



Internal auditing in the public sector: A systematic literature review and future research agenda

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Internal auditing in the public sector: A systematic literature review and future research agenda

Abstract

Purpose: This study reviews post-2009 literature on public sector internal auditing (IA) and addresses three interrelated research questions (RQ): *How is research on the public sector IA being developed?* What are the focus and criticisms of the literature on public sector IA? What is the future of public sector IA research?

Design/methodology/approach: We adopt a systematic literature review approach and analyze 78 peer-reviewed journal articles published between 2010 and 2019. We evaluate **five** criteria to identify the development of public sector IA research (RQ1): **namely level of government, academic discipline, number of countries, location/region, and MSCI country classification.** Similarly, we use **four** criteria to present the focus and criticisms of the literature (RQ2): **namely, type of organizational respondent, research instrument, theories, and research theme examined.** Finally, we use **two** criteria to answer the third research question (RQ3): **namely the ‘criticisms’ of RQ1 and RQ2, and the most influential studies in terms of total citations and citations per year.**

Findings: We find an increase of publications up to 2017, most of which are single-country-focused, particularly on emerging markets. Moreover, we note that IA has been studied at all government levels, most often at the local government level. Although we identify multiple research themes examined in the literature, most studies emphasize “governance” and “operational effectiveness” using quantitative analysis, without reference to any theory. Finally, considering implications from this stream of research and analyzing the most influential studies, we recommend new avenues for investigation **such as studies from several countries and markets that provide further evidence on the international and regional levels, and studies on the effect of cultural, institutional, and demographical characteristics in IA.**

Practical limitations/implications: Our results enable practitioners and/or policymakers perceive the efficacy of public sector IA as a means to improve decision-making.

Originality/value: This study is the first to provide a systematic literature review on public sector IA. Furthermore, it develops insights, critical reflections, and avenues for future research in this field.

Keywords: Internal auditing, **internal audit function**, public sector, **government levels**, systematic literature review

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3 **Paper type:** Literature review
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8 **1. Introduction**

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10 Much has been written on private sector internal auditing (IA) by auditing standard
11 setters (i.e., Institute of Internal Auditors Global; IIA Global), practitioners, researchers, and
12 the business community. In practice, IA is designed to add value and improve an organization's
13 operations. Thus, we **believe** that IA provides a basis for some of the most convincing
14 arguments for sound governance and accountability (Coetzee and Erasmus, 2017).
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18 In the same vein, public sector IA research was stimulated by the need to measure
19 output, outcomes, and evaluation activities at all levels[1]—local (municipal level such as a city
20 or county), regional (a province/state within a national state), national (an independent state)
21 and international (multi-state entities or partnerships; IIA, 2011, p. 3). **Indeed**, the study of
22 public sector IA has evolved with the Internal Audit Capability Model's (IA-CM) publication
23 (IIARF, 2009), after which new paths of IA have emerged. **The IA-CM is a comprehensive**
24 **international guide to assist any public organization in identifying the fundamentals needed for**
25 **effective IA (Van Rensburg and Coetzee, 2011). Consequently, the last decade has witnessed**
26 **several studies that investigate** the role of internal auditors in supporting public governance
27 (Sepsey, 2011; Mu' Azu, 2012; Enofe *et al.*, 2013; Roussy, 2013; Ferry *et al.*, 2017). Similarly,
28 IA has also been studied in relation to the factors influencing its effectiveness (Cohen and
29 Sayag, 2010; Alzeban and Gwilliam, 2014; Tackie *et al.*, 2016; Taiwo, 2019). Through these
30 studies, researchers have begun to highlight the importance of IA in the public sector. IA acts
31 as an important mechanism that facilitates the effectiveness of a public organization. **A variety**
32 **of studies have been published that explore the different perspectives of IA in the public sector.**
33 **However, to the best of our knowledge, there is no comprehensive review which provides a**
34 **systematic synthesis of the existing knowledge of this literature. Indeed**, we argue that empirical
35 knowledge regarding public sector IA is diffused. Thus, it is necessary to organize findings in
36 the literature into a coherent framework to understand the developments in this field. Doing so
37 would provide a cohesive and clear picture of public sector IA.
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41 In this study, we conduct a systematic review of the literature on public sector IA to
42 contribute to the literature in the following three ways. First, we describe how the research on
43 public sector IA **is being developed**. We look at publications during the last decade (i.e., 2010
44 - 2019) and consider the academic disciplines under which IA is approached and how IA is
45 related with the governance level in the public sector[2]. Second, we analyze relevant literature
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and discuss its key features based on four criteria. This gives us insights on the dominance of specific items related with the added value of IA. Third, we identify research gaps and define future paths. To achieve our research goals, we conduct a Systematic Literature Review (SLR), as inspired by Moher *et al.* (2009) and de Geus *et al.* (2020).

In summary, our study addresses three research questions:

1. How is research on the public sector IA being developed?
2. What are the focus and criticisms of the literature on IA in the public sector?
3. What is the future of research on IA in the public sector?

The rest of this paper is organized as follows. Section 2 describes the methodology used to analyze the literature on IA in the public sector. Section 3 presents the results of the systematic review and answers the three research questions. Section 4 provides the conclusions.

2. Methodology: Systematic literature review

IA-CM's publication in 2009 by IIA Global (IIARF, 2009) arguably offers—for the first time—a framework for improving the effectiveness of internal audit functions (IAF) within the public sector (Coetzee and Erasmus, 2017). This universal model has raised interest from academics and practitioners as it can be used globally as a means for implementing and institutionalizing effective public sector IA and as a guide for strengthening capabilities within IA (Macrae, 2010). Hence, to avoid noise from first-time implementation problems, we focused on journal articles published between 2010 and 2019 and applied a SLR methodology based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses approach (Moher *et al.*, 2009; de Geus, 2020; Lopes and Farias, 2020).

2.1. The literature review protocol

To reduce research bias, we established a review protocol as a guidance in the SLR development (Tranfield *et al.*, 2003; Kitchenham, 2004). This helped us to formulate the survey, research questions, search strategy, study selection process, quality assessment, data extraction, and synthesis of the extracted data (Kitchenham and Charters, 2007; Busalim and Hussin, 2016). With this approach, we ensured the reliability of our findings (Massaro *et al.*, 2016) and enabled the replication of this study by other authors (Yin, 2018; Tsalavoutas *et al.*, 2020). Figure 1 presents the review protocol of our study.

Figure 1 about here

2.2. *The literature search strategy*

To identify, review, and analyze the studies on IA in the public sector, we used a two-step approach (Street and Hermanson, 2019; de Geus *et al.*, 2020; Nguyen *et al.*, 2020) as depicted in Figure 1.

The first step was to ascertain the databases for the identification of the papers, setting as criterion the reputation in terms of size and publication quality, and the ability to ensure the collection of all eligible studies. We decided to use “Scopus,” “Web of Science,” and “Google scholar” as major electronic sources (same as Nguyen *et al.*, 2020). We performed Boolean search using the keywords “Internal auditing” AND “Public sector” (for more about Boolean search, see Street and Hermanson, 2019). This generated an initial set of 5,936 papers. We trimmed this sample by excluding any irrelevant studies, such as those in conference proceedings, book chapters, and in languages other than English; this resulted in 88 studies. We also excluded duplicated papers, retaining a final set of 74 papers.

In the second step, we searched through the most cited articles to identify any other relevant studies not retrieved from the first step. We used two alternative measures of impact: total citations (i.e. the ten papers with the highest number of citations), and citations per year (CPY) (the ten papers with the highest CPY index), which is a measure that mitigates bias towards older studies[3]. With this process, we identified 4 further studies, and we ended up with a final set of 78 studies conducted in all government levels (international, national, regional and local government) from 2010 to 2019. For these papers, a data extraction table was made in which the author(s), publication year, country, government level, sample size, research period, objective, theory, main findings, and citations were recorded (see Appendix).

3. Results

3.1 *Research question 1: How is research on the public sector IA being developed?*

The aim of this study is to synthesize and extend the current understanding of IA in the public sector. More specifically, with this research question, we aim to provide answers on the history of the field and what has been done so far. This may help researchers, practitioners, and consultants to know if the examined field is important. To answer this research question, we

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3 provide a general description of our data. Figure 2 presents details regarding the distribution of
4 publications of IA in the public sector between 2010 and 2019. As depicted, there is an increase
5 of studies up to 2017, with a short decline in the last two years (2018 and 2019). Furthermore,
6 the trend per year regarding government levels appears stable. The only minor change is the
7 examination of international level studies in 2018. This suggests that researchers have a
8 tendency to pursue the same research “paths” during these years.
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19 Furthermore, we discuss the key features of the research question 1 based on the five
20 criteria reported in Table I.
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24 **[Insert Table I about here]**
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26 27 *3.1.1. Government level*

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29 This criterion allows us to examine whether the literature focuses on *Local Government*
30 *Level (A1)*, *Regional Level (A2)*, *National Level (agencies) (A3)*, *National Level (ministries)*
31 *(A4)*, *International Level (A5)*, and *Multi-level (A6)*. This is important because each level has
32 different roles and obligations (Jóhannesdóttir *et al.*, 2018). As shown, IA has been studied at
33 all government levels and most often at the local government level. Studies at the national level
34 (agencies) accounted for 23% of the studies, while those at the regional level was studied the
35 least (i.e., only one study or 1% of the total). Another important feature is the significant focus
36 on multi-level studies.
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43 44 *3.1.2. Academic discipline*

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46 According to this criterion, we disaggregate/allocate the studies reviewed across ten
47 academic disciplines based on the Academic Journal Guide (CABS, 2018) classification:
48 *Accounting (B1)*, *Ethics, CSR, Management (B2)*, *International Business & Area Studies (B3)*,
49 *Finance (B4)*, *Public sector (B5)*, *Economics (B6)*, *Social sciences (B7)*, *Information*
50 *Management (B8)*, *Psychology (B9)*, and *Management Development and Education (B10)* [4].
51 The 78 studies were found in 64 journals, with the vast majority published in the fields of
52 accounting, the public sector, and business and finance. This illustrates that IA in the public
53 sector is approached by various disciplines, with the highest attention given by the accounting
54 field (30%).
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3.1.3. Number of countries

The same criterion that captures the number of countries studied in each article has been used by Guthrie *et al.* (2012), Dumay *et al.* (2016), and Tsalavoutas *et al.* (2020). We used C1 (single country) for each article that uses single-country data and C2 (multi country) for those using data from more than one country. As apparent, majority of the articles (75/78) are single-country studies, and only two draw on data from more than one country. There is also one study that does not explicitly define the data used. These results highlight the interest of researchers in shedding light on unique institutional and cultural environments.

3.1.4. Location/Region

Same as the previous criterion, this criterion is adopted by Guthrie *et al.* (2012), Dumay *et al.* (2016), de Geus *et al.* (2020), and Tsalavoutas *et al.* (2020). It presents the geographical areas where studies were conducted. In particular, we classified our studies into six categories including Europe (B1), Asia (B2), Oceania (B3), Africa (B4), America (B5), and worldwide (B6), and in one study, the country was not defined. Our results reveal that majority of the studies focus on African countries (27/78), while Asian (18/78) and European countries (17/78) are also important fields of research. **Thus, evidence on IA in the public sector for Oceania and America is lacking, while there is also a need for worldwide studies.**

3.1.5. Number of studies per country classified according to MSCI

This criterion complements the previous one and provides reflection across Developed (E1), Emerging (E2), Frontier (E3), Standalone (E4), and Other (E5) countries. This categorization is based on the Morgan Stanley Capital International (MSCI) equity indices, which are widely used for cross-regional comparisons (see Sarens and Abdolmohammadi, 2011; D' Onza *et al.*, 2015). **The reviewed studies were carried out in 30 different countries, with the most recurrent being South Africa (10 studies), Nigeria (9 studies), Malaysia (6 studies) and the United States (6 studies).** This review shows that majority of these studies do not focus on developed countries but in countries belonging to emerging and frontier markets (i.e., approximately 60% of the total; see Table I). **Therefore, evidence from standalone markets such as Iceland, Ukraine, Palestine, and Malta is needed (for more, see MSCI [5]).**

3.2 Research question 2: What are the focus and criticisms of the literature on IA in the public sector?

This subsection outlines the focus and criticisms of the literature on IA in the public sector as derived from our analysis. We discuss the key features of the literature based on **four** criteria. The main findings for each criterion are reported in **Table II**.

We present below the focus and criticisms gathered from our analysis and explain the rationale for our selection. To facilitate the discussion, we only include selected references to avoid difficulty in reading a lengthy paper. This approach is consistent with other relevant studies in the field of accounting (Massaro *et al.*, 2016; Tsalavoutas *et al.*, 2020).

[Insert Table II about here]

3.2.1. Type of organizational respondent

We included this criterion following the studies of Guthrie *et al.* (2012), Street and Hermanson (2019), de Geus *et al.* (2020) and Tsalavoutas *et al.* (2020). In particular, we classified organizational respondents by the following types: internal auditors (**F1**), internal auditors and managers (**F2**), internal auditors and accountants (**F3**) heads of an internal audit unit (**F4**), others (**F5**), and not applicable (N/A; **F6**). Majority of the studies use the perspective of internal auditors (13/78) or internal auditors and managers (8/78). However, some studies reflect the opinion of the head of an internal audit unit (4/78) and those of internal auditors and accountants (3/78), while some studies present the views of “others” (38/78) and others do not define their sample (12/78). **This illustrates that researchers use a variety of respondents in the examination of IA in the public sector to obtain different viewpoints. From the utilitarian perspective, one can assure that only research participants with great knowledge of the examined issue are chosen. Thus, choosing participants based on the focus of the research ensures that the research questions are appropriately answered and the aim of the research is reached (e.g. Saunders, 2012).**

3.2.2. Research instrument

This criterion captures the research instruments used based on Guthrie *et al.* (2012) and Dumay and Garanina (2013). We classified our studies as follows: case/field study/interviews (**G1**), content analysis/historical analysis (**G2**), survey/questionnaire/other empirical (**G3**), commentary/normative/policy (**G4**), and **viewpoint/conceptual/general review (G5)**. Following van Helden (2005) and Schmidt and Günther (2016), in case an article uses multiple research instruments (i.e., a combination of research instruments), we equally weighted them in the counting process. For example, in case an article uses two research instruments, each is counted

one half; for three research instruments each is counted one third, and so on. As Table II shows, the research method most commonly used is survey/questionnaire/other empirical, with questionnaire prevailing overall. Next, case/field study/interviews and viewpoint/conceptual/general review have 13.67 and 9.5 studies, respectively. Additionally, we find that content analysis/historical analysis and commentary/normative/policy are not so popular. Finally, even if there is a tendency for using either quantitative or qualitative methods, researchers avoid using multiple methods (e.g. triangulation framework – see Trotman and Wright, 2012) to order the data and for the results to be cross-checked.

3.2.3. Theories

Inspired by van Helden (2005) and Schmidt and Günther (2016), we included the theory criterion to extract the theoretical background of each study. More specifically we allocated the predominant theories used into eight categories: agency (H1), institutional (H2), accountability (H3), resource-based (H4), political (H5), stakeholder (H6), other (H7), and no theory (H8)[6]. When there are multiple theories, we equally weighted them. For example, in case an article uses two theories, each theory is counted one half; for three theories, each is counted one third, and so on (i.e., the counting process). Moreover, we classified the number of theories used as follows: studies that use one, two, more than two, and no theoretical approach as (I1), (I2), (I3), and (I4), respectively. As reflected in Table II, majority of the studies use only one theory (28/78), and the most predominant theory was agency theory (10.58/78). However, it is worth mentioning that almost half of the studies avoid referring to any theory (40/78) either in a straightforward manner or implicitly (e.g. Mu'Azuz, 2012; Emmanuel *et al.*, 2013; Jones and Bowrey, 2013; Alzeban and Gwilliam, 2014). This is quite an important constraint as it may lead to difficulties in explaining the results. This is because theory does not change the purpose of the research. However, it does contribute to “position taking” regarding the existing research (see, Beck and Stolterman, 2016). For instance, in cases where papers are largely descriptive, they do not contribute to the development of new theoretical insights, and the advancement and understanding of the examined issue in-depth. All in all, the theories of the reviewed papers have been applied as a tool (i.e. for explaining IA), as a reference (i.e. to elicit information about IA), or as a knowledge contribution (see, Beck and Stolterman, 2016).

3.2.4. Research theme examined

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3 Although all studies examine IA in public administration, they focus on different
4 research questions/themes. Thus, we adopted the Coetzee and Erasmus (2017) framework to
5 develop our categorization scheme. To avoid problems regarding the allocation of these studies,
6 we decided to consider the objective(s) and result(s) of each one and precisely define the study's
7 theme. This helped us categorize the various themes into major subjects and facilitated the
8 comparison of results with future studies. However, to minimize the potential bias of allocation,
9 two coders worked independently and discussed their work with each other to reach a
10 consensus. From this procedure, six main research themes/subjects were found appropriate:
11 governance (K1), risk management (K2), operational effectiveness (K3), service delivery by
12 institution (K4), forensic investigations (K5), and fruitless and wasteful expenditure (K6).
13 Table III shows that considerable importance is attached to operational effectiveness (36/78)
14 and governance (22/78) subjects. We separately discuss the key findings for each subject as
15 follows.
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30 3.2.4.1. Governance

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32 In this category, papers examine IA's contribution to good governance, focusing on
33 various themes such as the adoption of corporate-governance best practices in the public sector
34 (e.g., Reinstein *et al.*, 2014), the protection of stakeholders (e.g., Alam *et al.*, 2019), the
35 maintenance of legitimacy and trust (e.g., Thomasson, 2018), and compliance with IA
36 guidelines and its impact on transparency and accountability (e.g., Jones and Beattie, 2015;
37 Ackermann *et al.*, 2016). What can be inferred from these studies is that IA guidelines could
38 strengthen the principal-agent relationship. Thus, high priority can be placed on public
39 organizations' compliance with these practices to improve documentation and monitoring as a
40 way to promote transparency and accountability. Some of the most indicative practices that
41 contribute to external stakeholder confidence are the improvement of independence, presence
42 of audit committee (AC), assessment of internal controls, and increase of penalties for
43 fraudulent behavior (Reinstein *et al.*, 2014).
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53 Moreover, this set of studies emphasize the role of internal auditors in supporting public
54 governance (e.g., Roussy, 2013; Barasa, 2015; Ferry *et al.*, 2017) and the relationship of this
55 value of auditing with the corporate governance (CG) theory (e.g., Hay and Cordery, 2018). As
56 such, internal auditors serve top managers and organizations by assisting them and
57 communicating to them actionable items instead of simply being governance "watchdogs."
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3 However, this value of auditing could be hindered by a weak internal control system and
4 understaffed departments that lack independence (Mu' Azu, 2012). Thus, it is important to
5 develop a high-quality internal control system that reduces complexity, strengthens agency
6 relationships, and offers sufficient protection of stakeholders.
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10 11 12 3.2.4.2. *Risk management*

13 The four studies included in this category examine the contribution of IA to risk
14 management (Vinnari and Skærbæk, 2014; Ackermann and Marx, 2016; Coetzee, 2016; Politis,
15 2018). This issue is triggered by the unexpected uncertainties that risk management creates,
16 such as uncertainties relating to legal aspects, those relating to the definition of
17 operationalization, and the uncertainties relating to the resources available for expanding risk
18 management (for more, see Vinnari and Skærbæk, 2014). In general, it has been proven that IA
19 assists senior management in their responsibilities by providing a broad scope of risk
20 management work (Ackermann and Marx, 2016).
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29 3.2.4.3. *Operational effectiveness*

30 This category allows us to understand the factors that influence operational
31 effectiveness (e.g., Magrane and Malthus, 2010; Alzeban and Gwilliam, 2014; Tackie *et al.*,
32 2016) and the internal auditors' competency in terms of IA quality (e.g., Aikins, 2013; Nurdiono
33 and Gamayuni, 2018). In particular, the most important factors highlighted in the literature are
34 professional proficiency, tenure, independence, supportiveness, and enhancement of the
35 relationship with external auditors. In this respect, an effective and qualitative internal audit
36 department leads to higher internal auditor competency. Therefore, the quality of IA is a
37 function of several factors such as auditor training, audit client cooperation, and the
38 departments' budget size.
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46 Based on this, we can identify the scope of IA work in public organizations (e.g.,
47 Abuazza *et al.*, 2015), the problems that internal auditors face (e.g., Onumah and Krah, 2012),
48 and the deficiencies of internal control systems (e.g., Benedek *et al.*, 2014). More specifically,
49 the role of IA should lie beyond the traditional one, which is to check accounting records, verify
50 mathematical computations, and examine internal control systems. However, such a reform
51 usually is hampered by the low professional proficiency of internal auditors, staff shortages,
52 lack of competence, weak support of activities, and so on. All things considered, the quality of
53 the internal audit mission and risk recognition could strengthen IA.
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3.2.4.4. *Service delivery by institution*

This set of studies reviews the contribution of IA in organizational change (e.g., Kidron *et al.*, 2016) and the way it improves the performance of an institution's services/activities (e.g., Aikins, 2011 and 2015). In particular, improvements in internal control and the efficiency of operations affect an institution's performance by increasing audit staff accountability and the availability of adequate resources, and through better monitoring (Aikins, 2015). In this way, IA ensures that management's decisions and planning functions have the right basis with regard to the institution's services/activities (Dumitrescu, 2012).

3.2.4.5. *Forensic investigations*

The articles in this category focus on identifying corruption and unethical practices (e.g., Unegbu and Kida, 2011; Alias *et al.*, 2019) as a way to prevent fraud and secure public money (e.g., Onoja and Usman, 2015; Tabar, 2015). In particular, some studies confirm the contribution of an independent audit department through effective monitoring of duties in well-functioning public administration with low levels of corruption (Gustavson and Sundström, 2018). This suggests that IA plays a significant role in detecting unethical behavior, and this could be achieved by the presence of systematically trained auditors with high experience in the field (i.e., more than five years; Alias *et al.*, 2019).

3.2.4.6. *Fruitless and wasteful expenditure*

The two studies included in this category investigate the effect of IA on the management of financial resources (del Rocío Moreno-Enguix *et al.*, 2017; Harelimana, 2018). Their results reveal that there is a significant relationship between the internal control system and budget results, meaning that effective IA has impact on budget execution in that it prevents misappropriation of public funds (Harelimana, 2018).

3.3 *Research question 3: What is the future for research on IA in the public sector?*

The last research question focuses on the identification of avenues for future studies. We used a two-pronged strategy for this purpose. First, we used the analysis of RQ1 and RQ2 to propose new directions. Second, we used articles with the most impact to identify additional research directions.

3.3.1. *Directions using the analysis of RQ1 and RQ2*

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3 First, it appears that most of the studies analyzed here are single-country focused,
4 meaning that there is a paucity of multi-country studies. A lack of evidence is also noted for
5 studies on developed and standalone countries based on the MSCI index. Therefore, **we believe**
6 **that further research on several countries from different markets could provide key insights that**
7 **would help researchers in obtaining a cohesive picture about the differences of IA in the public**
8 **sector across countries, and to identify whether these differences could be explained by country**
9 **characteristics.**

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15 Second, only two out of 78 studies focus on the international level, and one on the
16 regional level. Thus, there is a need for further evidence at these levels since different levels
17 concern different roles and obligations, as precisely described by Jóhannesson *et al.* (2018).
18 **For instance, why is it important to learn from IA at the regional and international levels? Is**
19 **there any country that applies IA at the regional level?** We suggest that starting new fields of
20 enquiry that address neglected issues will help in consolidating research in the field of IA for
21 future comparisons.

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27 Third, a common characteristic of most studies is that they do not use any theory for
28 their analysis. **Additionally, more emphasis should be given to commentary/normative/policy**
29 **research instruments and the implementation of multiple methods (e.g. triangulation**
30 **framework) to order the data and for the results to be cross-checked.** Such approaches would
31 also help the academic community acquire clearer understanding of the relevant discipline and
32 profession.

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37 Fourth, with regard to the research theme, we observed that majority of the studies are
38 focused on operational effectiveness (35 out of 78) and governance (22 out of 78). However,
39 there is a lack of evidence regarding risk management and fruitless and wasteful expenditure.
40 Such investigations could reveal deeper insights into the link between IA and public
41 administration.

42 43 44 45 46 47 48 3.3.2. Directions using the most influential articles

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50 To identify areas that have not been investigated, we focused on the 10 most cited
51 studies in the IA literature (i.e., out of the 78 papers identified) and highlighted their
52 recommendations for future research (see Table IV, Panel A). We also used the 10 most cited
53 studies per year (CPY) [7] and comparing these two set of studies and excluding the common
54 ones, we gathered a final set of 13 studies that helped us to identify new paths for investigation.
55 Then, we excluded all relevant proposals that have already been referred to in section 3.3.1 and
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3 those that have materialized. Through this analysis, we recommend four avenues for future
4 research.
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8 **[Insert Table IV about here]**
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10 First, we encourage researchers to examine new factors that may influence auditor's
11 competency in public sector. For instance, IT skills (Unegbu and Kida, 2011; Enofe *et al.*, 2013)
12 could provide new insights in academic research. The public sector is changing and becoming
13 more complex globally. Thus, the roles and responsibilities of the auditor's profession needs to
14 be upgraded. For instance, as Crawford *et al.* (2011) mention, a low percentage of academic
15 respondents taught IT skills to their students, although they rank it highly as important
16 characteristic for auditors' competency. On that basis, we believe that research on internal audit
17 staff and management training, with higher emphasis on the acquisition of IT skills, could
18 provide new pathways that are important for IA effectiveness.
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25 Furthermore, we believe that future studies may consider the effect of cultural,
26 institutional, and demographical characteristics in IA (Alzeban and Gwilliam, 2014). Do beliefs
27 and societal attitudes impact IA effectiveness? What is the role of legal and/or accounting
28 system(s) on this potential association (see Abdullah *et al.*, 2015)? Could auditors' perceptions
29 be influenced by their age, gender, and/or race? These and other similar questions provide
30 grounds for future research.
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36 Researchers can also examine the changing governance and/or auditing practices in the
37 public sector, and their impact on IA quality. This is a very fruitful area for future research since
38 there is a lot to learn about the contribution of these reforms. Is there any country that has
39 confronted public sector corruption via specific auditing reforms? Did these reforms take place
40 for legitimacy reasons or after strategic planning? On this basis, these research questions have
41 many theoretical and practical implications.
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46 Finally, researchers can design rigorous models to predict IA effectiveness (Alzeban
47 and Sawan, 2013; Erasmus and Coetzee, 2018), and the value added to overall government
48 financial performance (Aikins, 2011). For example, can IA in the public sector make
49 meaningful improvements in public finance? Does IA play a significant role in public planning,
50 budgeting, and reporting cycles? Thus, we argue that there is a need for more advance models
51 that can explain in real world terms the contribution of IA in the public sector.
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4. Conclusion

Our study first aimed to answer the question “*How is research on IA in the public sector being developed?*” We achieved this by analyzing five distinct characteristics of the review studies: i) the government levels in IA studies, ii) the academic discipline, iii) the number of countries, iv) the location/region, and v) the number of studies per country classified according to MSCI. Our study shows that there is an increase in publications up to 2017, with focus on single country studies mainly in emerging economies and local government levels. Moreover, there is a significant focus on multi-level studies and various disciplines such as accounting, public sector, and business and finance.

Next, we addressed the question: “*What are the focus and criticisms of the literature on IA in the public sector?*” We discussed the key features of this research question based on four criteria as reflected by relevant literature: i) type of organizational respondent, ii) research instrument, iii) theories, and iv) research theme examined. Our review shows that majority of the studies present the views of internal auditors and managers instead of those of other significant parties like employees, senior stakeholders and so on (for more, see section 3.2.1). In addition, there is evidence that studies on IA in the public sector place more emphasis on survey/questionnaire/other empirical methods, while most avoid using any theory as a tool, a reference, or a knowledge contribution. Finally, we find that researchers place considerable importance on operational effectiveness and governance subjects. This leads us to some areas of concern that might provide researchers specific areas that are worth studying.

Next, in answering the final question: “*What is the future of research on IA in the public sector?*” we provided some ways forward. In doing so, we used a two-pronged strategy: i) the ‘criticisms’ of RQ1 and RQ2, and ii) the most influential studies in terms of citations and citations per year.

Specifically, researchers should study several countries from different markets and provide further evidence on the international and regional levels. Additionally, they should emphasize on commentary/normative/policy research instruments and the implementation of multiple methods. Moreover, they should seek for deeper insights by investigating themes that have not received considerable attention such as risk management and fruitless and wasteful expenditure.

Furthermore, future research could focus on internal audit staff and management training, with higher emphasis on the acquisition of IT skills. Furthermore, research can focus on the effect of cultural, institutional, and demographical characteristics in IA. Finally,

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3 researchers could examine the exploration of changing governance and/or auditing practices in
4 the public sector, and elaborate on advanced models that predict IA effectiveness.

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6 Overall, we argue that this research has important implications for academics and
7 policy-makers. First, it is important for researchers, and especially doctoral students, since it
8 provides an in-depth and comprehensive overview of the current knowledge that can open up
9 new avenues for research. Second, our results assist practitioners and/or policymakers in
10 perceiving the efficacy of public sector IA to improve decision-making. For the former, to better
11 perform their duties and for the later, to establish better regulatory reform agenda.

12
13 The present review is also subject to several limitations. First, while the systematic
14 literature review approach differs from traditional literature reviews as it improves on the status
15 quo and reduces subjectivity, it is however biased due to the researcher's intervention in the
16 choice of literature review (Massaro *et al.*, 2016). In addition, our study ends in 2019 and thus,
17 recent studies have not been included.

26 27 Notes

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29 1. At any of these levels, there are at least a few types of organizations: core government, agencies,
30 and public enterprises (IIA, 2011, p. 4).
 - 31
32 2. We perform literature review of all government levels since most researchers study more than
33 one level. Otherwise, a single government level review omits a significant body of data (see
34 Aikins, 2015; Coetzee, 2016; Jóhannesdóttir *et al.*, 2018).
 - 35
36 3. The CPY measure mitigates the bias toward older studies (Dumay and Dai, 2017; Tsalavoutas
37 *et al.*, 2020).
 - 38
39 4. For the distribution of the 78 papers among the various academic disciplines, we used the 2018
40 Academic Journal Guide (CABS, 2018) published by the Chartered Association of Business
41 Schools in the United Kingdom and classified the studies accordingly. In case a journal was not
42 included in the ABS list, the authors discussed with each other to arrive at a consensus and
43 categorize the journal considering a similar one as a reference.
 - 44
45 5. See <https://www.msci.com/market-classification>.
 - 46
47 6. Following van Helden (2005)'s approach, we categorized papers that do not refer to any specific
48 theory as no theory.
 - 49
50 7. For instance, Dumay *et al.* (2016) use $CPY = Citations (2015 - year\ published)$ to
51 counterbalance the tendency that older articles can accumulate more citations. Accordingly, we
52 calculated CPY as of April 4, 2020.
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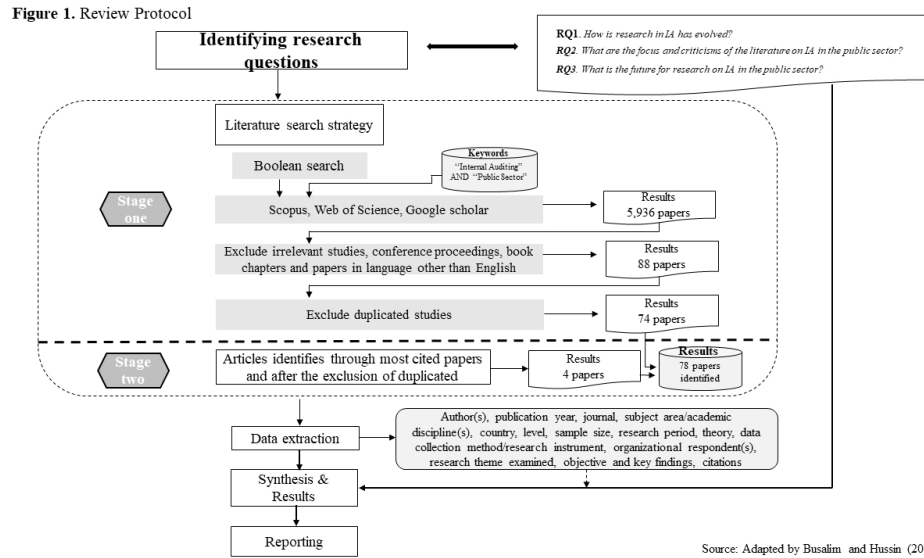


Figure 1

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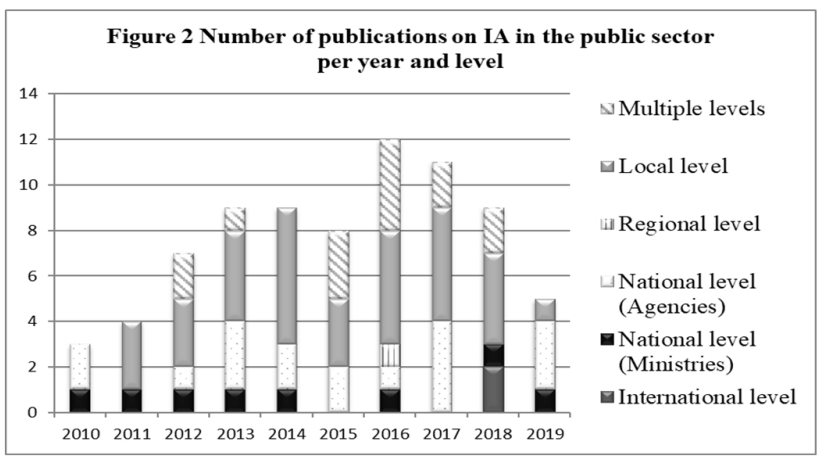


Figure 2
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Table I: Results of analysis of research question 1 on 5 criteria

A. Government Level in IA studies		C. Number of countries							
A1. Local Government Level	34 (44%)	C1. Single country	75 (96%)						
A2. Regional Level	1 (1%)	C2. Multi country	2 (3%)						
A3. National Level (agencies)	18 (23%)	C3. N/A	1 (1%)						
A4. National Level (ministries)	8 (10%)	Total	78						
A5. International Level	2 (3%)								
A6. Multi-level studies	15 (19%)								
Total	78								
B. Academic discipline		D. Location/Region							
B1. Accounting	24 (30%)	D1. Europe	17 (22%)						
B2. Ethics, CSR, Management	6 (8%)	D2. Asia	18 (23%)						
B3. International Business & Area Studies	10 (13%)	D3. Oceania	6 (8%)						
B4. Finance	10 (13%)	D4. Africa	27 (35%)						
B5. Public sector	10 (13%)	D5. America	7 (9%)						
B6. Economics	7 (9%)	D6. Worldwide	2 (2%)						
B7. Social sciences	6 (8%)	D7. N/A	1 (1%)						
B8. Information Management	3 (4%)	Total	78						
B9. Psychology	1 (1%)								
B10. Management Development and Education	1 (1%)								
Total	78								
E. Number of studies per countries classified according to the MSCI									
E1. Developed	No.	E2. Emerging	No.	E3. Frontier	No.	E4. Standalone	No.	E5. Other	No.
Australia	4	Hungary	2	Estonia	1	Bulgaria	1	Ghana	4
Canada	1	Indonesia	4	Jordan	2	Zimbabwe	1	Iran	1
Finland	1	Malaysia	6	Kenya	1			Kosovo	1
Israel	1	Poland	1	Nigeria	9			Libya	1
Italy	1	Saudi Arabia	3	Oman	1			Rwanda	1
New Zealand	2	South Africa	10	Romania	4			Multi-countries	2
Portugal	1	Greece	1					n.d.	1
Spain	2								
Sweden	1								
USA	6								
Total	20 (26%)		27 (35%)		18 (23%)		2 (2%)		11 (14%)

Table II: Results of analysis of research question 2 on 4 criteria

F. Type of organizational respondent		G. Research instrument¹	
F1. Internal auditors	13 (17%)	G1. Case/field study/interviews	13.67 (18%)
F2. Internal auditors and managers	8 (10%)	G2. Content analysis/ historical analysis	3.83 (5%)
F3. Internal auditors and accountants	3 (4%)	G3. Survey/ questionnaire/ other empirical	49.5 (63%)
F4. Head of internal audit unit	4 (5%)	G4. Commentary/normative/ policy	1.5 (2%)
F5. Other	38 (49%)	G5. Viewpoint/conceptual/general review	9.5 (12%)
F6. N/A	12 (15%)	Total	78
Total	78		
H. Theories²		I. Number of theories	
H1. Agency theory	10.58 (14%)	I1. 1 theory	28 (36%)
H2. Institutional theory	4 (5%)	I2. 2 theories	7 (9%)
H3. Accountability theory	2 (3%)	I3. >2 theories	3 (4%)
H4. Resource-based theory	2.5 (3%)	I4. No theory	40 (51%)
H5. Political theory	2 (3%)		
H6. Stakeholder theory	2.5 (3%)		
H7. Other	14.42 (18%)		
H8. No theory	40 (51%)		
Total	78	Total	78

Note:

1. Following van Helden (2005) and Schmidt and Günther (2016), if two research instruments are referred, each counts for one half, if three, each counts for one third etc.

2. Following van Helden (2005) and Schmidt and Günther (2016), if two theories are referred, each counts for one half; if three, each counts for one third etc. Also, we coded as 'no theory', the papers that do not mention any theoretical foundation.

Table III: Research themes used in previous IA studies (Criterion K)

Subjects/ Research theme	Description/ Justification	Studies	Number (percentage)
1 K1. Governance	1. Disclosure/ compliance (transparency and accountability) 2. the role of internal auditors to support public governance, 3. IA contribution to good governance, 4. determinants of the presence of AC, 5. Adoption of private sector practices, 6. Relationship of CG theory with the value of auditing, 7. Protection of stakeholders, 8. Maintenance of legitimacy and trust	Aikins, 2012; Mu'Azu, 2012; Jones and Bowrey, 2013; Reinstein et al., 2013; Roussy, 2013; Sawan, 2013; Fitzgerald and Giroux, 2014; Maclean, 2014; Ayagre, 2015; Barasa, 2015; Jones and Beattie, 2015; Ackermann, 2016; Ackermann, Marx and Fourie, 2016; Arena and Jeppesen, 2016; Usang and Salim, 2016; Ferry et al., 2017; Sari, Ghozali and Achmad, 2017; Alam, Said and Abd Aziz, 2018; Hay and Cordery, 2018; Johannesdottir et al., 2018; Thomasson, 2018; Jachi and Yona, 2019.	22 (28%)
2 K2. Risk management	1. Contribution of IA to risk management	Vinnari and Skaerbaek, 2014; Ackermann and Marx, 2016; Coetzee, 2016; Politis, 2018.	4 (5%)
3 K3. Operational effectiveness	1. Determinants/factors influencing IA effectiveness 2. recommendations to strengthen the IAF, 3. reasons for malfunctioning, 4. recommendations for efficient activity, 5. impact of internal auditors' competency on IA quality, 6. scope of IA work in public organizations, 7. problems facing IA in the public sector, 8. deficiencies of internal control, 9. internal audit capability model	Cohen and Sayag, 2010; Magrane and Malthus, 2010; Szczepankiewicz, 2010; Linnas, 2011; Sepsey, 2011; Azham et al., 2012; Md Ali et al., 2012; Onumah and Krah, 2012; Aikins, 2013; Alzeban and Sawan, 2013; Emmanuel, Ajanya and Audu, 2013; Enofe et al., 2013; Otetea, Tita and Aristotel, 2013; Alzeban and Gwilliam, 2014; Baharud-din, Shokiyah and Ibrahim, 2014; Benedek, Szenténé and Béres, 2014; Christopher, 2014; Abuazza et al., 2015; Cioban, Hlaciuc and Zaiceanu, 2015; Modibbo, 2015; Dascalu, 2016; Santosa et al., 2016; Tackie, Marfo-Yiadom and Achira, 2016; van Rensburg and Coetzee, 2016; Coetzee and Erasmus, 2017; Kewo and Afiah, 2017; Negobo and Malefane, 2017; Nedyalkova, 2017; Plant and Padotan, 2017; Rudhani, Vokshi and Hashani, 2017; Shamki and Alhajri, 2017; Erasmus and Coetzee, 2018; Nurdiono and Gamayuni, 2018; Abbaszadeh, Salehi and Faiz, 2019; Alqudah, Amran and Hassan, 2019; Taiwo, 2019.	36 (46%)
4 K4. Service delivery by institution	1. Municipal decision making 2. Improve the performance of institution's activities, 3. factors that impact on successful performance management, 4. Improvement in financial performance, 5. IA and organisational change	Aikins, 2011; Badara and Saidin, 2012; Dumitrescu, 2012; Rosa, Morote and Prowle, 2014; Aikins, 2015; Kidron, Ofek and Cohen, 2016; da Silva Nogueira and Jorge, 2017.	7 (9%)
5 K5. Forensic investigations	1. fraud prevention, 2. fraud detection, 3. identify corruption and unethical practices, 4. maintainance of public money	Unegbu and Kida, 2011; Pilcher, 2014; Onoja and Usman, 2015; Tabar, 2016; Asiedu and Deffor, 2017; Gustavson and Sundström, 2018; Alias, Nawawi and Salin, 2019.	7 (9%)
6 K6. Fruitless and wasteful expenditure	1. efficiency of IA in budgeting process (and misappropriation of public funds), 2. the role of IA in the maintainance of public money	del Rocío Moreno-Enguix, Gras-Gil and Hernández-Fernández, 2017; Harelimana, 2017.	2 (3%)

Table IV: Indicative impact of reviewed studies

Study	Future Research	Google Scholar Citations
Panel A: Top ten cited studies based on Google Scholar		
Cohen and Sayag (2010)	More focused researches on the relationship between top management support and IA effectiveness, since most of the determinants (e.g. hiring proficient IA staff, developing career channels and providing organizational independence for IA work) are decisions made by top management.	339
Alzeban and Gwilliam (2014)	The importance of cultural and institutional factors such as history, beliefs, and societal attitudes on the development of internal audit (e.g. gender as reflection of culture and societal relationships)	191
Aikins (2011)	Design rigorous models that apply real world numbers to help explain the value added contributions of government internal audits to overall government financial performance.	94
Unegbu and Kida (2011)	Future research may focus on the need for auditors to acquire the requisite technique and skills in computer operations and electronic data processing.	93
Roussy (2013)	To conduct further research on expectations and the relations between internal auditors and other governance mechanisms, particularly the audit committee, the board of directors, top management and external auditors.	86
Vinnari and Skærbæk (2014)	More empirical case studies on how risk management systems are translated into organizational practices. This is importance to answer how the risk management function can meaningfully be anchored within an organization without contravening the basic rules of internal auditing. Further emphasis is also needed on specific elements of risk management inscriptions and tools (e.g. the types of effect they produce, the extent to which existing solutions have incorporated various dimensions of the debate on risk management inside and outside the focal organization).	73
Alzeban and Sawan (2013)	Greater support to education and training of both management and internal audit staff which may act to reduce miscommunication between the various stakeholders and may influence management to provide more support and encouragement for the active pursuit of that role.	65
Sawan (2013)	Greater support to education and training of both management and internal audit staff which may act to reduce miscommunication between the various stakeholders and may influence management to provide more support and encouragement for the active pursuit of that role.	65
Baharud-din, Shokiyah and Ibrahim (2014)		62
Enofe et al. (2013)	Future research may focus on the need for auditors to acquire the requisite technique and skills in computer operations and electronic data processing which is the need for them to work effectively	35
Panel B: Top ten cited studies based on CPY (citations per year)		
Cohen and Sayag (2010)	More focused researches on the relationship between top management support and IA effectiveness, since most of the determinants (e.g. hiring proficient IA staff, developing career channels and providing organizational independence for IA work) are decisions made by top management.	33,90
Alzeban and Gwilliam (2014)	The importance of cultural and institutional factors such as history, beliefs, and societal attitudes on the development of internal audit (e.g. gender as reflection of culture and societal relationships)	31,83

1		Possible venues for exploremet are comparisons of different sectors	
2		within corrupt countries facing different typed of auditing reforms.	
3		Also, the measurement of the impact from public sector auditing	
4	Gustavson and Sundström (2018)	reforms before and after their implementation. Finally it would be of	14,50
5		interest to design interventions and create panel studies with	
6		participants in public authorities ridden with corrupt behavior that	
7		are facing increased auditing.	
8		Some suggestions for future research are: comparative studies of	
9		Supreme Audit Institutions and their impact; examination of	
10	Hay and Cordery (2018)	changing governance practices in the public sector and their impact	14,00
11		on auditing; more investigation of how and why institutions were	
12		created the way that they are; more extensive examination of the	
13		demand for value for money auditing.	
14		To conduct further research on expectations and the relations	
15	Roussy (2013)	between internal auditors and other governance mechanisms,	12,29
16		particularly the audit committee, the board of directors, top	
17		management and external auditros.	
18		More empirical case studies on how risk management systems are	
19		translated into organizational practices. This is importance to answer	
20		how the risk management function can meaningfully be anchored	
21	Vinnari and Skærbæk (2014)	within an organization without contravening the basic rules of	12,17
22		internal auditng. Further emphasis is also needed on specific	
23		elements of risk management inscriptions and tools (e.g. the types of	
24		effect they produce, the extent to which existing solutions have	
25		incorporated various dimensions of the debate on risk management	
26		inside and outside the focal organization).	
27		They propose the formulation of a working model to predict internal	
28		audit effectiveness. Also, they highlight the need for in-depth	
29	Erasmus and Coetzee (2018)	findings (from a qualitative research approach) to shed light on the	11,00
30		reasons for driver prominence from the respective key stakeholders.	
31		This will provide evidence on the expectation gaps between the key	
32		stakeholders of internal auditing to move closer to a solution on how	
33		to address the gaps.	
34	Aikins (2011)	Design rigorous models that apply real world numbers to help	10,44
35		explain the value added contributions of government internal audits	
36		to overall government financial performance.	
37	Baharud-din, Shokiyah and Ibrahim (2014)		10,33
38		Future research may focus on the need for auditors to acquire the	
39	Unegbu and Kida (2011)	requisite technique and skills in computer operations and electronic	10,33
40		data processing.	

* As of 4 April 2020

Appendix 1

No	Authors	Country	International level	National Level		Regional level	Local government level	Sample	Year(s)	Method	Objective	Theory/ies	Main findings	Citations
				Ministries	Agencies									
1	Cohen and Sayag (2010)	Israel		•				108 organizations (views of internal auditors and managers)	n.d.	questionnaire	This study aims to build a conceptual understanding of the effectiveness of internal audit in organisations and its determinants	organizational theory	Top management is the main determinant of internal audit effectiveness with some effect also found for the organizational independence of internal audit. The effect of the predictors was consistent between the public and private sectors	339
2	Magrane and Malthus (2010)	New Zealand			•			4 DHB (Distinct Health Board) personnel (audit committee chairperson, an additional audit committee member, the internal auditor and the CFO)	n.d.	analysis of secondary data and semi-structured interviews	The purpose of this paper is to examine the conditions and processes affecting the operation of an audit committee	n.d.	The factors that affect the effectiveness of audit committee are: audit committee members' independence, competence, tenure and remuneration	34
3	Szczepankiewicz (2010)	Poland			•			-	-	Theoretical – Overview paper	The aim of this work is to discuss the binding internal audit regulations, instructions and standards as well as principles of IA in the healthcare sector units	n.d.	The sector is ineffectively managed. Thus, in light of the effective regulations and adopted standards, an internal audit should support the manager of a unit in effective unit management, evaluation of the efficiency of internal control, public finance economy, risk management and execution of	9

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									corporate and public governance tasks	
4	Aikins (2011)	USA	•	178 audit department heads of the Association of Local Government Auditors (ALGA)	2008	mixed methodology (questionnaire and data from annual reports)	This study investigates how the work of government internal audits lead to improvements in government financial performance	theory of transaction cost economics	Results show that in general, local government auditors perform more audits in operational areas that deal with fiscal receipts and outlays. Additionally, auditors' work significantly influences local government financial performance both directly and indirectly through improvements in internal controls and efficiency of operations. Designing and developing an integrated system of ACS for LGUs should be based on a philosophical platform that stands on at least seven pillars: (1) the paradigm of the laws of nature; (2) the holistic approach; (3) the paradigm of self-organisation; (4) the reciprocal balance approach; (5) the uniqueness principle; (6) the paradigm of uncertainty; and (7) the compatibility approach	94
5	Linnas (2011)	Estonia	•	n.d.	2006	opinion study (based on an author's previous study)	The aim of this article is to present some ideas for the operation of an integrated system of audit, control and supervision for the local government sector	agency theory, theory of complex self-organising systems, theory of living organisms, organisational theory		2

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9	Azham <i>et al.</i> (2012)	Malaysia	.						2004	interviews	40 internal auditors in the federal government organizations	This study aims to provide a catalogue of the forms of internal audit being practiced in Malaysia's federal government ministries, departments and agencies. Second to generate policy recommendations to strengthen the internal audit function	accountability theory	The shortcomings are that: i) many internal audit units face staff shortages, and staff lacking in internal audit competence, ii) a majority of the audit units have failed to get the right level of support and assistance from the Treasury and other parties and iii) the effectiveness and efficiency of audit units are further threatened by the high-handed actions of the National Audit Department Internal auditors are uniquely placed in organization with the view to examine and evaluate the systems used in different parts of organizations and to make recommendation for improvement. Therefore, the status of internal audit should be improved to meet international standard so that to improve the performance of local government activities and ensure the achievement of local objectives	14
10	Badara and Saidin (2012)	Nigeria	.							Theoretical - conceptual paper		The objective of this paper is to highlight the status of internal audit at local government in order to be improved	-	Audit activities should cover not only the aspect of legality of accounting records, but especially the conformity of the methodical approach of controlling in order to insure that the management decision and planning functions have the right basis for their activities	5
11	Dumitrescu (2012)	Romania	.*	.*	.*	.*				Theoretical - general review paper		This paper approaches the relationship between internal public audit and accounting which improves decision making process in public sector. Thus, it aims to study these relationships and determine how they can work to the benefit of increasing public sector performance	n.d.		10

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									adherence to statutory and professional standards	
18	Enofe <i>et al.</i> (2013)	Nigeria	•	54 participants (directors, auditors, accountants)	2013	questionnaire	The objective of this study is to investigate the role of internal audit in effective management control in public sector organization	agency theory, theory of transaction cost economics	Management should put in place a conducive environment for internal auditor to perform their duty because of the impact which it has on IA effectiveness. Therefore training personnel as well as other training infrastructure becomes an important ingredient in the successful operation of IA effectiveness in public sector organization. They found that there is a minimal following of the Internal Audit Guidelines in relation to the establishment of an audit committee. Moreover, audit committees' structure and membership were found to not meet the level of independence required (as outlined in the guidelines)	35
19	Jones and Bowrey (2013)	Australia	•	152 NSW Local Government councils	2009/2010	annual reports and websites	The objective of this study is to examine the level of compliance of NSW Local Government councils with the Internal Audit Guidelines developed and published by the NSW State Government to address the identified weaknesses in the governance structures of the councils	n.d.	Moreover, audit committees' structure and membership were found to not meet the level of independence required (as outlined in the guidelines)	6

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20	Oțetea <i>et al.</i> (2013)	Romania	•	-	2009-2010	Theoretical - general review paper	The objective of this paper is to present an assessment of the organization and activity of internal audit in public entities and how it helped in preventing and/or managing the economic downturn	-	For good time in Romania's public administration system the role of internal audit was not understood, and managers were limited to formal cover this work without giving importance to internal audit in combating the negative effects of this financial crises Internal auditors perform two key roles: a protector role and a helper one. Moreover, they consider that their primary role is to serve the top manager and the organization and that they must prioritize the top manager at the expense of audit committee members. Therefore, internal auditing is not the governance 'watchdog' expected by the regulatory bodies since this is not the role performed by internal auditors The underpinnings of the Saudi Internal Audit Regulation did not tie in directly with perceived international best practice - the International Standards for the Professional Practice of Internal Auditing	5
21	Roussy (2013)	Canada	•	42 experienced internal auditors working in public administration	2010	semi-structured interviews	The purpose of this paper is to understand the governance roles of internal auditors in public sector organizations	role theory		86
22	Sawan (2013)	Saudi Arabia	•	29 (internal auditors and general and senior managers in public sector organizations)	n.d.	mixed methods (archival and documentary analysis, semi-structured interviews)	This paper contributes to the debate on the role of internal auditing in the public sector by focusing on the nature and practice of internal auditing in organizations that are subject to audit by the General Audit Bureau	n.d.		65

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27	Maclean (2014)	South Africa	•	-	-	Theoretical – general review paper	The purpose of this article is to address issues of auditing in the context of financial management as a contribution to good governance	-	The main issues of auditing in the context of financial management that contributes to good governance are: principles of financial management, financial strategy, auditing functions such as forensic auditing, fraud accounting and detection of fraud, including accounting systems and auditor's role There are still differences and inconsistencies between states regarding how seriously legislators take their monitoring duties via the implementation of an internal audit function. Also the authors reports financial misrepresentation and prediction of potential fraud and propose changes for effective internal auditing	6
28	Pilcher (2014)	Australia	•	568 participants (council CFO, council manager, legislative representative, audit office/ AUASB manager)	2009	mixed method (web analysis, questionnaire, semi-structured interviews)	This research seeks an understanding of the interrelationship between governance and internal audit in local government	agency theory		14

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29	Reinstein <i>et al.</i> (2014)	USA	•	•	185 participants (government financial officers - GFOs - and auditors)	n.d.	questionnaire	This paper examines whether certain provisions of the Sarbanes-Oxley Act (SOX, 2002) should be expanded to include state and local governmental entities	n.d.	GFOs generally support SOX-like provisions for governmental entities: improved independence standards, audit partner rotation, independent audit committees, management assessment and reporting on internal controls, and increased penalties for fraudulent behavior. Auditors are neutral or not supportive of applying general SOX-like but supportive regarding independence standards, management assessment and reporting on internal controls, and increased penalties for fraudulent behavior. To improve accountability, audit letters should include a conclusion on the value for money achieved by local authorities and their findings should be widely communicated to citizens. Also, external auditors should comment on performance indicators that are useful in management	2
30	Rosa <i>et al.</i> (2014)	Spain	•	•	124 participants (internal and external auditors)	2011	questionnaire	The paper examines the current situation regarding performance audit in the local government sector and how this could be strengthened	n.d.		7

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31	Vinnari and Skærbæk (2014)	Finland	•	13 key actors from various levels of Case Municipality	1st round (2008-2009) & 2nd round 2010	mixed (public and confidential documents as well as semi-structured interviews)	The purpose of this study is to analyse the implementation of risk management as a tool for internal audit activities, focusing on unexpected effects or uncertainties generated during its application	actor-network theory	Risk management creates unexpected uncertainties that would otherwise not have emerged. These are: i) uncertainties relating to legal aspects of risk management solutions (i.e. which types of document are considered legally valid) ii) uncertainties relating to the definition and operationalisation of risk management and iii) uncertainties relating to the resources available for expanding risk management (relating to the professional identities and responsibilities of operational managers) The scope of internal audit in Libyan organizations may not be sufficiently wide ranging to be considered as a value-adding service. Findings demonstrate that the scope of internal audit work in mainly restricted financial matters (i.e. traditional roles of internal audit) such as checking accounting records, verification of mathematical computations to ascertain that the company is not being defrauded, compliance with procedures and regulations and examination of internal control	73
32	Abuazza <i>et al.</i> (2015)	Libya	•	58 participants (chief executive officers, IA directors, administrative affairs managers, financial affairs managers and external auditors)	n.d.	semi-structured interviews	This study examines the perceptions of stakeholders regarding the scope of internal audit work in state-owned enterprises	n.d.		27

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systems. Much less emphasis is put on the internal audit role associated with the efficiency and effectiveness of various aspects of the organization

33 Aikins (2015) USA • • • 114 audit heads 2012 questionnaire

The purpose of this study is to investigate the factors that impact successful performance management in government internal audit units

stakeholder theory and resource dependence theory

They show that successful performance management is a function of audit oversight body's commitment, audit staff accountability, availability of adequate resources, as well as the use of audit performance report to monitor achievement against performance objectives, and to coordinate efforts within government

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34	Ayagre (2015)	Ghana	•	•	45 respondents (chief internal auditors and audit managers in Ministries, Departments and Agencies)	n.d.	questionnaire	The purpose of this study is to investigate the capacity of internal audit functions in public sector organizations. Thus the research question is as follows: Is the internal audit function in developing countries capable of enhancing good governance in public sector organisations?	agency theory	Internal audit's ability to ensure better governance is limited by: i) technical and professional skills set, ii) low motivation, iii) limited spending on internal auditing and iv) little support for the internal auditing function from management. Other limiting factors are: i) the issue of independence of the internal auditor which directly impact on internal audit's objectivity	1
35	Barasa (2015)	Kenya		•	370 respondents from 18 public institutions (Heads and staff of internal audit departments, managers and other ordinary staff)	2015	questionnaire	The main objective of this study is to establish the role of internal auditing in promoting good governance in public institutions	n.d.	There is a strong significant relationship between internal audit and good governance in public institutions	8
36	Christopher (2015)	Australia		•	26 chief audit executives	n.d.	questionnaire	This study seeks to confirm if internal audit is functioning effectively and to develop an internal audit evaluation framework (based on published literature and best practice guidelines)	agency theory	The majority of university internal audit functions are operating under flexible structural and functional arrangements to achieve internal audit's theoretical role of enhancing governance. A minority of functions did not comply with best-practice guidelines. Contributing factors to non-compliance and flexible operating arrangements include the non-availability of mandatory requirements for compliance by the	27

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profession or
government
legislation

37	Cioban <i>et al.</i> (2015)	Romania	•	•	•	•	720 contracts	2011-2012	public internal audit reports	The objective of this study is to identify the reasons for internal audit activity malfunctioning and find possible solutions that lead to more efficient internal audit activity	n.d.	The impact of internal audit in the public sector is strongly influenced by the quality of internal audit mission and also by early and accurate identification of the risks. On the other hand organizational framework and audit attributes have not a severe impact on audit efficiency. An internal audit committee which is overseen by an audit committee, where the majority of members are independent and where the management of councils does not have a role, are essential for providing good governance and accountability	8
38	Jones and Beattie (2015)	Australia				•	150 councils	2012/13	local councils' statements of financial performance	This study assesses the level of compliance with the 2010 revised guidelines (specifically in relation to internal audit committees) to determine if the guidelines are effective in improving local government council governance	n.d.		8

39	Modibbo (2015)	Nigeria	•	40 participants (the local government Chairmen, Internal Auditors, Treasurers, Cashiers and Budget Officers)	2010	questionnaire	This study examines the effectiveness of internal audit unit at local government level with a view to finding out how internal audit unit exists and its level of independence	n.d.	They found that internal audit unit does not exist as a separate department at local government level in the state. This should be taken into consideration to ensure independence and improve transparency and accountability Internal audit unit at local government put necessary measures to prevent fraud but lack total independent freedom to carry out their function effectively	10
40	Onoja and Usman (2015)	Nigeria	•	78 internal audit staff	2014	self-administered questionnaires and secondary sources	The general objective of this study is to examine the internal audit technique and fraud prevention in Bauchi State local government	agency theory and stewardship theory	The internal auditor government departments have a role in the maintenance of public money. In particular, auditors in government departments have knowledge to maintain public money	4
41	Tabar (2015)	Jordan	•	65 respondents (chairman, executive directors, auditors)	n.d.	questionnaire	The aim of this study is to highlight the role of internal auditors in maintaining the public money and explore their qualifications in terms of their ability to control the governmental departments' actions	owners theory, personal moral theory and the funds allocated theory	This study shows that internal audit functioning assists audit committees in their governance oversight. However, in the public eye it appears to be doing much less than they actually do	1
42	Ackermann (2016)	South Africa	•	8 municipalities (audit committees's views)	n.d.	mixed (questionnaire and annual reports)	The objective of this study is to report the extent to which the internal audit functioning assists audit committees in their governance oversight responsibility	n.d.	The results show that internal audit provide a broad scope of risk management work which assist senior management in the discharge of their responsibilities. However, in the public eye, internal audit risk management functioning is scant	-
43	Ackermann and Marx (2016)	South Africa	•	8 municipalities (audit committees's views)	n.d.	mixed (questionnaire and annual reports)	This study focuses on analysing the functioning of internal audit with specific reference to the risk management mandate	n.d.		3

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44	Ackermann <i>et al.</i> (2016)	South Africa					•	8 metropolitan municipalities	2012/2013 financial year	mixed (qualitative content analysis and Atlas.Ti analysis software)	The purpose of this study is to examine the role of internal audit in governance to accountability	accountability theory	The inclusion of internal audit disclosure in public annual reports could contribute to transparency and accountability in respect of municipalities as well as public (external stakeholder) confidence	1
45	Arena and Jeppesen (2016)	Italy					•	26 participants (head of the internal audit function, members of the internal audit team, divisional managers and the head of the function to which internal audit reported)	2008-2011	face-to-face interviews	The aim of this study is to analyze the rise of practice variations in public sector internal auditing, giving special attention to the role of agents' embeddedness in multiple institutional arrangements	institutional theory	It highlights the relevance of the interplay between actors' contemporary embeddedness in professional systems and the focal social system as a relevant source of practice variation	31
46	Coetzee (2016)	South Africa	•	•	•	•		197 (national departments, provinces, district and local municipalities)	n.d.	questionnaire	The purpose of this paper is to investigate the contribution of the internal audit functions to risk management in the South African public sector	n.d.	The existence of risk management structures has a minor effect on how the contribution of internal auditing to risk management is perceived	15

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47	Dascalu (2016)	Romania	•*	•*	•*	•*	-	-	Theoretical – viewpoint paper	This study investigates the factors supporting the adequate sizing of internal audit departments in the public sector (which represents the first step required to enhance internal audit independence)	n.d.	There are six factors which substantiate the sizing of the internal audit departments and which have no correspondence in the legislation governing the internal public audit field in Romania: the characteristics of the organization management structure, mission of the internal audit department, value added by internal audit, alignment between the management and the internal audit department on the role of internal audit, specific character of the internal audit department and quality of the internal audit services Regarding the first objective, authors propose that to successfully measure internal audit capability levels, a hierarchical building block foundation of the model should be reviewed. Regarding the second objective, they mention that some KPAs are more manageable than other and can have an effect on the ability of the public sector to implement effective and capable IAFs. Thus, it is important that the model should first be tested and adapted for a specific country, region or	1
48	Janse van Rensburg and Coetzee (2016)	South Africa		•				2014	the chief audit executive, the audit committee chairperson, the chief operating officer and a senior internal auditor of a national department (n.d.) documentary review and interviews	The main objective of the study is to determine whether the Internal Audit Capability Model (2009) can be used successfully to measure internal audit capability levels, and a secondary objective is to determine whether the tool can be successfully adapted for a specific public sector organisation and/or country	n.d.		13

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government before
being used

49	Kidron <i>et al.</i> (2016)	-	••	••	••	••	-	-	Theoretical – conceptual paper	The aim of this study is to identify the determinants of organisational change in the public sector that result from IA and the way internal auditors facilitate it	contextual theory	Auditees' perceptions is the mediator variable, and accessibility to audit information is the moderator variable	4
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50	Santosa <i>et al.</i> (2016)	Indonesia	•		•		205 Chief Audit Executives and 24 senior stakeholders	2015	in-depth interviews	The objective of this study is to examine the effectiveness of government internal audit systems in order to enhance the professionalism of government internal auditors and the maturity of the management processes that they audit	control theory and institutional theory	The existence of government internal audit units is important in promoting better government governance which will help providing better public welfare. Moreover, strategic issues which act as leverages to boost the improvement of the internal audit unit's role are as follows: professionalism; independence and objectivity; stakeholder support; level of management maturity; improved regulations and harmonization	2
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between regulations on internal audit

51	Tackie <i>et al.</i> (2016)	Ghana	•	10 internal audit units	n.d.	questionnaire	The aim of this study is to investigate the determinants of internal audit effectiveness in decentralized local government administrative systems	profession theory and institutional theory	Professional proficiency, organizational independence, and career advancement were found to have statistically significant positive relationship with internal audit effectiveness. Internal audit characteristics (professional certification, specific experience in internal audit, education and area of specialty) and internal audit relationship with management are important for internal audit value-adding capacity for improved performance for local governments	20
52	Usang and Salim (2016)	Nigeria	•	301 heads of internal audit unit in local governments	n.d.	self-reported questionnaires	The study examines the effect of internal audit characteristics and relationships on the performance of local governments	resource-based theory	Professional proficiency, organizational independence, and career advancement were found to have statistically significant positive relationship with internal audit effectiveness. Internal audit characteristics (professional certification, specific experience in internal audit, education and area of specialty) and internal audit relationship with management are important for internal audit value-adding capacity for improved performance for local governments	3

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53	Asiedu and Deffor (2017)	Ghana	•	287 workers (head of department, managers of various units and staff of the internal audit departments of public organizations)	n.d.	questionnaire (Structural Equation Modeling - SEM)	The purpose of this study is to analyze the link between corruption and effective internal audit function	institutional theory	They established that full implementation of Act 658, size of the internal audit department and independence of the audit department significantly affect the effectiveness of the internal audit function which negatively impact on corruption	29
54	Coetzee and Erasmus (2017)	South Africa	• • •	117 participants (heads of the internal audit function, senior management of public institutions and chairpersons of the audit committee)	n.d.	factor analysis	This study provides insight into the drivers and measures of internal audit effectiveness	neo-institutional theory	The result of the study identifies a refined list of drivers and measures of internal audit effectiveness	6
55	da Silva Nogueira and Jorge (2017)	Portugal	•	302 (politicians and financial officers)	n.d.	questionnaire	This study examines whether the perceived usefulness of financial information for internal decision making by municipal users (politicians and financial officials) is affected by the internal control	n.d.	Significant and positive relationship between internal control and usefulness of financial and budgetary information for municipal decision making	16
56	del Rocío Moreno-Enguix <i>et al.</i> (2017)	Spain	•	1806 local governments	2012/2013	regression analysis (using questionnaires)	The objective of this study is to measure efficiency in short-term in relation to management of financial resources	political theory	It shows a strong effect of internal control system on increasing the budget result	1
57	Ferry <i>et al.</i> (2017)	Malaysia	•	17 local government authorities	2013	interviews	This paper examines internal auditor roles to support public governance in a developing country context	critical theory	Internal auditors seek to legitimise their position through compliance (watchdog) and performance (helper and protector) audits. In performing these dual roles, internal auditors are not colonised by governance rules and managerial influence, but instead	9

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									are enabled by them to perform communicative action	
58	Kewo and Afiah (2017)	Indonesia	•	66 local government unit tool	n.d.	type primary data	The purpose of this study to examine and analyze the influence internal control systems and internal audit to financial statement quality of local government	n.d.	Internal control system and internal audit partially and simultaneously have positive effect on the quality of financial statements	10
59	Ncgobo and Malefane (2017)	Johannesburg	•	Roodepoort City Theatre	2004/5	gathering primary information	The aim of this study is to reveal how the assessment of internal controls could influence governance and audit outcomes	n.d.	The audit and risk committee's performance between the 2009/10 and 2012/3 financial years was effective whilst the performance of the internal audit function was ineffective and this may be due to the fact that it was not internal per se, but outsourced to private service providers	4
60	Nedyalkova (2017)	Bulgaria	•	25 respondents working in an internal audit department (unit)	2014	questionnaire	The study aims to determine the influence of factors that have a positive impact on the internal audit function for qualitative financial reporting and the management of the organization as well as to achieve its added value	n.d.	There is a strong dependence of the internal audit based on the influence of objectivity, competence, consultancy, publicity and risk activity (positive association)	4

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61	Plant and Padotan (2017)	South Africa	•	•	•	•	n.d.	n.d.	content analysis/ benchmark analysis	The aim of this research is to identify improvement to current skills development programs for internal auditors in the South African public sector	Kolb's experiential learning theory	They identified a number of current skills development programs for improvement, such as the use of personal development plans, more specific practical experience requirements, formal assessment of competence and a formal mentoring system	3
62	Rudhani <i>et al.</i> (2017)	Kosovo			•	•	59 internal auditors in public sector	n.d.	questionnaire	The objective of this study is to analyze the factors that contribute to increasing the efficiency of internal audit in the public sector which would help to set proper and more transparent governance of public financial resources	n.d.	The effectiveness has a positive relationship with internal audit quality, the competence of the internal audit team, the independence of internal audit, as well as with the support of internal audit from the management	5
63	Sari <i>et al.</i> (2017)	Indonesia		•			90 respondents (parties directly involve in financial management and internal auditors)	2017	questionnaire	This research focuses on an effect of internal audit and internal control toward accountability of public service universities (BLU) in Indonesia. Thus, the objectives are internal audit and internal control in forming accountability which is based on good governance	agency theory	Internal audit (represented by the parties directly involved in financial management) does not give influence and cannot improve accountability and internal control system gives influence and can improve accountability	8

67	Harelimana (2018)	Rwanda						18 employees of Musanze District office	2016	semi-structured questionnaires	This study aimed at investigating the effect of internal audit on budget management of local government	n.d.	There is significant relationship between internal audit and budget process and execution. Thus, one should put more efforts in raising more revenue to supplement the government transfers and smoothen the budget execution	2
68	Hay and Cordery (2018)	New Zealand	**	**	**	**	-	-		Theoretical – general review paper	This paper examines the value of financial statement auditing in the public sector	agency theory, signaling theory, neo-institutional theory	explaining the value of auditing, and these are more complicated in the public sector. Auditing for management control has always been important as well Internal auditors are able to give the board/politician and top management an assurance on the status of internal control and governance and risk management, as well as raising awareness for the importance of keeping up with high quality internal control Internal auditor competency positively and significantly affects internal audit quality. Likewise, internal audit quality positively and significantly affects financial accountability of regency/city. The higher the internal auditor competency, the better audit quality that is proxied by the	28
69	Johannesdottir <i>et al.</i> (2018)	Nordic countries						23 respondents (from various internal audit units)	2017	questionnaire	The aim of this study is to understand the basis and recognize trends in the development of internal audit in public sector	n.d.	Internal auditors are able to give the board/politician and top management an assurance on the status of internal control and governance and risk management, as well as raising awareness for the importance of keeping up with high quality internal control	2
70	Nurdiono and Gamayuni (2018)	Indonesia						15 Regencies/Cities in Lampung Province	2011-2015	path analysis of Partial Least Square (PLS)	The aim of this study is to provide empirical evidence on how the internal auditor's competency can affect internal audit quality in local government, and how its implication toward accountability of local government will be beneficial	agency theory	Internal auditor competency positively and significantly affects internal audit quality. Likewise, internal audit quality positively and significantly affects financial accountability of regency/city. The higher the internal auditor competency, the better audit quality that is proxied by the	1

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									number of findings by internal audit
71	Politis (2018)	Greece	•	a case study of a Greek local authority was used	2017	Case study paper	The paper presents a risk-based approach to conduct internal audits in the public sector based on the new roles and objectives of the internal audit function and the experience gained with the reform of Greek public administration	n.d.	-
72	Thomasson (2018)	Sweden	•	-	-	Case study paper	The purpose is to investigate and analyse how the internal audit process as well as the outcome of that process is used for politically reasons. Thus, it contributes to our understanding of how the internal audit process is open for the use of (de-)politicisation as strategies to influence stakeholders' perception of the audit process as well as the identity and legitimacy of the auditee	political theory of politicisation	2

The risk-based approach to conduct internal audits in the public sector considering the new roles and objectives of IA function is applicable. Thus, the organisation was able to prioritise and use its limited resources to develop its action plan more rationally taking into account risk levels and the possibility and feasibility to reduce or eliminate them. Auditors can use de-politicisation as a strategy to counteract the politicisation of the audit process. At the same time, it is a way for internal auditors to maintain their legitimacy and uphold trust in the system they represent. De-politicisation and politicisation are used as deliberate strategies but not to influence the degree of independence, instead, the motive is to use the audit process and the content of the reports to gain or maintain legitimacy

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for the political
majority

73 Abbaszadeh *et al.*
(2019)

Iran

•

143
participants
(auditors and
managers)

2016

questionnaire

This study aims to
investigate the
relationship between
information technology
and internal controls of
state agencies

n.d.

There is a
significant
relationship between
information
technology and
internal controls
(administrative,
financial and
accounting controls,
risk assessment,
information and
communication,
control activities
and monitoring)
To accommodate
and serve with
efficiency, the
practices of the
control system
should be linked
with the practices of
the accountability.
At the same time,
the control system
also needs to be
developed and
modified to reduce
the complexity and
offer the sufficient
protection to the
stakeholders as a
whole

74 Alam *et al.* (2019)

Malaysia

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109
respondents
from
different
departments
of federal
ministries in
Malaysia

n.d.

questionnaire

This study aims to
assess the status of
current practices of
accountability and its
relationship with the
practices of integrity
system, internal control
system and leadership
qualities in the public
sector

stakeholder
theory

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78	Taiwo (2019)	Nigeria	•	249 respondents (staff of internal audit department and account department)	2019	questionnaire	The study assessed the internal audit efficiency of public sector in Nigeria with a view of its major determinants	n.d.	-	The results from the respondents to the determinants in the area of public performance on the incidence of irregularities by the appropriate authorities, flaw of audit model and accounting system, inadequacy of the internal control system and non- implementations of routine audit report has contributed to the challenges of internal audit efficiency
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Note: Throughout the table, when summarizing the objective(s) and the results of each study, we sometimes use phrases without quotes.