., 2016).
- The audit finding brings improvement in the organization (M. azu S. Badara & Saidin, 2014).
- IA activities add value to the organization (D'Onza et al., 2015).

5 Factors of Internal Audit Effectiveness

This section presents the details of the factors that are considered to have an influence on the effectiveness IAs as studied in the existing literature. The literature accepts that an effective IA brings value to the organization by ensuring the adherence to the established procedures, laws, and regulations, and provide opportunity to improve existing processes (Yee, Sujana, James, & Leung, 2008). However, the current stakeholders also pinpoint a widening gap between the expectations of IA stakeholders (Erasmus & Coetzee, 2018). Accordingly, the underlying problems are often detected after the IAs, which cause a difficulty in determining whether the audit was effective or not (Bender, 2006). Furthermore, it was suggested that quantifying the effectiveness of IA might be proxied by examining the factors that may influence the effectiveness of IA (Bender, 2006). Therefore, it is valuable to investigate these factors and address our second research question.

In classifying the potentially influential factors, we adopt the scheme proposed by Lenz et.al (2015), which separates the factors into two categories: supply and demand. The supply side refers to the factors that are based on the self-assessment of internal auditors, while the demand side refers to the factors that involve the perspectives of other stakeholders, such as the auditees. This is also supported by Cohen et al. (2010) that consider the environment as an additional aspect of IA to reflect the

relationship with other stakeholders. In total, we identified 20 factors from the primary studies, 13 of which are in the supply side and 7 in the demand side. Table 4 presents these factors including the specific studies that refer to them. A concise description of each factor is presented below, including a brief discussion of how they are operationalized in the studies reviewed. This will be followed by a brief discussion of the direction and level of impact of each factor's influence on audit effectiveness.

Table 4. Factors of IA Effectiveness

	IA Effectiveness Factor
SUPPLY SIDE	
IAEF 1	Competence of the IA Department
IAEF 2	Size of the IA Department
IAEF 3	Organizational Setting
IAEF 4	Scope Limitation
IAEF 5	Compliance with Applicable Standards
IAEF 6	Management Training Ground
IAEF 7	Auditee Attributes
IAEF 8	IA Independence
IAEF 9	IA Objectivity
IAEF 10	Conduct Risk Consulting
IAEF 11	Outsourcing IA
IAEF 12	Quality of Audit Work
IAEF 13	Chief Audit Executive's Leadership Style
DEMAND SIDE	
IAEF 14	Management Support for IA
IAEF 15	Interaction Between Internal and External Audit
IAEF 16	Cooperation with Audit Committee
IAEF 17	Information and Communication
IAEF 18	Existence of a Follow-up Process
IAEF 19	Supportive Control Environment
IAEF 20	Cultural Dimensions

IAEF1. Competence of the IA Department

This factor refers to the proficiency and professional care of the IA department, as represented by the internal auditor. According to IIA, 'the internal auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities', which is referred to as proficiency. Similarly, 'the internal auditors must apply the care and skill expected of a reasonably prudent and competent internal auditor', which is referred to as professional care (IIA, 2017).

The competence of the IA department is one of the most commonly investigated factors in the existing literature; it appears in 22 out of 37 primary studies. The competence of the staff members is a key element in effective IA activity (IIA, 2017). Moreover, The International Standards for the Professional Practice of Internal Auditing (ISPPA) highlights the importance of IA team, which should possess the knowledge, skills, and other competencies necessary to perform their responsibilities (Dellai et al., 2016). Some of the primary studies that we have investigated (e.g., [S4], [S9], [S10], [S13], [S21]) relate the competencies with the experience of the staff members, their professional qualification, percentage of certified staff, training hours, and education level. These studies used questionnaires to obtain the competencies of the internal auditor in terms of, for instance, the number of years that the staff members have been working in the organization, and the number of certifications and trainings they received in the past years (Nurdiono & Gamayuni, 2018).

IAEF2. Size of IA Department

Bednarek (2018) argues that one of the obligatory conditions to be met to allow an internal auditor to conduct effective IAs is the availability of adequate number of qualified experts. Similarly, Arena et al. (2009) argue that larger IA departments would allow internal auditors to do rotations, ultimately leading into a more objective IA. Hence, the size of the IA department is considered as an important factor that potentially influence the IA effectiveness (Chang, Chen, Cheng, & Chi, 2019). The size is also closely related to the resources allocated and the level of investment made on the IA function (Alhajri, 2017). Some of the primary studies (e.g., [S3], [S14]) also report this factor as a metric used by the external auditors to assess the quality of the IA. The study in [S21] shows that the quality of IA is likely to be higher when there is sufficient number of staff members in the audit department. In order to measure the size of the IA department, the study in [S14] uses the number of employed IA department members, while [S3] use the number of employed full-time-equivalent internal auditors (EMP). However, as indicated in [S14], the ratio between the number of internal auditors and the number of total employees in the organization can be more useful as it gives a normalized value for comparison reasons.

IAEF3. Organizational Setting

Organizational setting is not only related to organizational policy and procedures to guide the IA operation, but also covers the organizational profile, internal organization role and position in the whole organizational setting (Mihret & Yismaw, 2007). Clear policy and procedure aligned with the organization practices are crucial and may influence the IA effectiveness (Mihret & Yismaw, 2007). The study in [S23] considers the organization's characteristics, such as politics, and role ambiguity and conflict, as influential factors. Several studies (e.g., [S4], [S22]) use survey questionnaires to elicit different aspects of the organizational setting and its influence on the IA effectiveness. This include, for instance, the organizational structure and its ability to provide the framework within which the segregation of duties is determined (Karagiorgos, Drogalas, & Giovanis, 2011), or the existence (or lack) of clear policies and procedures against which the organizational practices are to be gauged (Mihret & Yismaw, 2007).

IAEF4. Scope Limitation

Audit scope is the "extent and boundaries of an audit" (ISO, 2011). According to Erasmus et al. (Erasmus & Coetzee, 2018), good scope limitation for IA means that no limitation is placed on the IA activities. Internal auditing can investigate any aspect of the organization, scrutinizing any process, system, and document, and communicate with all stakeholders. By defining the correct scope, internal auditor is able to identify potential process improvement or detect non-conformance. Combination of the questionnaire items and interviews are used in the existing literature in order to capture the scope limitation of an IA (e.g., [S13], [S5]). For instance, the study [S5] uses a 5-point Likert scale, where '1' refers to the case with no scope limitation, and '5' with extensive scope limitation.

IAEF5. Compliance with Applicable Standards

An effective internal auditor operates in adherence with professional standards (Feizizadeh, 2012). Studies [S8] and [S28] use 'the adherence to IIA standard' as an influential factor. According to IIA standard, both internal auditors and IA activities should comply with the IIA standard related to IA objectivity, proficiency, and professional care (Dejnaronk, Little, Mujtaba, & McClelland, 2016). The literature also reports on the use of the ISO 19011:2016 standard as a guideline for performing audit activities (Beckmerhagen et al., 2004).

IAEF6. Management Training Ground

Dellai et al. (2016) argue that the management training ground improves the IA effectiveness, since the IA activities can be used to train potential managers. By conducting IA activities, the internal auditor can have a better understanding of the process as well as the internal controls and wide variety of knowledge. However, researchers also indicate their reservation about this factor, due to the impact that involving managers in IAs can have on the IA independence and objectivity (Yee et al.,

2008). The study in [S16] uses the following questionnaire items (to be indicated using a 5-point Likert scale on 'agreement') to capture this factor:

- IA is considered for training and preparing employees in the organization
- IA is considered for the promotion process of employees in the organization, and
- IA is considered a stage in the career development of employees in the organization.

IAEF7. Auditee Attributes

According to ISO 19011:2016, auditee refers the organization being audited (ISO, 2011). In this context, the auditee refers to the people in the organization. Study [S4] defines auditee attributes as the proficiency of the auditee, auditee attitude, and level of cooperation with the auditor. These attributes also relate to the capability of auditees to meet their objectives and affect the audit effectiveness. Study [S4] uses surveys with questions regarding the cooperation level of auditees with the auditors, the level of access provided to internal auditors, and ability to examine auditee's records.

IAEF8. IA Independence

Independence of IA is considered as a key driver for IA effectiveness (Alzeban & Gwilliam, 2014). In this content, the independence is defined as *"the freedom from conditions that threaten the ability of the IA activity to carry out IA responsibilities in an unbiased manner"* (Dejnaronk et al., 2016). To allow the internal auditor conduct IA independently, there should be safeguarding tools in IA department (D'Onza et al., 2015). The study in [S13] reveals that the reference document that contains the role of the IA department in the organization, its rights of access to individuals, records and assets, and the document sets out the scope of internal auditing are beneficial to ensure IA independence. The literature agrees that the lack of independence is an obstacle to satisfactory IA performance (Alzeban & Gwilliam, 2014).

IAEF9. IA Objectivity

Objectivity is defined as *"an unbiased mental attitude that allows internal auditors to perform engagements in such a manner that they believe in their work product and that no quality compromises are made"* (Dejnaronk et al., 2016). Along with IA independence, the objectivity is considered as one of the key drivers for IA effectiveness (Al Matarneh, 2011; Alzeban & Gwilliam, 2014). Objectivity requires internal auditors to judge based on the evidence obtained during audit activities (Dejnaronk et al., 2016). Despite the criticisms about the high level of subjectivity involved in the measurement of this factor [S5], the literature often uses questionnaires with Likert scales to elicit the level of IA objectivity [S9].

IAEF10. Conduct Risk Consulting

In the last few years, IA perspective has been changed from traditional focus on the compliance and monitoring against certain standards/regulatory requirements into a new perspective that endorses focusing and offering recommendations for improving organization's performance (Allegrini et al., 2006; Arena & Azzone, 2009). Risk-based auditing is considered as a new perspective that helps organizations understand the risks that can hinder them in reaching their objectives (Arena & Azzone, 2009). By understanding their risk profile, organization can define certain controls to manage their risks and ultimately improve their processes. This also makes risk management crucial for IA effectiveness. Studies [S5] and S14] argue on an additional role for internal auditors, where they provide consulting services to help organizations improving their processes and establishing best practices. However, there are also criticisms against this view arguing that such consulting services can potentially influence the IA legitimacy (Lenz & Hahn, 2015).

IAEF11. Outsourcing IA

IAs can be organized inside the organization, outsourced to third parties, or as a combination of both. Dellai et al. (2016) list several advantages and disadvantages of outsourcing IAs. While internally organized IAs can facilitate employees in obtaining skills and knowledge in the audited domain, outsourced IAs are considered to increase the level of audit objectivity. It is considered that the cost of in-house IAs is often higher, chiefly due to the cost incurred in recruiting and training the audit

team. On the other hand, in outsourced IAs, there is a higher possibility that the auditors lack critical knowledge on the business domain and the culture of the company, which may in turn, obstruct them to discover critical issues and identify potential improvements. The study in [S26] presents the results of the interviews with the IA stakeholders, while the study in [S9] use questionnaire items to capture the influence of outsourcing IAs.

IAEF12. Quality of Audit Work

The quality of internal auditing refers to how the internal auditors conduct their activities and evaluate processes according procedure or standard (Cohen & Sayag, 2010; Rupsys & Boguslauskas, 2007). Quality of audit work also refers to “the planning and supervision, fieldwork, recording, reporting, findings, recommendations, and follow up activities of internal audit” (Endaya & Hanefah, 2013). The internal auditor must develop and maintain a quality assurance and improvement program that covers all aspects of the IA activity (IIA, 2017). Studies [S10] and [S16] consider quality of audit work as the adherence with internal auditing standards. However, these two factors are distinguished in this SLR as the quality of audit work and adherence with IA standard factors. Other studies ([S11] and [S13]) use the term performance of IA to refer to the quality of the audit work. In this SLR, this factor is considered as the quality of audit work for consistency. From the primary studies, the quality of audit work was measured using the questionnaires that were sent to stakeholders [S10, S24].

IAEF13. Chief Audit Executive’s Leadership Style

One of the drivers of value proposition of the IA is the way that IA is managed by the Chief Audit Executive (CAE) (D’Onza et al., 2015). The literature also considers the leadership as the most important skill that a CAE should possess (Burnaby et al., 2007). The literature argues on the importance of the quality of leadership demonstrated by the CAE in setting and driving IA, and on the influence of CAE’s leadership style on IA effectiveness. The leadership is often conceptualized as a composite of transformational, transactional and passive/laissez-faire leadership styles (Bass, 1999). Transactional leaders practice contingent reinforcement of followers and reward them for fulfilling expectations, while transformational leaders inspire and intellectually motivate followers to work for the collective good beyond their own interests; laissez-faire leadership is seen as non-leadership (Bass, 1999; Burns, 1978). The empirical study in [S31] confirms that the CAE leadership style significantly influences IA effectiveness. However, it also shows that the abovementioned traditional conceptualization of leadership might not be appropriate for or compatible with the leaders of professional teams in a regulated environment. The results indicate limitations of the laissez-faire leadership on IA effectiveness, and propose such leaders to become both transformative and transactional as this has a significant influence on the effectiveness of their IA functions (Dal Mas & Barac, 2018).

IAEF14. Management Support for IA

Even though internal auditors can have a large degree of independence and autonomy, they may still have a limited capability to perform their duties within an organization (Al-Twaijry, Brierley, & Gwilliam, 2003; Alzeban & Gwilliam, 2014). Hence, management support becomes critical to facilitate the internal auditors in conducting their duties (Baheri, Sudarmanto, & Wekke, 2017; Halimah, Othman, Othman, & Jusoff, 2012). Similar to the case in any substantial undertaking in an organization, the support and commitment of the top management for internal auditing play an important role, - particularly in the implementation of the audit recommendations [S1], [S13], [S16]. Therefore, several studies consider the management support as a major influencing factor on the IA effectiveness. These studies (e.g., [S1] and [S13]) typically use a set of questionnaire items to capture employees’ perception regarding the level of management support for IAs.

IAEF15. Interaction between Internal and External Audit

The literature report on the positive influence of increased interaction (in the form of joint planning, information and report exchange, etc.) between internal and external audit actions (M. azu S. Badara & Saidin, 2014), (Alzeban & Gwilliam, 2014). Therefore, some studies examined the relationship between the level of interaction and the IA effectiveness using questionnaire items [S1], [S11].

IAEF16. Cooperation with the Audit Committee

The IA and audit committee are two different control bodies: IA operates within the organization, while the audit committee is established from the members of Board of Directors for monitoring and evaluation (Arena & Azzone, 2009). The cooperation between the IA and the audit committee is important for both parties as it is considered to have an impact on the effectiveness of the IA activities through information and data sharing (Alshbiel, 2017; Bednarek, 2018).

IAEF17. Information and Communication

Information and communication factor refers to the identification, understanding, and exchange of information in an appropriate form and timeframe to accomplish the IA objectives (Karagiorgos et al., 2011). Moreover, communications in regards to the IA must include the predefined objectives and scope, as well as conclusions, recommendations, and action plans of the IA (IIA, 2017). The study in [S28] considers communication to the IA stakeholders (e.g., audit committee, senior management, board of directors) to take place both in verbal or written forms, including the audit report as a part of the communication to the management level (Dejnaronk et al., 2016).

IAEF18. Existence of a Follow-up Process

IA performance standard (IIA, 2017) requires the chief audit executive to establish a follow-up process for monitoring the previously identified internal control deficiencies and ensuring that management actions have been effectively implemented or that senior management has accepted the risk of not taking any action. Studies in the literature argue on the positive influence of the existence of a follow-up process of the status of audit findings and recommendations on the improvement of IAF effectiveness (Mihret & Yismaw, 2007), (Oussii & Taktak, 2018).

IAEF19. Supportive Control Environment

The environment in which management acknowledges the importance of controls and the structures that review their effectiveness can facilitate the communication with other employees, who often perceive an internal audit as a 'company police', and better understanding of the internal audit role by management (Barisic & Tusek, 2016). The control environment refers to the set of standards, processes, and structures that provide the basis for carrying out internal control across the organization (COSO, 2013). It concerns the integrity and ethical values of the organization, the governance structure and responsibilities, the process for attracting, developing, and retaining competent individuals, and the rigor around performance measures, incentives, and rewards to drive accountability for performance. The study in [S19] reports a significant association between the quality of IA and the control environment component of the internal control system. Similarly, the study in [S34] argues on the positive influence of supportive control environment on the IA effectiveness. The factors that describe the supportive control environment are often operationalized using statements originating from the COSO framework (COSO, 2013). Such statements aim to capture perceptions on the statements that represent certain aspects of the control environment, such as the ethical awareness and management style, the level of awareness for the importance of control, and the existence of enterprise risk management and related monitoring activities.

IAEF20. Cultural Dimensions

The literature reports on a number of cross-cultural studies in auditing, where cultural dimensions -as conceptualized by Hofstede et al. (2010)- have served as the basis. These studies often report significant variations in practice with respect to the cultural context (Abdolmohammadi & Sarens, 2011; Hughes, Sander, Higgs, & Cullinan, 2009). The empirical work in [S35] examines the influence of three cultural dimensions of the Hofstede's framework, namely power distance, uncertainty avoidance, and individualism, on the quality of internal audits (Alzeban, 2015). Power distance relates to the extent to which the less powerful members of institutions expect and accept that power is distributed unequally (Hofstede et al., 2010). A higher degree of power distance indicates that a hierarchy is clearly established in the institution. Uncertainty avoidance is defined as the society's tolerance for ambiguity, in which people embrace or avert an event of something unexpected, unknown, or away from the status quo. Individualism (vs. collectivism) explores the degree to which

people in a society are integrated into groups. Individualistic societies have loose ties that often only relate an individual to his/her immediate family (Hofstede et al., 2010). In [S35], the survey data from 67 Chief Executive Auditors shows a positive association between higher power distance and uncertainty avoidance and lower internal audit quality. The results also show a positive association between individualism and higher IA quality, indicating that internal audit is largely based on the accomplishments of the individual internal auditors associated with the process.

6 Discussions

In this section, we present an overview of the factors reported in each primary study that are considered to influence the IA effectiveness and discuss the findings. Based on the findings, we propose an integrated framework based on the overview, and discuss its mapping to the results published in the CBOK 2015 Practitioner Survey (IIARF, 2015).

6.1 Results of the empirical research on the influence of IA effectiveness factors

Table 5 below shows the result of empirical research of the factors considered to influence the effectiveness of IAs in the primary studies. The table uses the following convention to indicate the information:

- ✓⁺ statistically significant positively
- ✓⁻ statistically significant negatively
- ✓ statistically significant
- ● conflicting result or partially supported
- ✕ no correlation
- — no statistical check

Table 5. Results of the Empirical Research on the Influence of IA Effectiveness Factors

	IAEF1 Competence of IA Function	IAEF2 Size of IA Function	IAEF3 Organizational Setting	IAEF4 Scope Limitation	IAEF5 Compliance with Applicable Standard	IAEF6 Management Training Ground	IAEF7 Auditee Attributes	IAEF8 IA Independence	IAEF9 IA Objectivity	IAEF10 Conduct Risk Consulting	IAEF11 Outsourcing IA	IAEF12 Quality of Audit Work	IAEF13 CAE' s Leadership Style	IAEF14 Management Support for IA	IAEF15 Interaction btw. Int. and Ext. Audit	IAEF16 Cooperation with Audit Committee	IAEF17 Information and Communication	IAEF18 Existence of a Follow-up Process	IAEF19 Supportive Control Environment	IAEF 20 Cultural Dimensions	
#	23	6	6	3	3	3	1	11	5	7	2	12	1	13	6	8	2	2	3	1	
[S01]	√+	√+						√+						√+	√+						
[S02]	—								—					—							
[S03]	√+	×						√+					•			•					
[S04]	—		—				—							—					—		
[S05]	•	•		√				•		×			•		•						
[S06]														—							
[S07]	—													—							
[S08]	—				—																
[S09]	×					√+		√+	√+		×			√+							
[S10]	√-					√+		√-				√+		×							
[S11]	√+									√+					√+						
[S12]					×			√+	√+							√+				√+	
[S13]	—			—				—				—		—							
[S14]	•	•								•						•					
[S15]																					
[S16]	×					×		√+				√+		√+							
[S17]																					
[S18]			√																		
[S19]										—						—	—		—		
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[S22]	—		—											—		—					
[S23]	—		—	—				—		—				—	—	—					
[S24]	√+							√+				√+		√+		√+					
[S25]	—																				
[S26]	—										—			—							
[S27]												—									
[S28]					√+			•	•	√+		√+		•			•				
[S29]	√+		×									√+				√+		√+			
[S30]	√+	√+																			
[S31]													√								
[S32]	√+								√+												
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[S36]	√+																				
[S37]			—							—					—						

A factor is considered to have '*no correlation*' if the empirical research result shows no statistically significant influence of the particular factor on the IA effectiveness. In the case of a statistically '*significant effect*', the direction can be of *positive* or *negative*. The *positive* effect indicates a positive relation between the factor and the IA effectiveness (i.e., an increase in the auditor competence leads to an increase IA effectiveness). On the contrary, the *negative* effect indicates an opposite direction. For instance, study [S10] found IA independence to have a negative effect on the IA effectiveness. The *conflicting result* is applicable if the empirical research shows that the influence of a factor differs for different dependent variables or that it is only partially supported. If the study does not involve statistical tests to analyze the results, it is marked with 'no statistical check'.

Based on the primary studies, we can infer that the level of influence of some factors on effectiveness depend on the stakeholders and the interaction with other factors. Therefore, some of the results achieved through the empirical works that we examined differ considerably. For example, the study in [S5] report on mixed results regarding the influence of a set of factors (e.g., audit independence, objectivity, and management support) when different stakeholder groups are taken into consideration in the analysis. Similarly, studies [S11] and [S5] report on inconsistent results regarding the effect of the "conduct risk consulting". While [S11] reports on a positive relation, [S5] does not support this. This is also the case for the factor regarding the "outsourcing of IA". The study [S28] argues on a positive influence of this factor, while the analyses in [S12] shows no correlation.

Only few of the primary studies provide the questionnaire items used to gather participants' views. Similarly, only few of the primary studies provide information about the design steps that were considered in developing these items. This aspect is considered important to assess the reliability of the factors used in the experiments and ultimately the validity of the experiments. The clarity and understandability of the questionnaire items are crucial and have significant effect on the outcomes of the experiments. Most of the primary studies report only on the final results achieved, while a set of studies i.e., ([S1], [S3], [S10], [S11], [S13], [S14], [S18], [S21], [S24]) report on the pilot tests in order to validate the questionnaire items prior to the main survey.

The analysis of existing works that review IA effectiveness pinpoints specific issues and challenges that demand further investigation in this research field. The early findings indicate an imbalanced emphasis on the perceived IA effectiveness over objectively measured approach. Furthermore, the existing studies also have inconsistent factors that are considered to influence the effectiveness of IAs. Barely any of these studies have identified exact or similar factors that influence IA effectiveness and used the same metrics to measure the IA effectiveness. Consequently, the models developed based on the empirical works are different. In addition, the works listed above present a narrow perspective on both factors. This hinders their potential to guide in identifying factors that influence IA effectiveness (Mihret, James, & Mula, 2010).

In our analysis of the primary studies, we looked at the type of organizations (private, public, or both) that the participants of the empirical works are based. As depicted above in Figure 4, the studies depict a balanced view on the type of organizations that they addressed. However, there is no empirical research that have investigated the variations between public and private organizations in the context of IA practices and effectiveness. A number of researchers argue on the significant differences in the IA practices between public sector and private-sector organizations (Goodwin, 2004; Mihret et al., 2010). This suggests a need for future research that will examine the potential (moderating) effect of public-private settings on the relationship between IA effectiveness and other influential factors.

Various facets of an organization are embodied in the factor of 'organizational setting' (IAEF3). Although many researchers acknowledge the influence of organizational factors on the IA effectiveness (Lenz et al., 2017; Mihret & Yismaw, 2007), the results of empirical studies are inconsistent. There is a clear need for further attention on the link between IA effectiveness and various organizational factors through empirical studies.

A number of studies emphasizes on the importance of soft-skills of internal auditors (Mihret et al., 2010; Soh & Martinov-Bennie, 2011). For example, determination, diplomacy, or being able to speak up in controversial situations are considered highly significant on IA effectiveness (Lenz & Hahn, 2015). Such factors deserve more attention in future empirical research.

The effectiveness of internal audit contributes to organizational goal achievement (D'Onza et al., 2015; Dittenhofer, 2001; Gramling et al., 2004). For this notion, however, the current literature has little to offer as a support. The contribution of an effective and high-quality IA to the organizational performance are not consistent or are not clearly identified (Mihret et al., 2010), and calls for empirical studies as future research.

Furthermore, majority of the works report on their investigation of the influence of the *supply side factors* on the audit effectiveness, which leads to a narrow perspective and overly optimistic self-assessment by internal auditors (Lenz & Hahn, 2015). The *demand-side* perspective is crucial as it sheds light on the perceptions of the auditees, external auditors, and other stakeholders of the IAs (Lenz & Hahn, 2015).

Our review reveals a diverse set of indicators used to operationalize the effectiveness of IAs, while there is no clear evidence of a convergence into a set of commonly accepted indicators. We can distinguish between two categories of indicators in the existing literature: objectively measured indicators and indicators regarding the perceived effectiveness (or subjectively measured indicators). We observed that the indicators in the category of perceived effectiveness are dominantly used in the existing literature. It can be argued that the objectively measured effectiveness typically shows the efforts made by the internal auditors but not the outcome of the IA that have been reached. In that respect, the perceived effectiveness may provide more insightful information related to the IA effectiveness. Aligned with this, only few studies in the existing literature used the indicators that objectively measure the effectiveness of IAs. Lack of available data or difficulty in retrieving the data are also reasons for the limited number of studies that involve such indicators.

6.2 Integrated framework for IA effectiveness

Figure 5 presents an integrated framework of the IA effectiveness that is synthesized from the existing literature. The framework incorporates the factors as investigated in the primary studies that are considered to have an influence on the IA effectiveness. The framework also incorporates the indicators used to measure the IA effectiveness. Each study examined in our review investigate the influence of at least one of these factors on at least one of the IA effectiveness indicators.

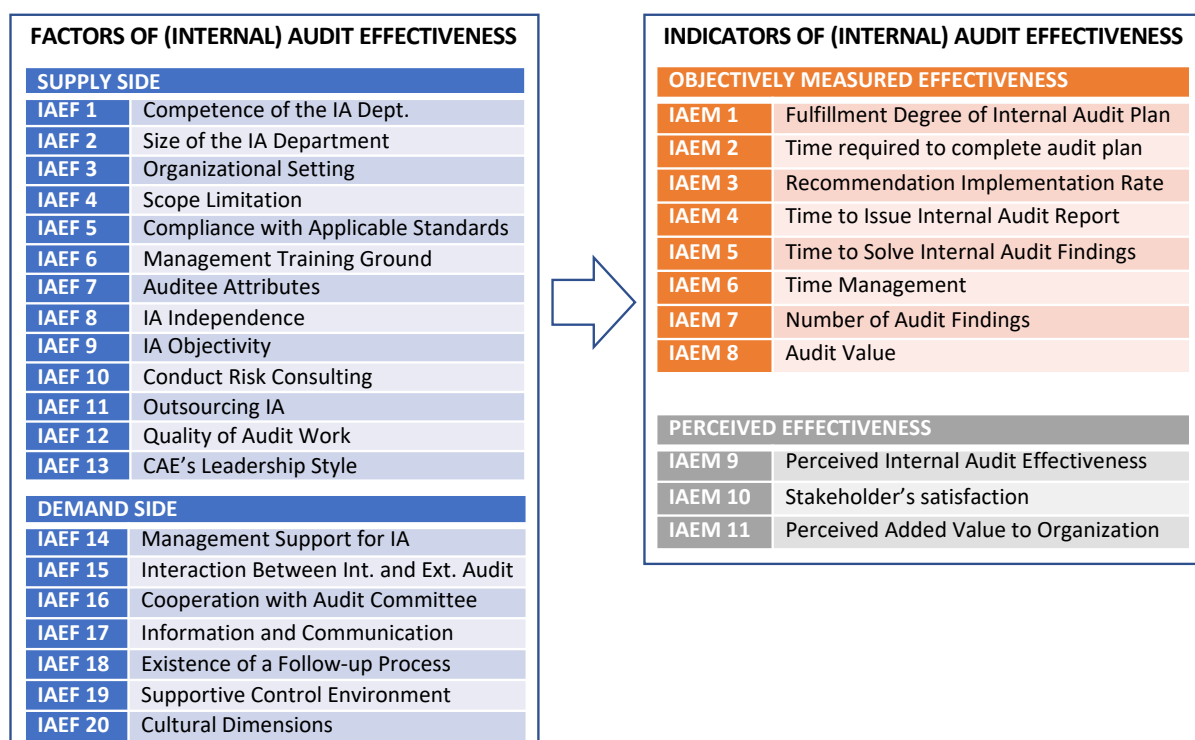


Figure 5. Integrated Framework for IA Effectiveness

The survey series of the members of the Institute of Internal Auditors (IIA), known as the Common Body of Knowledge – CBOK (IIARF, n.d.), provides a comprehensive survey on the state of the internal auditing practice. The CBOK 2015 Practitioner Survey (IIARF, 2015) incorporates a set of measures that organizations can use to evaluate the performance of their internal audit activity. Table 6 presents a mapping of the IA effectiveness indicators of the integrated framework and the measures used in the CBOK 2015 survey for indicating IA performance.

Table 6. Mapping of the IA Effectiveness Indicators of the Integrated Framework and CBOK 2015

IA Effectiveness Indicator of the Integrated Framework	CBOK 2015 - Measures of IA Performance (IIARF, 2015)
IAEM-1. Fulfillment Degree of IA Plan	1. Percentage of audit plan complete
IAEM-2. Time required to complete audit plan	~ 3. Completion of mandated coverage
IAEM-3. Recommendation Implementation Rate	8. The fulfillment of specific expectations set and agreed to with key stakeholders
IAEM-4. Time to Issue IA Report	5. Cycle time from entrance conference to draft report 6. Cycle time from end of fieldwork to final report
IAEM-5. Time to Solve IA Findings	4. Timely closure of audit issues
IAEM-6. Time Management	--
IAEM-7. Number of Audit Findings	--
IAEM-8. Audit Value	--
IAEM-9. Perceived IA Effectiveness	--
IAEM-10. Stakeholder's satisfaction	7. Client satisfaction goals
IAEM-11. Perceived Added Value to Organization	--
--	2. Budget to actual audit hours
--	9. Performance against the IA financial budget

The mapping suggests a considerable overlap between two lists. Only 2 measures in the CBOK 2015 survey are left out in the matching. These measures aim to capture the budgeted hours and financial resources against the actuals, which – according to our literature review- have not been used so far in the academic literature. On the other hand, there is a number of indicators of the framework that are not incorporated in the CBOK 2015 survey. The notable ones are the ‘number of audit findings’ and the ‘perceived IA effectiveness’, which are two most commonly used indicators in the studies published in the academic literature (see Table 3). This is also in contrast with the findings of the CBOK survey, which is responded by over 14,000 practitioners world-wide (Seago, 2015). The data indicates that two-thirds of the companies participated in the survey use the ‘percentage of audit plan complete’ to measure IA performance, while this measure (i.e., IAEM-1) used only in 3 out of 37 primary studies published in the academic literature. Future research should consider aligning the state-of-the-practice and -research regarding the indicators of IA effectiveness, and in turn bring research and practice closer to each other. Such efforts would help contribute to the accurate measurement of the constructs, and to the consistency and validity of the findings achieved in empirical studies.

7 Conclusions

In this study, we performed a systematic literature review to investigate the indicators used in the existing literature in operationalizing or quantifying the IA effectiveness, and to report on the factors that are considered to have an influence on the effectiveness of IAs. The queries performed on 7 established electronic libraries with the aim to find potentially relevant studies published between 2000 and March 2019 resulted an initial list of 8287 publications. Eventually, 37 primary studies were selected based on the inclusion and exclusion criteria. Based on the defined research questions, the primary studies were analyzed and relevant information was synthesized in order to address our research objectives.

Our study provides an overview of the state-of-the-art research on the IA effectiveness including the research gaps that should be addressed in future research. It can be used as a comprehensive source to understand the indicators and metrics used to operationalize the IA effectiveness and potentially influencing factors.

This study offers contributions both for research and practice. The practitioners who aim to improve the effectiveness of IAs conducted in their organizations will find this structured review useful. The indicators and metrics can be use not only in assessing and monitoring the effectiveness of their audits, but also in understanding and improving the factors contributing the effectiveness these activities.

The researchers should consider our study as a comprehensive source that offers pointers on the factors investigated in the literature and a basis for future research in this field. Our systematic analysis of the results of the works in the field also shows that our understanding of the factors contributing to effective IAs is still limited. As such, the studies investigating the factors influencing the IA effectiveness need to grow in maturity with more empirical studies. In particular, there is a need for studies that propose and use objectively-measured and outcome-related indicators for the operationalization of the audit effectiveness. The literature also reports on the inconsistencies in the metrics used in quantifying some factors, as well as on their impact on the effectiveness, which should be addressed in future research.

In addition to the factors we incorporated in our framework, the literature has also investigated other factors in a limited number of studies for their influence on the IA effectiveness. This include, for instance, the size of the organization, whether the organization is public or private, or whether the organization uses dedicated auditing tools or not. Future research should also consider further investigation of these potentially influencing factors.

In our research study, we focused on works that investigate the influential factors of IA effectiveness. Hence, the indicators and metrics used for the operationalization of IA effectiveness originate only from these scientific publications that consider IA effectiveness as a dependent variable. However, there is a body of research in the literature that investigate the influence of IA effectiveness/quality or a number of key factors of IA effectiveness on a diverse set of organizational functions or concepts. This include for instance the influence of IA competence and independence on financial reporting quality (Abbott et al., 2016), the influence of internal audit quality on the likelihood of management misconduct (Ege, 2015), or on the earnings management (Prawitt, Smith, & Wood, 2009). Although these studies propose relevant and interesting indicators for the operationalization of IA effectiveness, they are not considered in our list of primary studies. This a limitation of our work, which can be addressed by a future research that focuses on empirical studies in the literature which incorporate IA effectiveness/quality not only as a dependent but also as an independent variable. This would enable incorporating a larger set of indicators and metrics in the proposed framework for the operationalization of the term IA effectiveness.

This structured literature review has various limitations, mainly in regard to the underlying research method. We based our research only on the empirical studies, and the inclusion and exclusion criteria used in this review limit certain types of publications. Studies that are published as (non-academic) books, magazine articles, and grey literature (technical reports, white papers, publications without bibliographic information, unpublished papers) were excluded in this study. Although this is in line with our research objectives, it poses risks for the completeness and validity of the findings. Future research may extend the scope of the review to include contributions in the grey literature to provide a broader understanding on the effectiveness of IAs, influential factors, and their operationalizations.

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8 Appendix A – Primary Studies

[S]	Author(s)	Title	Year	Type	Name
[S01]	Alzeban, A., & Gwilliam, D.	Factors Affecting the Internal Audit Effectiveness: A Survey of the Saudi Public Sector	2014	Journal	Journal of International Accounting, Auditing and Taxation
[S02]	Endaya, K. A., & Hanefah, M. M.	Internal Audit Effectiveness: An Approach Proposition to Develop the Theoretical Framework	2013	Journal	International Journal of Finance and Accounting
[S03]	Bednarek, P.	Factors Affecting the Internal Audit Effectiveness: A Survey of the Polish Private and Public Sectors	2018	Book Chapter	Efficiency in Business and Economics (Scientific Book)
[S04]	Mihret, D. G., & Yismaw, A. W.	Internal Audit Effectiveness: An Ethiopian Public Sector Case Study	2007	Journal	Managerial Auditing Journal
[S05]	Erasmus, L., Coetzee, P.	Drivers of Stakeholders' View of Internal Audit Effectiveness: Management versus Audit Committee	2018	Journal	Managerial Auditing Journal
[S06]	Bota-Avram, C., & Stefanescu, C.	Measuring and Assessment of Internal Audit Effectiveness	2009	Journal	Annals of Faculty of Economics
[S07]	Rupsys, R., & Boguslauskas, V.	Measuring Performance of Internal Auditing: Empirical Evidence	2007	Journal	Engineering Economics
[S08]	Feizizadeh, A.	Strengthening Internal Audit Effectiveness	2012	Journal	Indian Journal of Science and Technology
[S09]	Dellai, H., Ali, M., & Omri, B.	Factors Affecting the Internal Audit Effectiveness in Tunisian Organizations	2016	Journal	International Journal of Finance and Accounting
[S10]	Tackie, G., Marfo-Yiadom, E., & Oduro Achina, S.	Determinants of Internal Audit Effectiveness in Decentralized Local Government Administrative Systems	2016	Journal	Journal of Business and Management
[S11]	Badara, M. azu S., & Saidin, S. Z.	Empirical Evidence of Antecedents of Internal Audit Effectiveness from Nigerian Perspective	2014	Journal	Middle-East Journal of Scientific Research
[S12]	D'Onza, G., Selim, G. M., Melville, R., & Allegrini, M.	A Study on Internal Auditor Perceptions of the Function Ability to Add Value	2015	Journal	International Journal of Auditing
[S13]	Al-Twaijry, A. A. M., Brierley, J. A.,	The Development of Internal Audit in Saudi Arabia: An Institutional Theory	2003	Journal	Critical Perspectives on Accounting

	& Gwilliam, D. R.	Perspective			
[S14]	Arena, M., & Azzone, G.	Identifying Organizational Drivers of Internal Audit Effectiveness	2009	Journal	International Journal of Auditing
[S15]	Badara, M. S., & Saidin, S. Z.	The Journey so far on Internal Audit Effectiveness: A Calling for Expansion	2013	Journal	International Journal of Academic Research in Accounting, Finance and Management Sciences
[S16]	Cohen, A., & Sayag, G.	The Effectiveness of Internal Auditing: An Empirical Examination of its Determinants in Israeli Organisations	2010	Journal	Australian Accounting Review
[S17]	Dittenhofer, M.	Internal Auditing Effectiveness: An Expansion of Present Methods	2001	Journal	Managerial Auditing Journal
[S18]	Van Gelderen, S. C., Zegers, M., Boeijen, W., Westert, G. P., Robben, P. B., & Wollersheim, H. C.	Evaluation of the Organisation and Effectiveness of Internal Audits to Govern Patient Safety in Hospitals: A Mixed-Methods Study	2017	Journal	BMJ - Health Services Research
[S19]	Karagiorgos, T., Drogalas, G., & Giovanis, N.	Evaluation of the Effectiveness of Internal Audit in Greek Hotel Business	2011	Journal	International Journal of Economic Sciences and Applied Research
[S20]	Mizrahi, S., & Ness-Weisman, I.	Evaluating the Effectiveness of Auditing in Local Municipalities using Analytic Hierarchy Process (AHP): A General Model and the Israeli Example	2007	Journal	International Journal of Auditing
[S21]	Halimah, N. A., Othman, R., Othman, R., & Jusoff, K.	The Effectiveness of Internal Audit in Malaysian Public Sector	2012	Journal	Journal of Modern Accounting and Auditing
[S22]	Lenz, R., Sarens, G., Hoos, F.	Internal Audit Effectiveness: Multiple Case Study Research Involving Chief Audit Executives and Senior Management	2017	Journal	EDPACS
[S23]	Lenz, & Hahn, U.	A Synthesis of Empirical Internal Audit Effectiveness Literature Pointing to New Research Opportunities	2015	Journal	Managerial Auditing Journal
[S24]	Alshbiel, S. O.	Internal Auditing Effectiveness Success Model: A Study on Jordanian Industrial Firms	2017	Conf. Paper	Proceedings of the Second American Academic Research Conference on Global Business, Economics, Finance and Social Sciences (Conf.)
[S25]	Shu, F., Li, Q., Wang, Q., Zhang, H.	Measurement and Analysis of Process Audit: A Case Study	2010	Conf. Paper	International Conference on Software Process (Conf.)
[S26]	Soh, D. S. B., & Martinov-Bennie, N.	The Internal Audit Function: Perceptions of Internal Audit Roles, Effectiveness and Evaluation	2011	Journal	Managerial Auditing Journal
[S27]	Bota-Avram, C.,	Methods of Measuring the Performance	2010	Journal	The Annals of the

	Popa, I., & Stefanescu, C.	of Internal Audit			“Stefan Cel Mare” University of Suceava
[S28]	Dejnaronk, J., Little, H. T., Mujtaba, B. G., & McClelland, R	Factors Influencing the Effectiveness of the Internal Audit Function in Thailand	2015	Journal	Journal of Business and Policy Research
[S29]	Oussii, A. A., & Taktak, N. B.	The Impact of Internal Audit Function Characteristics on Internal Control Quality.	2018	Journal	Managerial Auditing Journal
[S30]	Chang, Y. T., Chen, H., Cheng, R. K., & Chi, W.	The Impact of Internal Audit Attributes on the Effectiveness of Internal Control over Operations and Compliance	2019	Journal	Journal of Contemporary Accounting and Economics
[S31]	Dal Mas, L. O., & Barac, K.	The Influence of the Chief Audit Executive’s Leadership Style on Factors related to Internal Audit Effectiveness	2018	Journal	Managerial Auditing Journal
[S32]	Al Matarneh, G. F.	Factors Determining the Internal Audit Quality in Banks: Empirical Evidence from Jordan	2011	Journal	International Research Journal of Finance & Economics
[S33]	Baheri, J., Sudarmanto, & Wekke, I. S.	The Effect of Management Support to Effectiveness of Internal Audit for Public Universities	2017	Journal	Journal of Engineering and Applied Sciences
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