



KEMENTERIAN KEWANGAN  
JABATAN AKAUNTAN NEGARA MALAYSIA

# IPN JOURNAL

## OF RESEARCH AND PRACTICE IN PUBLIC SECTOR ACCOUNTING AND MANAGEMENT

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VOLUME 14, NO. 2, 2024

eI SSN 2682-9347



9 772682 934003

Published by  
Institut Perakaunan Negara  
Jabatan Akauntan Negara Malaysia  
ISSN 2180-4508



**IPN JOURNAL OF RESEARCH AND PRACTICE  
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# A Thematic Review on Performance-Based Budgeting in the Public Sector Organisation

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<https://doi.org/10.58458/ipnj.v14.02.01.0104>

Received: 12 January 2024    Reviewed: 22 March 2024    Accepted: 30 September 2024    Published: 20 December 2024

## Abstract

**Purpose:** The current thematic review was motivated by the belief that performance-based budgeting (PBB) is an effective tool that can benefit public sector organisations in budgeting practices and assist in improving the efficiency of public spending management. Specifically, a thematic analysis procedure was conducted to identify patterns and construct themes associated with the current trends and issues regarding performance budgeting in public sector organizations. The literature from 2018 to 2023 was systematically reviewed and thematically analysed.

**Design/ Methodology/ Approach:** The systematic review was conducted to identify pertinent trends and issues in PBB using ATLAS.ti 22 software. A keyword was employed to search the string of the document title, followed by filters via inclusion and exclusion criteria on the SCOPUS and World of Science (WoS) databases. A total of 95 journal articles were identified in the initial stage, with 61 selected articles finalised after the inclusion, exclusion, and duplication removal process.

**Findings:** The results revealed three PBB themes based on 15 initial codes from 61 selected documents, namely budget practices, implementation, and use of performance information. The identified themes were significant to the current PBB trends and issues in public sector organisations. Successful PBB implementation and effective use of PBB in public sector organisations remain a critical topic requiring further investigations.

**Originality/ Value:** This study contributed to the evolution of PBB trends within public sector organisations through a thematic analysis. The findings are beneficial to future studies by aiding future researchers in appraising the relevant topic. Additionally, the present study can guide policymakers,

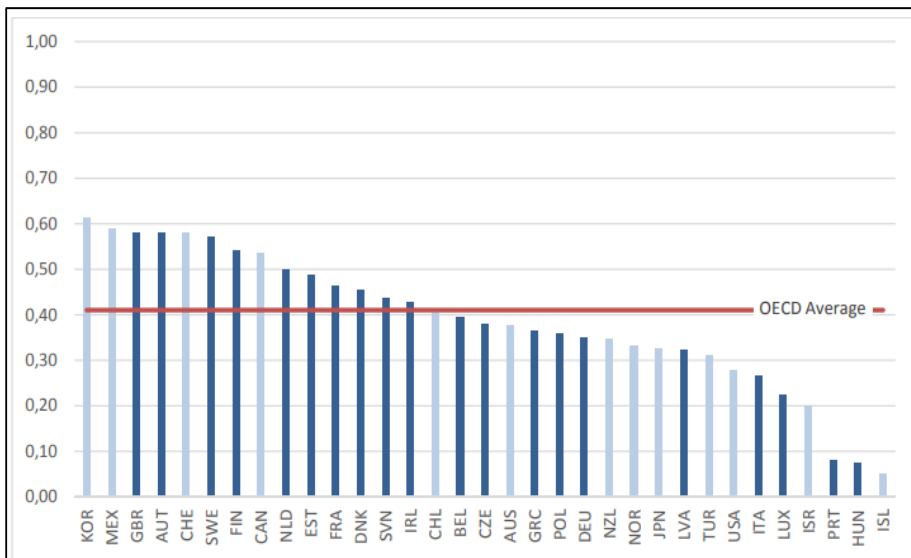
budgetary practitioners, and key stakeholders worldwide to focus on the ambiguous areas of PBB practices.

**Keywords:** ATLAS.ti, management accounting, performance budget, performance-based budgeting, qualitative methods, thematic review

## 1.0 Introduction

PBB has been a popular topic among budget professionals for decades, with a surge of interest in relevant practices since the 1990s before becoming widespread as one of the New Public Management (NPM) reform agendas across multiple countries (Mauro et al., 2018). The primary objective is to improve the effectiveness and efficiency of public service delivery as well as public spending management (Postuła & Tomkiewicz, 2019). The PBB implementation is also expected to drive the budgetary practice towards a performance-oriented approach (Joyce, 1997). Ho (2018) demonstrated that PBB implementation encompasses a broader scope of budget allocation decisions focusing on performance and outcomes, which involves “the full budget cycle, from preparation, allocation, and implementation to evaluation, as a platform for achieving various managerial, budgetary, and policy-making goals” (p. 5). Jordan and Hackbart (1999, p. 68–88) also elucidated that “PBB are linking financial resources allocated in the budget period with some kind of information about the expected results of policies. This type of budgeting requires information about strategic planning regarding the objectives of an organisation. It requests quantifiable data together with the allocation of resources providing meaningful information about program outcomes”. Generally, the objective of the targeted budget programmes is predicated on the outcomes (Pratolo et al., 2020; Hager et al., 2001), with PBB serving as a budgetary system ideally linking programmes to the targeted outcomes or results (Amini et al., 2019). Ellul and Hodges (2019) also explicated that the PBB acronym could account for performance budgeting, outcome-based budgeting, or result-based budgeting.

Figure 1 illustrates the ranking of 35 Organisation for Economic Co-operation and Development (OECD) member countries based on a composite index of PBB implementation (Sapała-Gazda, 2018). Sapała-Gazda (2018) indicated the extensive PBB use across OECD nations despite significantly varying approaches employed. Nonetheless, the implementation process remains unsatisfactory (Marsus, 2020) as Ho (2018) discovered that PBB implementation did not entirely substitute the traditional budgetary system among budget preparers. Therefore, various challenges have been encountered by organisations in ensuring PBB effectiveness in budgetary processes and practices (Ho, 2018; Clark et al., 2017), on top of multiple difficulties during the adoption and implementation phases (Clark et al., 2017). The effective use remains ambiguous due to different areas requiring further exploration and improvement in relevant implementation (Mauro et al., 2018). Moreover, limited studies concentrated on thematic analysis to appraise PBB issues and trends among public sector organisations and examine the prominent topics and subtopics, especially in emerging countries. Insufficient systematic review analysis has also been observed to identify the primary themes across public sector entities in terms of the use of performance information (Martínez-Guzmán, 2020) and the impacts of budgetary monitoring and evaluation on effective use (Martí, 2019).



**Figure 1: The OECD Index of PBB Practices**

Source: Sapała-Gazda, 2018

Despite its popularity, there are limited review papers focusing on thematic analysis, discussing issues and trends of PBB within public sector organizations, and examining the prominent topics and subtopics of the PBB study field, especially in emerging countries. Additionally, there is a lack of systematic review analysis conducted to identify the main themes in the PBB studies area within the public sector organizations. How the performance information is used (Martinez Guzmán, 2020) and how the monitoring and evaluation of the budget have been done would affect the effective uses of PBB in budgetary processes and practice in the organizations (Martí, 2019). This review was motivated by the belief that the PBB is an effective tool that can benefit public sector organizations in budgetary practices and help the organizations enhance the efficiency of public spending management. Furthermore, this study discusses the current trends and issues globally based on the following research questions:

- i. What are the current trends of publications, geographical dispersal, and prominent source titles of the PBB studies field in the literature from 2018 to 2023?
- ii. What are the trends of the research setting, methodology used, and prominent theory used in the PBB studies area from 2018 to 2023?
- iii. What are the current trends and issues discussed by scholars on the topics and subtopics of the PBB studies field in the literature from 2018 to 2023?
- iv. What are the main themes involving the current trends and issues in the PBB studies in the literature from 2018 to 2023?

The present study aimed to systematically review the literature from 2018 to 2023 by conducting a thematic analysis of PBB among public sector organisations. Simultaneously, the current trends and issues in PBB practices were also identified. This study uses a systematic approach (ATLAS.ti software) to identify important trends and challenges in the PBB research. Thematic analysis is a rare technique in systematic PBB literature reviews to provide a more

comprehensive picture of the existing trends and issues. Furthermore, the Scopus and Web of Science (WoS) databases were employed to select the primary documents. A total of 95 journal articles were determined in the initial stage, with only 61 retained as final documents for subsequent reviews following the inclusion, exclusion, and duplication removal process. Three (3) key themes related to PBB issues and challenges were pinpointed, namely budget practices, implementation, and use of performance information. The findings can guide policymakers, budgetary practitioners, and key stakeholders globally to resolve the ambiguous areas of PBB practices, especially to align existing budgetary practices to PBB and promote higher performance information utilisation among public sector stakeholders and government officials. The findings would also benefit future studies and aid future researchers in the current topic and context by identifying research gaps and suggesting potential directions.

## 2.0 Materials and Methodology

The current study employed a thematic analysis procedure in the literature review and the term ‘thematic review’ using ATLAS.ti 22 software (Zairul, 2020). The thematic analysis identifies patterns and constructs themes related to the current PBB trends and issues among public sector organisations (Clarke & Braun, 2013). The next step is to identify the patterns and form categories in order to understand the current trends and issues of performance budgeting in public sector organization. Literature selection was performed according to selected inclusion criteria encompassing 1) publication years from 2018 to 2023, 2) containing at least the keyword(s) of performance budget, performance-based budget or outcome-based budget, or outcome budget, or result-based budget, and 3) focusing on performance budget trends and issues in public sector organisations. The publication years between 2018 and 2023 were selected to capture the recent PBB studies and leverage a surge in research for rich data analysis, which offered a rich data source for analyses and valuable insights. In addition, articles in English were selected as English is a universal language understood by most researchers. The decision to limit subject areas and document types with full paper available was made to clearly define the current trends and issues among other scholars.

**Table 1: Search Strings from the Scopus and WoS Databases**

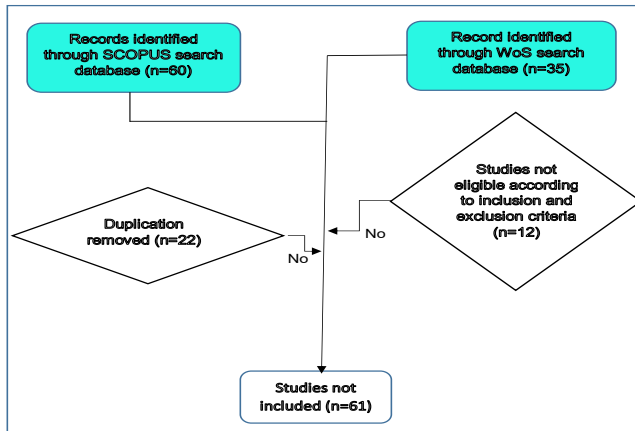
Database	Process/ Method	Results
Scopus	TITLE-ABS-KEY ( ( "performance budget*" OR "performance-based budget*" OR "outcome-based budget*" OR "outcome budget*" OR "result-based budget*" ) ) AND PUBYEAR > 2017 AND ( LIMIT-TO ( PUBSTAGE, "final" ) ) AND ( LIMIT-TO ( SUBJAREA, "BUSI" ) OR LIMIT-TO ( SUBJAREA, "ECON" ) ) AND ( LIMIT-TO ( DOCTYPE, "ar" ) OR LIMIT-TO ( DOCTYPE, "cp" ) ) AND ( LIMIT-TO ( LANGUAGE, "English" ) )	60 documents
<b>Year: 2018 – 2023</b>		



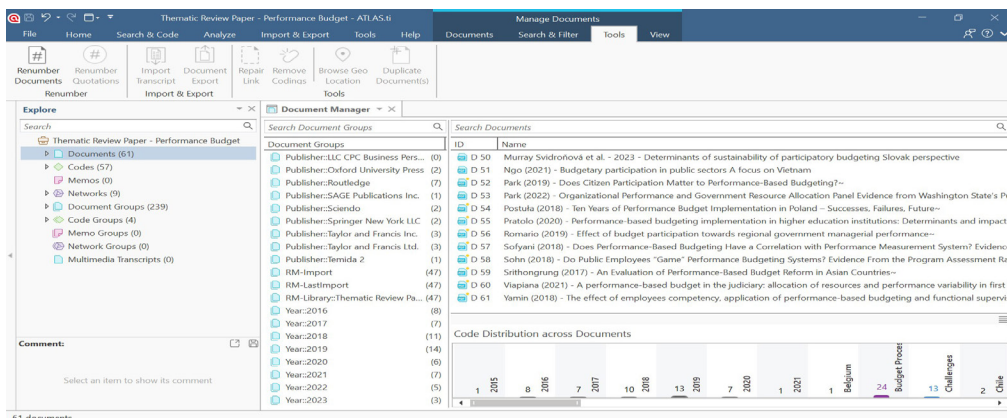
**Table 1: Search Strings from the Scopus and WoS Databases (continued)**

Database	Process/ Method	Results
Web of Science (WoS)	TI=(("performance budget*" OR "performance-based budget*" OR "outcome-based budget*" OR "outcome budget*" OR "result-based budget*")) and Article or Proceeding Paper or Review Article (Document Types) and 2018 or 2019 or 2020 or 2021 or 2022 or 2023 (Publication Years) and Article or Review Article or Proceeding Paper or Book Chapters (Document Types) and English (Languages) and Public Administration or Business Economics or Environmental Sciences Ecology or Operations Research Management Science or Education Educational Research or Government Law or Social Sciences Other Topics (Research Areas) and Early Access (Exclude – Document Types) and Article (Document Types)	35 documents
<b>Year: 2018 – 2023</b>		

While significant growth in available data sources and bibliographic metrics has been observed over the past decade, the WoS and Scopus databases remain the primary and most popular sources owing to the complete publication metadata and impact indicators. Therefore, both databases serve as significant tools for various tasks ranging from journal and literature selection or personal career tracking to large-scale bibliometric analyses and research assessment practices at all possible levels. Both databases offer broad coverage of high-quality journals and additional analysis tools for swift publication journals and citations across various disciplines. The initial searches produced 60 related documents from the Scopus database and 35 documents from the WoS database, spanning from 2018 to December 2023. However, 22 documents from the WoS database were excluded due to overlapping articles between the two (2) databases. Another 12 documents were removed due to the irrelevance to PBB, the study scope not covering public sector organisations, incomplete metadata, inaccessible full articles, and anecdotes or PBB trends and issues not being discussed. Resultantly, only 61 articles were reviewed after the inclusion, exclusion, and duplication process. Figure 2 illustrates the entire inclusion and exclusion process for the thematic review, as indicated by Zairul's (2020) flow chart. The final 61 articles were uploaded to the ATLAS.ti 22 software as the primary documents, with each paper grouped based on 1) the author, 2) issue number, 3) periodic, 4) publishers, 5) volume, and 6) publication year (see Figure 3). Discussion patterns were analysed according to the publication year.



**Figure 2: Inclusion and Exclusion Criteria in the Thematic Review**  
 Source: Authors own creation



**Figure 3: ATLAS.ti Document Groups**  
 Source: Authors own creation

### 3.0 Literature Gaps

Two (2) published documents conducted the review of PBB studies among public sector organisations from 2018 to November 2023. Particularly, Musso and Weare (2020) reviewed existing PBB studies on transaction-cost analysis of incentive intensity in performance regimes. Conversely, Ho (2018) reviewed the PBB theory and corresponding practices. Nevertheless, previous scholars investigating the PBB subtopic did not comprehensively analyse the current trends and issues. None of the prior PBB studies conducted the literature review by applying the thematic analysis technique to identify recurring themes. Hence, the present study serves as the first systematic literature review employing the thematic analysis technique (2018-2023), which provides an alternative perspective and unique insights to acquire a deeper PBB understanding in the current public sector landscape. The present findings would also aid future academicians in determining the potential study area to focus on. Table 2 depicts the two (2) previous systematic PBB literature reviews.

**Table 2: The Two Previous Systematic PBB Literature Reviews**

Author	Article Title	Publication Year
Musso J.A.; Weare C.	Performance Management Goldilocks Style: A Transaction Cost Analysis of Incentive Intensity in Performance Regimes	2020
Ho A.T.-K.	From Performance Budgeting to Performance Budget Management: Theory and Practice	2018

## 4.0 Results and Discussion

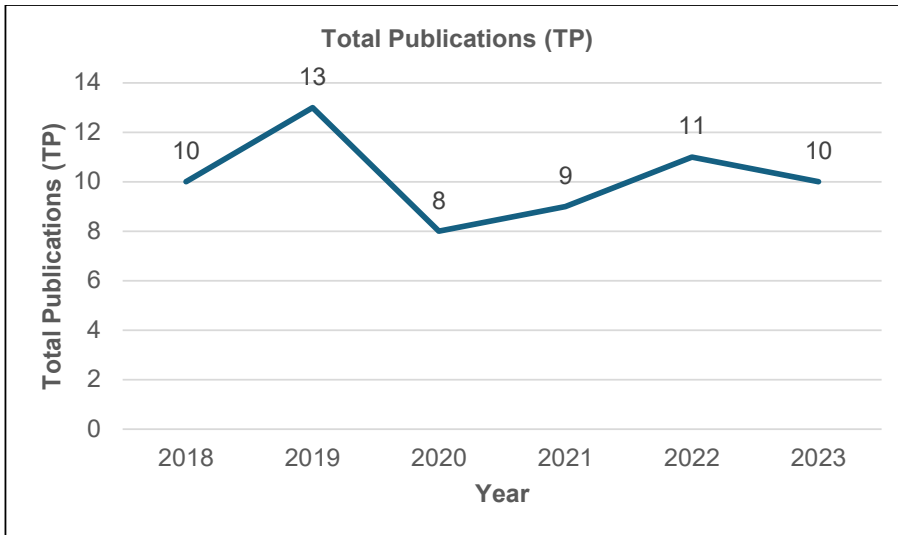
The current section presents the descriptive analysis of primary documents from the selected databases in the study period to answer the first research question related to the current trends of PBB publications, geographical dispersal, and prominent source titles. The analysis also answered the second research question about the trends of the research setting, employed methodology, and prominent theory applied to PBB studies from 2018 to 2023. Moreover, the co-occurrence author's keywords analysis was performed to discuss the current trends and issues on the primary topic and subtopics to answer the third research question. Research Question 4 was answered by assessing and developing the final themes after pinpointing the major themes involving the current trends and issues in PBB studies in the literature between 2018 and 2023.

### 4.1 Descriptive Analysis

This subsection describes the descriptive analysis of the trends in PBB studies within public sector organisations. The analysis commenced by evaluating the total trends of PBB publications by year, followed by the top 10 countries of affiliation and the prominent source titles in the PBB studies field based on the study domain and study period. Subsequently, the popular research setting in the study area was investigated, and the methodologies employed by prior scholars were highlighted. The primary theories applied by past researchers in the PBB study area were also discussed and presented.

#### 4.1.1 Publications

The average number of PBB publications within the public sector organisations from 2018 to 2023 is 10 articles. Figure 4 demonstrates that the total publications in the study area slightly increased from 10 to 13 from 2018 to 2019, although the number decreased to eight (8) in 2020. The total number of publications in 2020 was the lowest throughout the study period. Conversely, the total number of publications gradually increased from 2020 to 2023, with 11 documents published in 2022 and 10 in 2023. The analysis was according to the extraction date of articles from the selected database (3rd November 2023). The decrease in the PBB study from 2019 to 2020 could be due to the coronavirus disease (COVID-19) outbreaks, which significantly impacted the academic world tremendously from 2020 to 2022. The results posited that PBB discussions related to the performance budget among scholars peaked in 2019 before the COVID-19 pandemic. Figure 4 also portrays that PBB studies have continuously highlighted relevant issues across public sector organisations, which postulates that this area remains relevant and pertinent among researchers.



**Figure 4: Total Publications by Year**

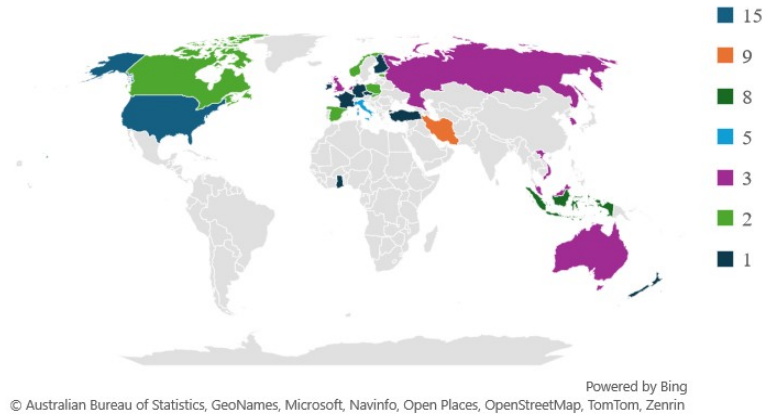
Source: Authors own creation

#### 4.1.2 Country

The analysis of countries based on the authors' affiliation was conducted. Figure 5 depicts the geographical dispersal of previous PBB studies. According to Clark et al. (2017), PBB adoption was initiated from 1985 to 1995 before experiencing rapid growth during the subsequent 15 years. The leading pioneer innovators included four (4) Western nations, namely the United States of America (USA), Canada, Australia, and New Zealand. Table 3 also demonstrates that the USA constantly publishes PBB studies, which is the country with the most publications. The results also revealed that the PBB topic from 2018 to 2023 became the focus of Asian countries, such as Iran, Indonesia, Malaysia, Korea, and Vietnam. The trend could be attributed to the diffusion of the NPM and the budgetary system reform in developing countries (Srithongrung, 2018). Nonetheless, the budgetary reform encounters institutional issues and challenges, which would significantly influence the effectiveness and success of the PBB implementation (Mauro et al., 2018). Additionally, part of the research context conducted in Indonesia pertained to budgetary practices, performance, and PBB implementation, with PBB being implemented across Indonesian government agencies for over a decade. According to Marsus and Mas'udin (2020), Indonesian PBB implementation has not delivered satisfactory results, and Indonesian government agencies have continuously experienced challenges and issues for over a decade. The PBB implementation has also not transformed and positively impacted the budgetary practices across public sector organisations in Asian countries (Srithongrung, 2018).

Studies from developed countries, such as Italy, Australia, Netherlands, Russia, and the UK, were generally used as a reference among researchers from other nations. While Malaysia was one of the top 10 countries actively contributing to the study area, none of the study scopes was focused on Malaysian public sector organisations. The three (3) latest Malaysian studies concentrated on public universities in China (Liyang & Ismail, 2023) and the highest educational level in Indonesia (Sofyani et al., 2023). Generally, PBB leads to temporary changes in the

spending scale of certain programmes. Nonetheless, the changes are not permanent owing to no significant restructuring in the baseline budget (Srithongrung, 2018). The circumstance suggests further investigations are required on the issues related to PBB implementation and the critical success factors among government agencies (Pratolo et al., 2020), particularly in developing countries like Malaysia.



**Figure 5: Geographical Dispersal**

Source: Authors own creation

**Table 3: The List of Publication Countries**

Country	Total Publication (TP)	Percentage (%)
USA	15	18
Iran	9	11
Indonesia	8	10
Italy	5	6
Australia	3	4
Malaysia	3	4
Netherlands	3	4
Russian Federation	3	4
South Korea	3	4
United Kingdom	3	4
Vietnam	3	4

#### 4.1.3 Source Title

Table 4 demonstrates the top 10 most active source titles across various PBB studies based on the study period and selected databases. Multiple PBB publications have garnered significant traction among academicians, primarily in the fields of accounting, financial management, corporate management, and public administration. The PBB topic has also attracted interest from other sources, such as scientific and technology research. Specifically, the Journal of Public Budgeting Accounting and Financial Management is the top source title, with five (5)

articles published during the study period. Mauro et al. (2019) examined the role played by key organisational actors in PBB practices. Similarly, Jalali Aliabadi et al. (2019) explored the underlying factors for PBB implementation failure in public sector organisations by focusing on the actors participating in the budget processes and respective perceptions. Comparatively, Ellul and Hodges (2019) assessed the pre-adoption phase of PBB implementation by analysing the introduction and use of performance information in budgeting from the politicians' and civil servants' perspectives. Viapiana (2021) also concentrated on the effect of the criteria adopted on resource allocation and performance variability by public sector organisations, while Budding, Faber, and Schoute (2022) explored non-performance indicators and integrated budget documents. Meanwhile, publications in other sources, such as Public Money and Management, focused on the use of performance information in PBB practices (Jethon & Reichard, 2022; Raudla, 2022; Raudla & Bur, 2023) and examined the policy control in PBB (Fitz Verploegh et al., 2023). Jeong and Oh (2019) also appraised the development of integrated financial management information systems on PBB.

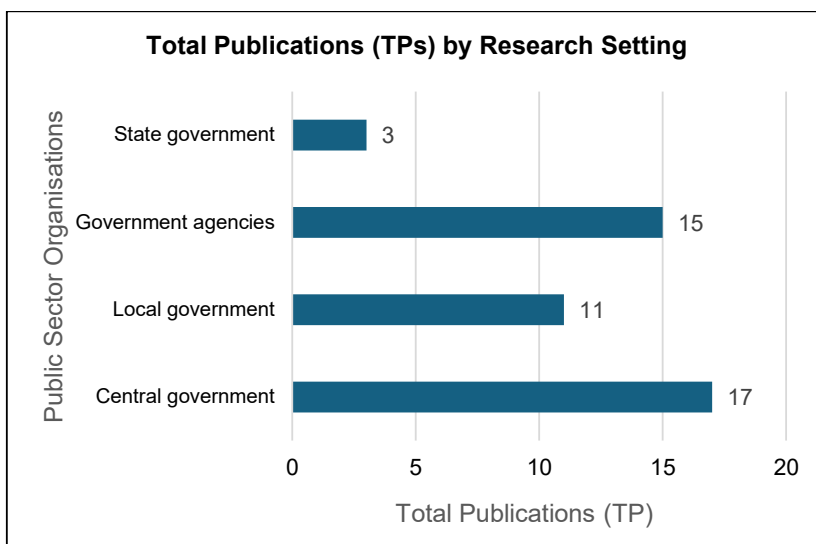
**Table 4: The List of Most Active Source Titles**

Source Title	Total Publication (TP)	Percentage (%)
Journal of Public Budgeting Accounting and Financial Management	5	8
Public Money and Management	5	8
Public Performance and Management Review	4	7
International Journal of Public Administration	2	3
International Journal of Scientific and Technology Research	2	3
Public Administration Review	2	3
Public Budgeting and Finance	2	3
Qualitative Research in Accounting and Management	2	3
Accounting Auditing and Accountability Journal	1	2
Administrative Sciences	1	2

#### 4.1.4 Research Setting

Public sector organisations in most countries are generally structured into four (4) tiers, including the central government, state government, local government, and government agencies. Numerous research settings have emerged for PBB studies, as depicted in Figure 6. Past literature reviews revealed that the PBB topic in the central government was most explored from 2018 to 2019, which contributed to 37% of the total publications (Clark et al., 2017; Grossi et al., 2018; Mauro et al., 2018; Mauro et al., 2019; Martí, 2019). Research in the Central Government settings continues to catch scholars' interest, where 37% of the documents fall under this scope. Nevertheless, the trend altered when the topic was evaluated in the context of government agencies, such as public universities, the healthcare sector, and

higher educational institutions, which accounted for 33% in 2021 (Pratolo et al., 2020; Jalali Aliabadi, 2021; Viapiana, 2021; Decker et al., 2023) while 24% of the publications were related to the local government (e.g., Sofyani, 2018; Yamin & Ishak, 2018; Park, 2019). Meanwhile, only 6% were associated with the state government (Jang et al., 2021), whereas a total of 15 articles examined public sector organisations without specific tiers in the research setting. The most discussed topic regarding the central government was PBB implementation, which underscored the difficulties experienced by government officials in transitioning PBB theories into actual practices. In addition, government agencies encountered challenges from a multi-dimensional institutional framework (Ho, 2018). There are 15 documents focusing on the public sector organization as a general without specific tiers in their research setting. However, the study's scope meets the current study's inclusion criteria. The trend analysis disclosed that the study context has gradually evolved, which addressed the issues and challenges within the public sector organizations.



**Figure 6: Total Publications by Research Setting**

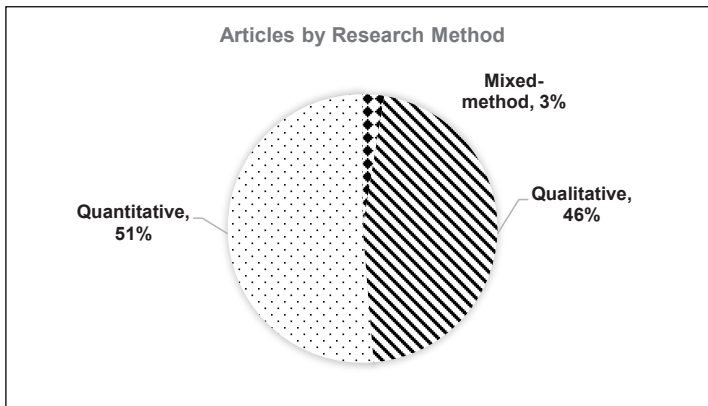
Source: Authors own creation

#### 4.1.5 Methodology

Figure 7 illustrates the methodologies employed in the selected articles, wherein 51% applied quantitative approaches, followed by 46% utilising qualitative methods, and the remaining 3% employed the mixed method. Quantitative content analysis was the most popular approach when analysing performance (Park, 2022; He & Ismail, 2023) due to the structured method for quantifying qualitative or interpretative data concisely and understandably in a highly repeatable format (Liyang & Ismail, 2023). Additionally, the approach provides additional support in generalising the findings to a significant portion of the population despite collecting data from a relatively limited sample size. The quantitative methodology is also comparatively straightforward due to its inherent advantage in terms of objectivity compared to qualitative methods (Leavy, 2022). Thus, quantitative content analysis is an appropriate technique for measuring PBB to evaluate different performance levels. Certain scholars applied quantitative methods by distributing questionnaires to obtain respondents' perceptions of budget



participation (Junita et al., 2018) and the role of employees' competency on PBB implementation and success (Yamin & Ishak, 2018) while simultaneously constructing pertinent measurement instruments to assess the budget reform (Ellul & Hodges, 2019). Furthermore, the qualitative approach was discovered to be the second most frequently utilised methodology used by researchers in the study area of PBB (Clark et al., 2017; Grossi et al., 2018; Kholeif & Jack, 2019). Nonetheless, the present study revealed a scarcity of PBB studies that used mixed methods due to methodological challenges, established research practices, and preference for single methods perceived as more reliable and providing sufficient insights.



**Figure 7: Employed Methodologies in Previous PBB Studies**

Source: Authors own creation

#### 4.1.6 Theory

The results indicated that the institutional theory was the most popular across various PBB studies from 2018 to 2023. The results were also supported by prior study findings demonstrating the prominence of the theory in management accounting (Ribeiro & Scapens, 2006; Van Helden et al., 2008; Modell, 2009). The Institutional theory framework has been frequently employed to identify potential contributing factors that might influence and promote the introduction of PBB and lead to a future positive decision on PBB adoption among public sector organisations (Ellul & Hodges, 2019). The goal-setting theory is also frequently applied by PBB scholars (Locke et al., 1981), which posits that organisational goal-setting significantly influences performance and highlights the significance between goal-setting and performance outcomes (Sofyani, 2018). Pratolo et al. (2020) applied the theory to delineate the relationship between PBB implementation and higher educational institutional (HEI) quality. Meanwhile, Locke's goal-setting theory elucidates that the characteristics of budgetary goals can develop employee motivation and improve performance (Le & Nguyen, 2020), which suggests that budget involvement will increase employee commitment to budget targets or organisational performance objectives (Junita et al., 2018). Other theories, including grounded theory (Jalali Aliabadi et al., 2021), structuration theory (Kholeif & Jack, 2019), and resource dependency theory (He & Ismail, 2023) were among the top five (5) theoretical frameworks (see Table 5).



**Table 5: The Top Five Theories**

Theory	Total	Percentage (%)
Institutional Theory	8	23%
Goal Setting Theory	4	11%
Grounded Theory	3	9%
Structuration Theory	2	6%
Resource Dependency Theory	2	6%

#### 4.2 Co-Occurrence Author Keyword Analysis

In this subsection, the co-occurrence author keyword analysis was performed to answer the third research question: “What are the current trends and issues discussed by the scholars on the topics and subtopics of the PBB studies field in the literature from 2018 to 2023?”. The word cloud was generated from the ATLAS.ti 22 software to determine the most frequently employed terms from articles between 2018 and 2023. Subsequently, the VOS-viewer software was utilised to map the authors’ keywords and conduct a co-occurrence analysis to reveal clusters.

##### 4.2.1 World Cloud

Figure 8 depicts the word cloud generated from 61 primary documents uploaded to the ATLAS.ti software. The results demonstrated the frequency of employed terms, with the popular terms as performance, budgeting, public, budget, and management. Other relevant words universally used in articles associated with the PBB issues were implementation, information, process, accounting, policy, use, accountability, practice, reform, organisational, political, institutional, budgetary, change, actors, and practice. All these words are discussed further according to the themes.



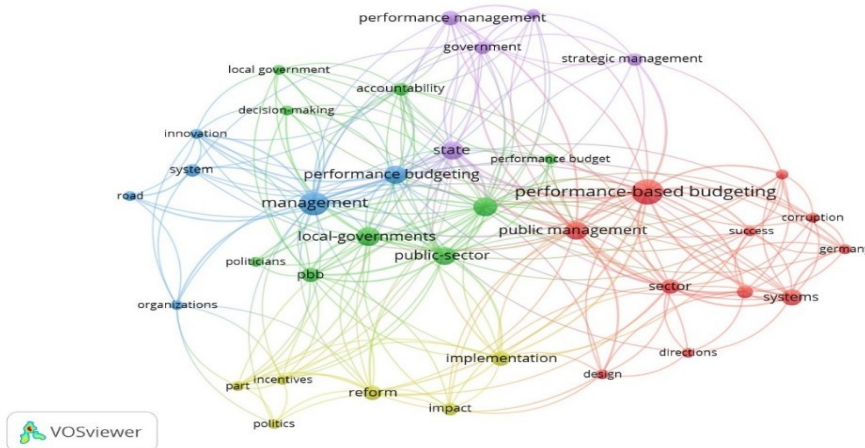
**Figure 8: World Cloud Generated from ATLAS.ti**

Source: Authors own creation

#### 4.2.2 Primary PBB Topics and Subtopics in Public Sector Organisations

Next, the main topic and subtopics within the PBB studies in public sector organizations were analyzed. Figure 9 portrays a network visualisation of the authors' keywords through colours, square sizes, and line thickness to represent the connection and relationships with other keywords. Keywords with the same colour were grouped based on the relationships. For example, reform, impact, incentives, and politics frequently co-occurred and highly correlated to implementation, which were grouped and represented in yellow. The current study discovered and categorised five (5) clusters into respective colours (see Figure 9). The most frequent author keywords were included in Clusters 1, 2, and 3. The results and keyword appearances in each cluster are also listed in Table 6. While overlapping keywords existed within the evolving cluster, the clusters could be defined in a broader context. Cluster 1 (red) is a cluster involving PBB, which strongly correlates with the NPM, public sector, public management, design, corruption, and success (Alsharari, 2022; Balážová et al., 2022; Mauro et al., 2021; Savignon et al., 2019; Mauro et al., 2018). Cluster 2 (green) comprises accountability highly associated with the performance budget, local government, public sector, decision-making, information, and politicians (Decker et al., 2023; Raudla & Bur, 2023; Viapiana, 2021; Aleksandrov et al., 2020; Sofyani, 2018).

Cluster 3 (blue) encompasses the relationship between performance budget, innovation, management, organisations, and systems (Balážová et al., 2022; Flink, 2019; Hijal-Moghrabi, 2019) while Cluster 4 (yellow) comprises reform and implementation linked with impact, incentives, and politics (Haliah, 2021; Mauro et al., 2021; Aleksandrov et al., 2020; Musso & Weare, 2020). Cluster 5 (purple) contains performance management connected with government, state, and strategic management (Ohemeng et al., 2022; Musso & Weare, 2020; Savignon et al., 2019). The emergence of the five clusters represented the primary PBB trends among public sector organisations. Nevertheless, co-occurrence analysis did not provide definitive distinctions between the discussion subtopics. The list of authors' keywords could enhance the comprehension of PBB studies in public sector organisations by providing a deeper of the study area.



**Figure 9: The Author Keyword Co-occurrence Network**

Source: Authors own creation

**Table 6: The Five Primary Clusters and List of Authors' Keywords**

Cluster	Keywords
Cluster 1 (Red)	Corruption, design, directions, NPM, PBB, public management, public sector, success, systems
Cluster 2 (Green)	Accountability, decision-making, information, local government, PBB, performance budget, politicians, public sector
Cluster 3 (Blue)	Innovation, management, organisations, performance budgeting, system
Cluster 4 (Yellow)	Impact, implementation, incentives, politics, reform, success
Cluster 5 (Purple)	Future, government, performance management, state, strategic management

Even though there is confirmation of overlapping keywords within the evolving cluster, these clusters may still be defined in a broader context. Cluster 1 (red) is a cluster involving performance-based budgeting (PBB), which firmly correlates with New Public Management (NPM), public sector, public management, design, corruption, and success (Balážová et al., 2022; Alsharari, 2022; Mauro et al., 2021; Savignon et al., 2019; Mauro et al., 2018). Cluster 2 (green) comprises accountability that strongly connects with the performance budget, local government, public sector, decision-making, information, and politicians (Raudla & Bur, 2023; Decker et al., 2023; Aleksandrov et al., 2020; Viapiana, 2021; Sofyani, 2018). Cluster 3 (blue) involves the relationship between performance budget, innovation, management, organizations, and systems (Balážová et al., 2022; Hijal-Moghrabi, 2019; Flink, 2019). Cluster 4 (yellow) comprises reform and implementation linked with impact, incentives, and politics (Mauro et al., 2021; Haliah, 2021; Aleksandrov et al., 2020; Musso & Weare, 2020). Finally, Cluster 5 (purple) contains performance management connected with government, state, and strategic management (Ohemeng et al., 2022; Musso & Weare, 2020; Savignon et al., 2019).

The emergence of five (5) clusters showed the main trends in the study field of PBB in public sector organizations. The frequently used words generated from ATLAS.ti 22 related to the PBB issues are implementation, information, process, accounting, policy, use, accountability, practice, reform, organizational, political, institutional, budgetary, change, actors, and practice. These frequently used words by the scholars supported the list of clusters and are interrelated. Nevertheless, it is essential to highlight that co-occurrence analysis does not give definitive distinctions between the discussion subtopics. Thus, the list of authors' keywords enhances comprehension of the PBB studies in public sector organizations by providing a more intense understanding of the study area.

### 4.3 Thematic Analysis

The evolving clusters from co-occurrence author keyword analysis and most frequently employed terms from the word cloud were integrated and synchronised to develop final themes. The emerging final themes were subsequently analysed and discussed to answer Research Question 4: What are the main themes involving the current trends and issues in PBB studies in the literature from 2018 to 2023?

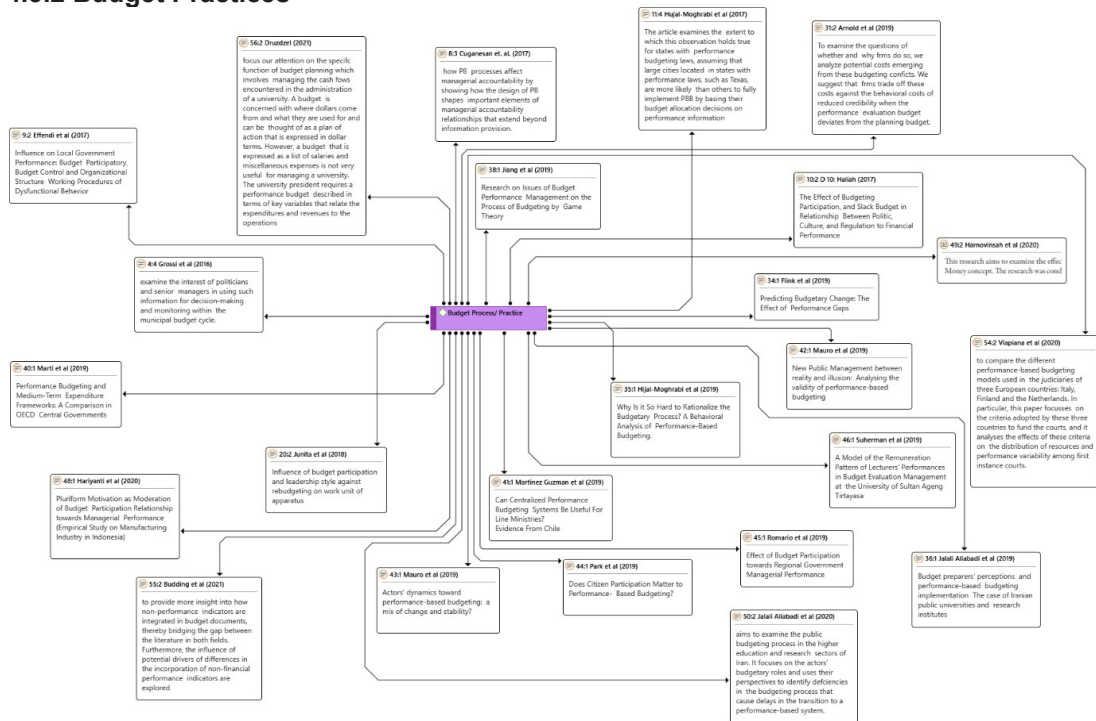
### 4.3.1 Final Themes and Sub-Themes

The final themes were formulated based on the emerged cluster groups, co-occurrence authors' keyword networks, and literature review from 61 primary articles within the study period. A total of 15 sub-themes were also pinpointed and grouped according to the three (3) final emerging themes. The three (3) final themes consisted of budget practices, implementation, and use of performance information. The first theme was related to actors, budgetary processes, decision-making, and policy, whereas the second theme was associated with the impact of reforms, resistance to change, political interference, information systems, organisational performance, and success. The third theme was connected to accountability, culture, actor dynamics, resistance to use, and institutional barriers. Table 7 summarises the three (3) final themes on the current PBB trends and issues among public sector organisations.

**Table 7: The Three Final Themes of the Current PBB Trends and Issues**

Theme	Sub-Theme
Budget Practices	Actors, budgetary processes, decision-making, policy
Implementation	Impact of reform, resistance to change, political interference, information system, organisational performance, success
Use of Performance Information	Culture, accountability, actor dynamic, resistance to use, institutional barriers

### 4.3.2 Budget Practices



**Figure 10: The Network of the First Theme (Budget Practices)**

Source: Authors own creation

The PBB objective is to improve budget practices by enhancing the allocation of resources, improving the efficiency and effectiveness of government agencies in managing budgets and public spending, improving the decision-making process, achieving the cost-saving target, and strengthening transparency and accountability. The PBB implementation process would temporarily impact the expenditure for certain programmes but not permanently alter the budget structure (Srithongrung, 2018). Budget practices were one of the popular PBB topics (Jang, 2021; Ho, 2018). This study discovered that the theme was highly connected to the actors, budgetary processes, decision-making processes, and policy based on existing PBB studies (Fitz Verploegh et al., 2023; Raudla, 2022; Jalali Aliabadi et al., 2021, 2019; Martínez-Guzmán, 2020; Hijal-Moghrabi, 2019; Mauro et al., 2018). Jalali Aliabadi et al. (2019) explicated that the focus on budgetary processes is critical for public sector organisations as a lack of strong connection between the regulated and budgetary processes would lead to budgetary slack, which hinders the legitimate information flow and PBB implementation. The significance of budgeting and involved individuals' perspectives should also be considered while comprehending the intricacies of the budgeting process and the evolution of budgetary procedures (Jalali Aliabadi et al., 2019). Therefore, every individual in the organisation is responsible for ensuring that every budget item is successful and accountable for every component of the budgetary process (Mauro et al., 2019). Contrarily, Hijal-Moghrabi (2019) stated that budgetary decisions in the budgetary process are the output of interactions among the external and internal organisational actors without following a linear path. The presence of nonlinearity accounts for the difficulty in rationalising the budgetary process (Hijal-Moghrabi, 2019). Sohn and Bae (2018) also highlighted that PBB practices in public sector organisations compel government officials to participate in "gaming" behaviours in budgetary processes.

The PBB is recognised for assisting organisations in enhancing decision-making processes. Several efforts have been performed to rationalise the government's budgetary decision-making process since the mid-20th century. Nevertheless, Hijal-Moghrabi (2019) delineated that most efforts were either incomplete or a failure, which postulated that budget participation involved is essential to inform decision-making and employee involvement in decision-making is vital when the budgetary decision-making process is complex (Mauro et al., 2019). According to Flink (2019), decision-making is not only based on the PBB framework but also performance gaps. Nonetheless, public managers possess limited decision-making authority (organisational constraints) in developing countries due to political interference. Likewise, Mauro et al. (2019) argued that political, legislative, and organisational involvement renders the benefits of PBB to be ineffective. Meanwhile, Park (2019) recommended that budget decisions cannot be dominated by professionals but are required to merge with citizen inputs. The efficiency of PBB practices also depends on the actors' interplay within the institutional processes, although different internal perceptions and practices with similar external pressures would significantly impact relevant processes (Jalali Aliabadi et al., 2019; Mauro et al., 2018). Various interests, values, and perceptions of actors within the organisation would lead to significant variations in PBB implementation and internalisation. Mauro et al. (2018) elucidated that the alignment of external pressures and internal dynamics would ensure the resolution of a continuous institutionalisation process on PBB implementation. Furthermore, Jalali Aliabadi et al. (2019) emphasised that understanding the interaction between different actors in institutional activities is crucial to understanding different goal attainment approaches and corresponding influences on budgetary reforms in public sector organizations. Nonetheless, inadequate mutual reinforcement across different organisational levels will impede PBB implementation, which posits that in public sector organizations. Hence, in the context of establishing budgetary



norms in PBB, the public sector organisations should develop mutual strategies for change to mitigate the resistance from different actors involved (Jalali Aliabadi et al., 2021).

The institutional structure associated with the policy formulation influences changes in budgetary practices through varying friction degrees in the process due to the accumulation of pressure in the policy system (Flink, 2019). More effective leadership skills are essential to resolving the shortcomings and ambiguities of alternative budgeting rules and processes in the organisation. The actors involved in implementing PBB are also required to possess a clear understanding of the alternative budgetary policy and sufficient competencies and skills in implementing PBB practices and processes. According to Alkaraan (2018), sound performance management in budgeting is assessed through competencies and leadership skills. Hijal-Maghrabi (2019) also contended that a budget encompasses not only numbers but also serves as a fiscal plan that determines and details the government's priorities, which shapes how revenues are utilised for a specific fiscal year. A budget also functions as a strategic plan, a statement of preferences, and a document of political economy. In addition, a budget reflects the attitudes, ideologies, and preferences of dominant power elites (Hijal-Maghrabi, 2019). Jalali Aliabadi et al. (2019) also explicated that government officials' attitudes and perspectives towards PBB practices in public sector organisations are pivotal to addressing any losses caused by internal, external, and behavioural factors. Therefore, more studies on organisational actors' behaviours and participation towards PBB practices are integral when relevant subtopics are limited, and further studies are needed to enhance the understanding of the PBB studies in public sector organizations.

### 4.3.3 Implementation

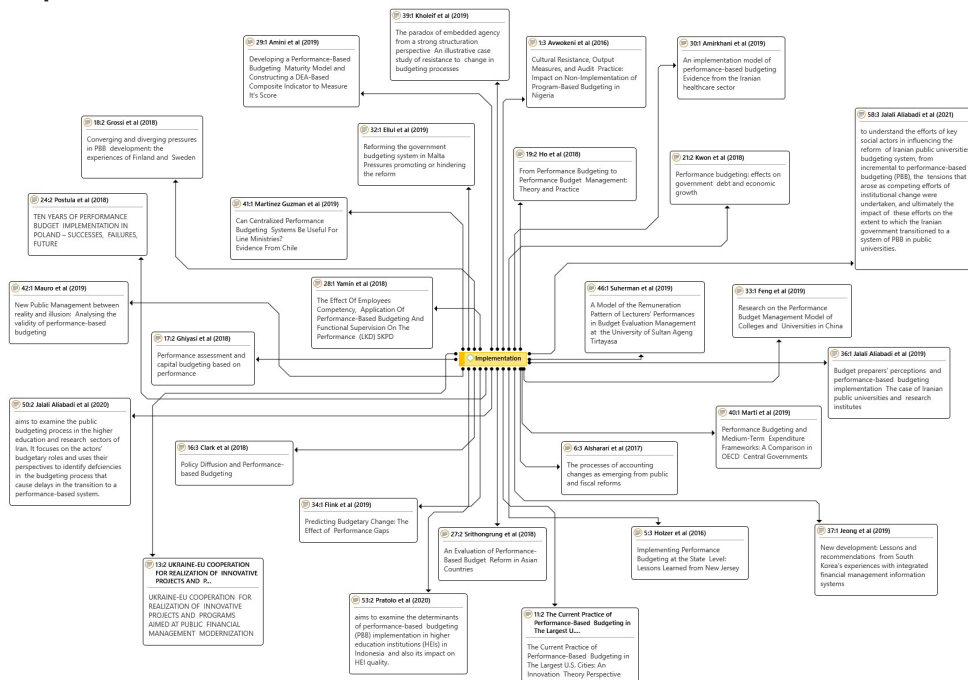


Figure 11: The Network of the Second Theme (Implementation)

Source: Authors own creation

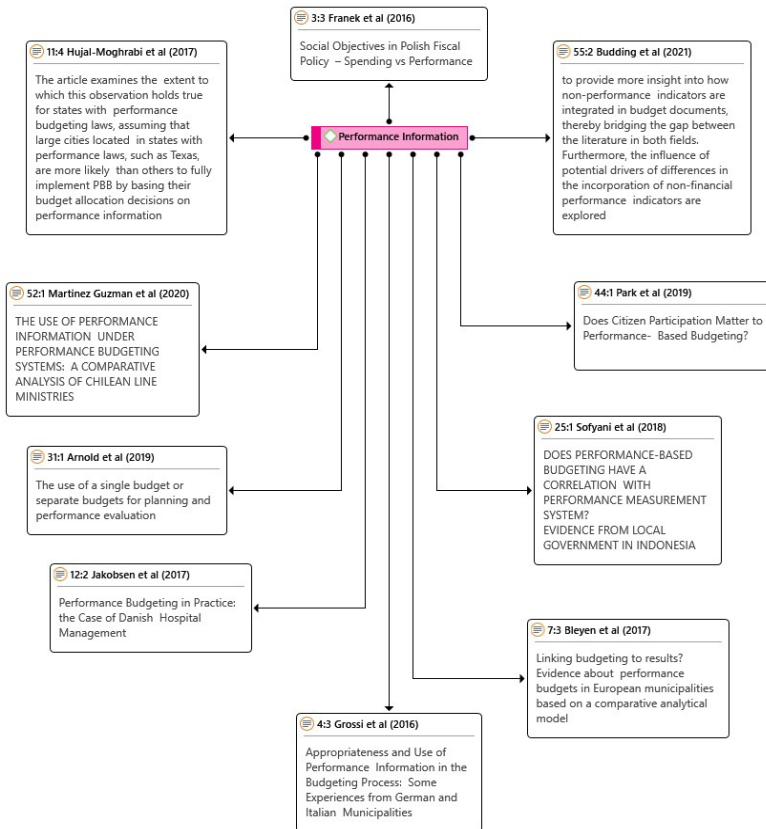
The budgeting system is consistently the subject of major reform in public sector organisations to ensure that relevant practices and policies are aligned with international best practices (Alsharari, 2022). Previous researchers demonstrated various issues and challenges during the PBB adoption and implementation phases among public sector organisations. Numerous studies have emphasised the issues associated with external pressures, particularly from international institutions, such as the World Bank and the International Monetary Fund (Marsus & Mas'udin, 2020; Kholeif & Jack, 2019; Mauro et al., 2018; Sofyani, 2018). Public sector organisations receiving significant influences from international institutions would be compelled (coercive pressures) to adopt and emulate PBB practices in the budgetary system in less prepared circumstances (Alsharari, 2022; Jang et al., 2021; Mauro et al., 2018; Sofyani, 2018). In addition, PBB implementation requires support from top management (He & Ismail, 2023; Bandiyono & Al Fikri, 2020) and involvement and support from all organisational actors (Haliah, 2021; Park, 2019; Junita et al., 2018) to ensure efficient public spending and organisational performance. Likewise, the availability of the latest technologies and information systems is also essential to support the PBB reform (Sofyani, 2018). Meanwhile, resistance to change (Jalali Aliabadi et al., 2021; Mauro et al., 2019) and reform (Srithongrung, 2018) are among the notable issues examined in the PBB implementation studies area. Martínez Guzmán (2020) revealed that one of the major impediments to the PBB implementation was the absence of support from certain key stakeholders (political). The acceptance of PBB implementation also varied among government officials. Certain actors were voluntarily involved in the reform process, whereas other counterparts resisted changes (Handayani et al., 2023; Kholeif & Jack, 2019; Mauro et al., 2019).

Past scholars underscored the obstacles that caused delays in the transition to a PBB system (Jalali Aliabadi et al., 2021; Holzer et al., 2016). Therefore, the budgetary roles and perception (Jalali Aliabadi et al., 2020) are crucial to identify deficiencies in the budgeting process that delay the PBB transition among public sector organisations. Cultural issues (Ho, 2018), the effect of political interference, and the mimetic forces from other organisations (Ellul & Hodges, 2019) were also significant issues that negatively impacted the effectiveness of PBB implementation. Meanwhile, Huy and Phuc (2022) aimed to adopt PBB during the COVID-19 pandemic and focused on the critical success factors (CSFs) of government officials' behavioural intentions. While the legislation influences the effectiveness of the alternative budget system structure in multiple countries, the legislation does not guarantee that the PBB will be fully implemented according to the established law and guidelines (Grossi et al., 2018). Nevertheless, Prikhodchenko et al. (2018) argued that the policy development and legislation in PBB implementation necessitate synthesising international and domestic experiences, which propounds that the policy and legislation are vital to improving the efficiency of budget planning among public sector organisations (Jang et al., 2021; Clark et al., 2017; Ho, 2018).

Jalali Aliabadi et al. (2021) delineated that PBB in public sector organisations has only achieved minimal success as incremental budgeting or traditional budget practices remain prevalent in the budget allocation formula and processes. Legislative participation from internal and external audits is also essential to ensure the efficiency and effectiveness of PBB practices and processes at the organisational level. The activities of the legislative body, such as performance audit, will aid in determining the effectiveness of PBB monitoring and evaluation mechanisms. Programme monitoring and evaluation elements are also equally essential to ensuring the effectiveness of PBB implementation (Feng, 2019; Martí, 2019; Ho, 2018; Postuła, 2018). Ho (2018) also emphasised that check-and-balance is one of the effective

mechanisms in the PBB monitoring process. Nonetheless, relevant PBB discourse is limited in terms of the effectiveness of PBB monitoring and evaluation and legislative participation, which necessitates a deeper understanding of PBB subtopics to ensure the success of PBB implementation.

### 4.3.4 Use of Performance Information



**Figure 12: The Network of the Third Theme (Performance Information)**

Source: Authors own creation

Performance information is a non-financial report and an integral tool in different public management phases and concepts (Grossi et al., 2016). The performance information systematically informs performance budgeting and offers indirect linkages between the budget allocation and targeted results (Grossi et al., 2016). Nevertheless, Kwon (2017) indicated no consensus on the effective approach to linking the performance information with the budget process and budget allocation (Kwon, 2017), owing to the nature of performance information in rationalising PBB (Hijal-Moghrabi, 2019). The utilisation of performance information in budgeting processes and practices remains minimal despite the extensive development and use of performance measures in budget presentations. While Sofyani (2018) highlighted that accountability would significantly influence the use of performance information as a practice for PPB, the budgetary processes and practices do not include performance



information in the PBB framework owing to organisational barriers (Ho, 2018; Hijal-Moghrabi, 2017). The reasons are limited knowledge and understanding of the PBB concept. The use of performance information in the PBB framework is also minimal among budget practitioners, who also perceive PBB in terms of outcomes and outputs of programmes funded through the budget as irrelevant during the budget process (Grossi et al., 2018; Ho, 2018). The scarcity of positive dynamics among budget practitioners also creates limitations and the full utilisation of performance information in the budgetary process and practice (Mauro et al., 2018). Resultantly, the limited use of performance information in budgetary processes and practices has rendered PBB implementation an ambiguous area with a certain resistance to corresponding changes (Mauro et al., 2019).

Efficacious performance information in the budgetary process and practice will improve the decision-making process. Ellul and Hodges (2019) elucidated that complete and comprehensive performance information will assist in appropriate decision-making, especially during budget preparation and budget execution. Contrastingly, Hijal-Moghrabi (2019) delineated that the budgetary decisions inherent in the political process are difficult to differentiate between the budget process and political authority, which does not support the use of performance information. Nonetheless, Grossi et al. (2016) argued that the reluctance to use performance information would dissipate after acquiring certain working experience with the new budget model and when the budget participants become familiar with the new budgetary system. Thus, continuous training and clarification on PBB will elevate the knowledge and understanding of relevant processes and practices. Contemporary discussions on how the performance information in PBB practices is effectively used and how the performance results link to the budgetary allocation decision-making remain scarce. The issue has become a critical topic and still represents an issue that needs further clarification.

## 5.0 Discussion

The PBB is a budgetary tool or system employed in various countries worldwide. International bodies, such as the World Bank and the International Monetary Fund (IMF), recommended public sector organisations adopt and implement PBB in the budgetary system (Budding et al., 2022; Mauro et al., 2019) as PBB is perceived to deliver the benefit of improving the efficiency and effectiveness of organisational and budgetary management. Like other reforms, PBB was implemented among public sector organisations and is expected to gradual and incremental changes to enhance public service and delivery. In addition, PBB implementation is significant as a modern budgetary system that aids in improving budget management efficiency, although ensuring effectiveness in PBB implementation is challenging (Hijal-Moghrabi, 2019). Hence, the present study conducted a thematic analysis of the primary articles related to PBB in public sector organisations. The thematic analysis contributed valuable insights into several crucial research questions, which assisted in grasping the evolving landscape of budgetary reform in public sector organisations, PBB implementation, and budget practices. Thematic analysis included descriptive and qualitative analyses. Descriptive analysis assessed the publication quantity, quality, geographical distribution, dissemination, and the global impact of PBB implementation in budget practices. The qualitative analysis examined the primary PBB topics and subtopics of PBB studies to identify patterns and construct relevant themes (Clarke & Braun, 2013).

The current PBB publication trend of PBB in public sector organizations indicated a steady increase over the years, with 61 articles published between 2018 and 2023. The annual growth rate of total publications remained relatively stable, with an average of 10 articles per year. The USA consistently contributed a significant number of studies, which exceeded other countries in terms of the publication volume. Notably, the PBB studies also garnered significant interest from Asian nations, including Iran, Indonesia, Malaysia, Korea, and Vietnam. The most active source title in PBB within public sector organizations was the *Journal of Public Budgeting Accounting and Financial Management* and *Public Money and Management*, with five (5) documents published by each journal, respectively. The second research question relates to the trends of the research setting, employed methodology, and prominent theories applied in the PBB studies area, which is vital to understanding the previous phenomenon, the scope of prior studies, research setting trends, and the interest area. The insight regarding the research setting is valuable for understanding the current knowledge state and pinpointing areas for further investigations. Particularly, the scope at the state government was limited (Park, 2022; Jang, 2021). The present study also revealed a scarcity of PBB studies employing mixed methods. Future researchers can focus on the state government and consider utilising the mixed method to increase the knowledge depth while improving the credibility and consistency of research findings. Future scholars may also explore different factors based on other theoretical frameworks to determine unexplored areas to ensure a conceptual understanding of PBB.

Moving to research question 3, a co-occurrence analysis of the authors' keywords revealed numerous prominent topics and subtopics that addressed the clusters related to PBB within public sector organisations. Understanding the emerging clusters is crucial to identifying the current PBB trends and issues, which would assist researchers in aligning further studies with the most pertinent issues to ensure relevance and contributions to the existing knowledge corpus. The topics and subtopics that received significant attention from scholars were NPM, success, accountability, performance, decision-making, information, politicians, innovation, organisations, systems, reform, implementation, impact, and incentives.

Finally, research question 4 develops the final themes based on emerging cluster groups and most frequently employed terms generated from the world cloud via the ATLAS.ti 22 software. The final themes were vital to gaining a deeper understanding of the patterns and issues associated with PBB in public sector organisations. A total of 15 sub-themes were discovered and categorised according to the three (3) final emerging themes. The three (3) final themes comprised (i) budget practices connected with actors, budgetary processes, decision-making, and policy, (ii) implementation associated with the impact of reform, resistance to change, political interference, information systems, and organisational performance and success, and (iii) performance information linked to accountability, culture, actor dynamics, resistance to use, and institutional barriers. The final themes would guide future researchers in scrutinising the PBB topic within public sector organisations.

The current study contributed to the evolution of PBB trends within public sector organisations by deepening the comprehension of PBB variations on the issue of the same PBB practices, which might not be implemented and internalised similarly across different government agencies (Grossi et al., 2018). Srithongrung (2018) underscored that PBB practices might not be different from other budget reforms. The effectiveness of budgetary practices in public sector organisations also requires full involvement and participation from internal and external

stakeholders, including actors, institutions, organisations, legislators, politicians, and citizens. Participation in the budgetary process reflects the organisational involvement in budget preparation (Haliah, 2021). Furthermore, Park (2019) elucidated that participation from citizens in the PBB process could aid in realising the acceptance of fiscal policies while demonstrating external support for budgetary institutions. Balážová et al. (2022) also highlighted that participatory budgeting contained a significant linkage that could assist in sustaining PBB practices in public sector organisations. Nevertheless, PBB studies related to stakeholders' participation in budgetary practices within public sector organisations remain scarce.

While PBB has been widespread as one of the reform agendas under NPM, diverse approaches and outcomes exist across countries. The variation degree within specific countries has also remained relatively underexplored (Mauro et al., 2018). Hijal-Moghrabi (2019) underscored that PBB is one of the examples of a budget innovation that has been proposed for over 50 years to streamline the budget process by associating allocations with performance outcomes. Nevertheless, PBB has not been fully implemented and a gap remains between PBB practices and implementation, which necessitates further investigations. The PBB implementation is also anticipated to produce performance information for utilisation in the budgetary process and practices despite the budgetary reform not substantially reshaping the actual budget practices (Grossi et al., 2018). Despite the lengthy experiences with PBB, key actors' limited use of performance information hinders PBB's effectiveness. Hence, the reform is situated in an ambiguous area between the full adoption and opposition to PBB implementation (Mauro et al., 2019). Nonetheless, the discussion on the PBB function and execution in budgetary practices would effectively aid in comprehending the PBB budgetary reform and implementation among public sector organisations (Jalali Aliabadi et al., 2020).

## 6.0 Conclusion

The current study reviewed existing PBB research focusing on public sector organisations by analysing publications between 2018 and 2023 to pinpoint the current trends and issues. The results revealed a positive trend, with the USA leading the growth and Asian countries demonstrating significant and increasing interest in PBB. While the analysis reveals a positive trend of growing research on PBB, the analysis also exposed critical gaps in the PBB understanding. Limited studies exploring PBB implementation in Malaysia emphasised the need for more studies across Asian countries. The present study employed thematic analysis, which was a technique less frequently employed in PBB research, to gain a deeper understanding. Three (3) key themes were identified, namely budget practices, implementation, and the use of performance information. The first theme explored how PBB was integrated into existing budgeting processes within public sector organisations. The second theme delves into the challenges and strategies associated with PBB practices. The third theme investigated the effective use of performance information to inform budgetary decisions and monitor progress toward outcomes.

Several limitations exist in this study. Specifically, selecting published articles from only two (2) databases and the year of selected articles from 2018 to 2023 (up to 8 September 2023). We found several relevant studies published in different databases; however, the scope of the relevant studies was beyond our review. The identified trends and issues and the outlined research direction were based on the authors' perspectives during the review parameters setting, although the results emphasised the need for further research in several areas,

particularly the effectiveness of PBB implementation. Additionally, the highlighted themes were the outcome of the endeavour to review prior PBB studies through thematic analysis, in which PBB implementation success and effective use of PBB in public sector organisations require further clarification to resolve existing issues in budget practices while improving public spending management, especially in Asia. The present study also identified crucial knowledge gaps, including PBB implementation within state governments. Research in this area is currently limited, which hinders a comprehensive understanding of PBB effectiveness. Future researchers should also adopt more mixed methods by combining qualitative and quantitative data for a more nuanced understanding of PBB practices and their corresponding impacts. Other essential but underexplored PBB aspects, including effective governance practices, stakeholder participation, and the long-term sustainability of PBB efforts, are also the key literature gaps. Summarily, this study significantly contributed valuable insights into PBB trends and issues in public sector organisations. Identifying research gaps and suggesting future research directions could also encourage further exploration. Practically, the findings are valuable to policymakers, budget practitioners, and stakeholders globally who seek to improve public spending management, particularly in Asian regions.

### Acknowledgements

We extend our heartfelt gratitude to all individuals and institutions who contributed to the successful completion of this manuscript. We are especially grateful to Dr. Siti Alawiah Siraj from the International Islamic University Malaysia and Puan Maslina Kamarudin from the Accountant General's Department of Malaysia for their invaluable insights and constructive feedback during the Research Colloquium 2023 organised by IPN, which greatly enriched this work. Our sincere appreciation also goes to the editorial and peer review team of the IPN Journal for their guidance and support throughout the publication process.

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# Developing a Data Analytics Framework Using Python for Internal Audit Functions of the Accountant General's Department of Malaysia

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<https://doi.org/10.58458/ipnj.v14.02.02.0105>

Received: 27 June 2024

Reviewed: 27 September 2024

Accepted: 30 September 2024

Published: 20 December 2024

## Abstract

**Purpose:** This study aims to develop a data analytics framework that incorporates Python for continuous auditing purposes. This initiative involves revisiting the existing audit framework to incorporate data analytics with Python capabilities. This comprehensive audit framework will be the foundation for a robust and continuous auditing system, maximising Python's potential due to its versatility, efficiency, and powerful data analysis capabilities. The proposed framework is designed to significantly enhance the effectiveness and efficiency of continuous auditing practices, specifically within the BPAD of the Accountant General's Department of Malaysia (AGD).

**Design/ Methodology/ Approach:** This study employs a qualitative methodology to develop a comprehensive audit framework integrating Python for continuous auditing. The approach consists of focus group interviews, in-depth discussions with key stakeholders from the BPAD, and a thorough examination of the current audit procedures and guidelines within existing audit documents. This method facilitates the understanding and identification of current practices and opportunities for improvement tailored to the BPAD's (Bahagian Pengurusan Audit Dalam [BPAD]) requirements while leveraging Python's robust capabilities in data analysis and process automation.

**Findings:** This study discovers several challenges and limitations in the existing audit framework that warrant the development of an analytical data

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This article is part of a research on Data Analytics Framework for Continuous Audit Using Python: A Case Study of *Bahagian Pengurusan Audit Dalam (BPAD), Jabatan Akauntan Negara Malaysia (JANM)* supported by the Accountant General's Department of Malaysia through *Geran Penyelidikan Perakaunan dan Kewangan Sektor Awam Tahun 2024* JANM.100-12/2/1 (11).

framework using Python for internal audit functions in the public sector. The proposed framework is expected to reduce manual data processing and analysis through automation, increase accuracy in audit results, and provide continuous real-time monitoring, potentially significantly enhancing the division's continuous auditing capabilities, leading to more efficient, effective, and comprehensive audit processes.

**Originality/ Value:** This study proposes an analytical data framework that incorporates Python for continuous auditing purposes tailored to government agencies' unique requirements and challenges. The framework focuses on integrating data analytics in audit processes, providing a novel approach to enhance internal audit effectiveness in the public sector. The traditional audit fieldwork is divided into two (2) sub-stages: Pre-Audit Analytics and Audit Analytics Fieldwork, following the Extract, Transform, Load (ETL) process for data preparation and analysis. This approach allows for real-time insights, proactive risk management, and improved decision-making. By automating data analysis with Python, the framework also enables the identification of anomalies, fraud detection, and more effective compliance than traditional methods.

**Keywords:** Data analytics, continuous audit, public sector, Python, government

## 1.0 Introduction

Public sector auditing is essential for upholding prudence and integrity, ensuring value for money, and overseeing the stewardship of public assets. It enhances the quality of information used for decision-making, supports an effective corporate governance system, and boosts citizens' confidence in the government's management of economic resources (Dawuda et al., 2017). Within the framework of public sector audits, internal audits serve purposes similar to internal audits in the private sector. However, they are tailored to the unique needs and objectives of governmental entities. According to Goodwin (2004), internal audits have evolved from their traditional emphasis on financial and compliance audits to encompass a broader, value-enhancing role, incorporating assurance and advisory functions to enhance efficiency and effectiveness. In the context of the internal audit function in the public sector, its significance is highlighted by the accountability of public entities to a diverse array of stakeholders, in contrast to the accountability of private entities. The role of the internal audit function is crucial to providing unbiased assessments and recommendations that contribute to effective governance and prompting corrective actions when necessary (Ahmad et al., 2009). It acts as the first line of defence by assessing internal controls, ensuring the reliability of financial information, and enhancing accountability within government agencies (Kamara, 2023).

In Malaysia, the requirement for implementing internal auditing in federal government agencies was first documented in Treasury Circular No. 2 (1979). This Circular was replaced by Treasury Circular No. 9 (2004), which took effect on October 12, 2004 (Ali et al., 2012; Treasury Circular, 2004). Subsequently, it was replaced by Treasury Circular (PP) PS 3.1 – Implementation of Internal Auditing in Federal Ministries/ Departments and State Governments (Ministry of Finance, 2024). It states that the Internal Audit Unit is responsible for conducting financial

management audits and performance audits. Financial management audits involve examining financial systems, internal controls, and financial records to ensure that expenditures, revenues, assets, and inventories are managed according to relevant laws, regulations, and directives. Performance audits evaluate an organization's activities to determine if its objectives have been achieved and resources have been used prudently, efficiently, and effectively.

In the rapidly evolving landscape of financial auditing, the BPAD must augment the efficiency and efficacy of its audit processes. While traditional audit methods are robust, their shortfall lies in keeping abreast of the dynamic intricacies inherent in contemporary business environments. Moreover, traditional auditing methods are constrained by data scale and processing speed, often relying on sampling, which limits the auditors' ability to conduct comprehensive analyses across all available data (Sun et al., 2024).

In the context of the BPAD, the absence of a systematic and automated approach to continuous audit will expose potential vulnerabilities associated with a delayed anomaly or red flag and compliance issues. This delay could result in problems not identified promptly, potentially allowing the continuation or escalation of fraudulent or irregular activities. There is a need for the BPAD to explore automated processes to provide real-time monitoring and help identify and address issues as they arise. In this regard, a systematic and automated continuous audit framework that is aligned with the specific needs and requirements of the BPAD must first be established. This framework should leverage technology, such as Python-based analytical tools, to enhance the efficiency, accuracy, and timeliness of the audit process. A framework that focuses on a systematic and ongoing auditing approach is vital, instead of relying solely on periodic or manual interventions. This approach can ensure continuous oversight and timely identification of issues, leading to more effective and proactive risks and compliance management.

Given the constraints of traditional auditing and the urgent need for continuous auditing in the BPAD, this study aims to develop a Python-based data analytics framework for continuous auditing. It is essential to provide the division with a systematic approach to integrating data analytics into ongoing internal auditing processes to overcome current limitations and bolster the effectiveness and efficiency of audits.

## **2.0 Literature Review**

### **2.1 Audit Tools**

Extant literature has highlighted the need to shift from traditional auditing due to its limitations, such as being labour-intensive and time-consuming (Chan & Vasarhelyi, 2011). This shift can be facilitated using audit tools for automation, enabling continuous auditing. Audit tools have become increasingly integral to modern auditing practices, leveraging technology to enhance efficiency, accuracy, and overall audit quality. They encompass various technologies, such as Computer-Assisted Audit Tools and Techniques (CAATs), electronic audit working papers, database applications, and business intelligence audit software (Siew et al., 2020). These tools automate audit tasks, enabling auditors to analyse extensive datasets, detect anomalies, and perform complex calculations swiftly and precisely. For instance, CAATs streamline data analysis, providing auditors with a greater volume of evidence in less time (Aksoy & Gurol, 2021).

Incorporating audit tools into auditing processes yields manifold benefits. They reduce audit costs by automating routine tasks, enabling auditors to focus on the analytical aspects. Moreover, they enhance audit quality by minimising human error and facilitating thorough examination of financial data, enhancing assurance validation to financial reporting users (Sanusi et al., 2023). These tools are crucial for keeping pace with evolving business landscapes and complex financial transactions, extracting insights from vast datasets, and employing data analytics to uncover patterns, trends, and risks that traditional methods may overlook. Despite these advantages, challenges persist in the broad adoption of audit tools, particularly regarding technological infrastructure, specialised training needs, and data security and privacy concerns. Addressing these challenges is essential to maximise efficiency and effectiveness in audit performance, thereby improving the overall audit quality (Sanusi et al., 2023).

Python, a versatile programming language, is increasingly integrated into auditing and data analysis. Renowned for its readability, simplicity, and extensive libraries, Python supports tasks, like data extraction, transformation, and analysis. Auditors use Python scripts to automate repetitive tasks, analyse large datasets, and conduct intricate calculations. Its data manipulation and analysis capabilities make Python particularly valuable for auditors engaged in financial data analysis and data-driven audits. It also facilitates data visualisation, aiding auditors in presenting findings more clearly. Its flexibility allows the customisation of scripts based on audit needs, contributing to its recognition as a pivotal tool in data-centric audit approaches and CAATs (Siew et al., 2020).

## **2.2 The Use of Audit Tools in the Public Sector**

Internal audits, especially within the public sector, are critical because they evaluate the efficiency and effectiveness of management controls. These audits support management by optimising these control mechanisms, thus aiding in achieving relevant objectives and tasks (Postula et al., 2020). The importance of internal audits in the public sector is further underscored by their crucial role in assessing the quality of internal controls, thereby improving public sector management (Uneqbu & Kida, 2011).

In 2000, the public sector accounting system underwent significant changes, notably transitioning towards e-business (Mahzan & Veerankutty, 2011). This shift required auditors to adapt to new technologies for conducting information technology-related (IT) audits. Consequently, auditors improved their technological skills to navigate and assess the evolving IT landscape within the public sector. This transformation has profoundly impacted the accounting systems of the federal government, state governments, and statutory bodies (Mahzan & Veerankutty, 2011).

Besides their crucial role, internal audits in the public sector face evolving challenges that necessitate using advanced tools like CAATs. Adopting CAATs is essential for internal audit teams to effectively identify red flags and discrepancies, thereby increasing their capacity for continuous auditing. As highlighted by Malaescu and Sutton (2014), the application of audit technology increases auditors' confidence in creating audit reports and ensures the reliability of financial statements. Using CAATs in the public sector is well-established for enhancing audit efficiency, improving the accuracy of data analysis, and ensuring thorough scrutiny of financial records. Technological advancements and data analytics have further facilitated the use of



CAATTs, enabling auditors to stay abreast of evolving methodologies and to fully leverage these tools in the auditing process.

### 2.3 Audit and Python

Integrating Python in financial auditing has garnered significant interest in recent academic research. Oladipupo et al. (2023) demonstrated the effectiveness of a Python-based machine-learning technique for enhancing audit data performance. Several studies have examined the use of Python in various contexts. For example, Hung et al. (2023) utilised Python web crawlers to collect data and examine the impact of auditing industry specialisation on using derivatives for earnings management in Chinese public companies. In another study, Liu et al. (2022) investigated the application of Python's Random Forest algorithm in the digital systems of power grid enterprises to enhance internal audit functions. Bellinga et al. (2021) presented an open-source Python algorithm for extracting data from annual reports, significantly improving the efficiency of the audit process in a Dutch asset management firm.

Python is also used in financial auditing. For instance, Eguando (2023) highlighted technological advancements in forensic auditing, emphasising the strategic use of software applications, including Python, for data analytics and robotic process automation. According to Eguando, such an approach is recommended for forensic audit firms and banks to enhance the credibility of forensic auditors' reports.

Li (2023) studied improving internal tax audit management for China's private enterprises by leveraging network IT, data mining, and computer application technology. The author utilised data processing libraries, like Numpy and Pandas, within the Python environment to develop a web-based internal tax audit system for these enterprises. Such development has significantly enhanced the efficiency of internal tax audits for private enterprises and fostered the informatisation and intelligent evolution of their internal management processes (Li, 2023).

In a case study at University W, Xia (2023) uncovered that the university had insufficient risk controls within its finance department through process testing and risk assessment. The auditors integrated Python automation tools with optical character recognition (OCR) technology to overcome this issue, linking it to an intelligent cloud OCR financial document image recognition interface. This approach automated the reading of files, recognition of invoice images, data collection, and entry into Microsoft Excel. Subsequent data analysis identified audit suspicions for further verification, enhancing audit efficiency and accuracy (Xia, 2023).

It can be concluded that Python is increasingly recognised for its importance in auditing due to its numerous benefits, such as its versatility, extensive libraries, and ability to automate repetitive tasks. These advantages enable auditors to efficiently analyse large datasets, identify irregularities, and detect red flags. Nevertheless, before integrating Python into the auditing process, it is crucial to revisit and update the existing audit framework to incorporate Python's capabilities. By doing so, a comprehensive audit framework can be developed, laying the groundwork for a robust auditing system that fully leverages Python's potential.

### **3.0 Research Methodology**

This research employed a qualitative approach to investigate the integration of Python-based analytics in continuous audit practices within the BPAD. The qualitative design was chosen to provide deep insights into the perceptions, experiences, and challenges related to adopting new audit technologies in the public sector context. A focus group of face-to-face interviews with key stakeholders within the BPAD was conducted to gather insights into the current internal audit practices. This group comprised the deputy director, chief assistant director of the accounting compliance section and their two (2) staff members, and two (2) staff members each from the special auditing section and internal control section. The discussion centred on audit tools, challenges, implications, issues, potential tools, and expectations from a data analytics framework for detecting red flags.

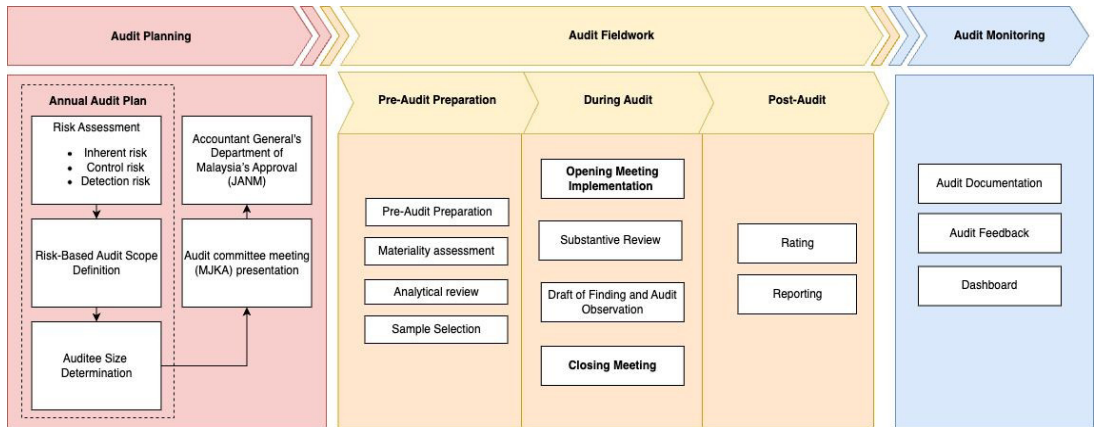
Additionally, existing documents, such as the auditing manual, reports, and audit findings, were reviewed to understand the internal audit process of the BPAD in detail. This document review is crucial for understanding current practices and identifying opportunities for improvement using Python-based tools. It helps pinpoint gaps, issues, and areas for enhancement within internal audit procedures while providing insights into integrating Python-based tools to boost audit efficiency and effectiveness. The data from the document review and the focus group interview transcriptions were triangulated to produce a data analytics framework for continuous auditing in the BPAD.

### **4.0 Data Analytics Framework Using Python for Internal Audit Functions in the Internal Audit Management Division**

This study proposes a comprehensive, continuous internal auditing data analytics framework tailored to the unique requirements and challenges faced by government institutions. The framework integrates data analytics into audit processes, especially audit planning, pre-audit, audit fieldwork, audit documentation, and reporting.

#### **4.1 Current Traditional Framework for Internal Audit in the Internal Audit Management Division**

Based on the document review and the findings from the focus group interview, the traditional framework for internal audit in the government sector was structured into three (3) main stages: (1) Audit Planning, (2) Audit Fieldwork, and (3) Post-Audit and Monitoring (Figure 1).



**Figure 1: Traditional Framework for Internal Audit in the BPAD**

The Audit Planning phase begins with a comprehensive risk assessment, including evaluating inherent, control, and detection risks to identify areas susceptible to material misstatement due to error or fraud. Based on this assessment, a risk-based audit scope is developed to focus on high-risk areas, ensuring efficient use of audit resources. The size and complexity of the auditees are also considered when tailoring the audit procedures accordingly. The audit plan is then presented to the Audit Committee Meeting (Mesyuarat Jawatankuasa Audit, MJKA) for review and approval before obtaining approval from the Accountant General to commence the audit.

During the Audit Fieldwork phase, auditors perform a materiality assessment to determine the significance of financial statement items and transactions, focusing on those that could influence the economic decisions of users. Analytical reviews are conducted to identify unusual trends or variances in financial data, which help in understanding the public sector’s financial performance and areas that need further investigation. Auditors will then determine the sample size from the raw data to test the effectiveness of controls and the accuracy of financial statement assertions without examining every transaction. Upon completing the Pre-Audit phase, auditing commences with an opening meeting and ends with reporting at the Post-Audit phase.

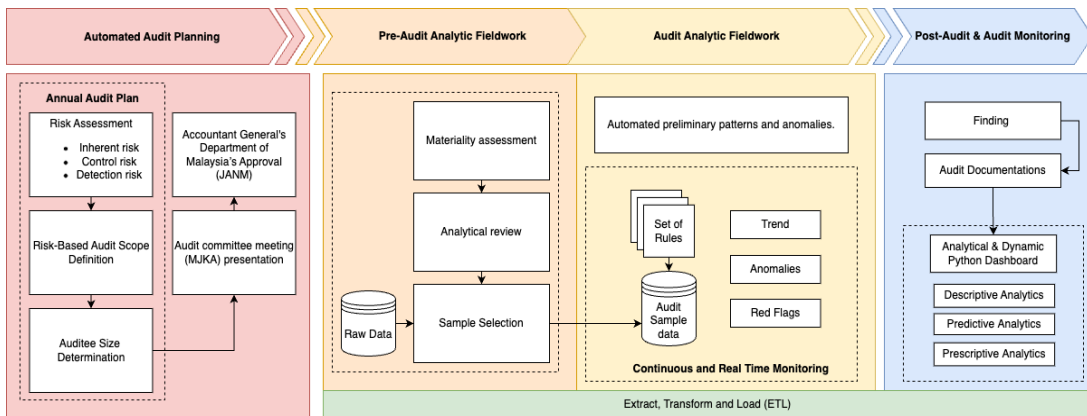
In the Post-Audit phase, findings are documented, highlighting any discrepancies, control weaknesses, or identified areas of non-compliance. A comprehensive audit documentation is prepared to support the audit findings and conclusions, ensuring the transparency and verifiability of the audit process. This structured approach ensures that the internal audit process in the BPAD is thorough, efficient, and aligned with regulatory requirements, ultimately enhancing the effectiveness and accountability of the public sector, specifically the AGD.

While the traditional framework for internal audit in the BPAD is structured, some limitations require the integration of data analytics. A significant limitation is the reliance on sampling methods, which do not capture the full scope of financial transactions, resulting in missing irregular trends, anomalies, and red flags. Additionally, although manual testing techniques are thorough, they are time-consuming and may not be as effective in identifying all instances of non-compliance or deviations. Incorporating data analytics is essential to address these concerns.

Data analytics tools, such as Python, can analyse entire datasets through big data analysis, providing a more comprehensive view and enabling the identification of unusual patterns, red flags, and potential issues that traditional methods might have overlooked. Furthermore, dashboards can enhance data visualisation, making it easier for auditors to communicate findings and insights to stakeholders. By leveraging data analytics, internal audits can become more efficient, accurate, and aligned with modern auditing standards, ultimately improving the accountability and effectiveness of public sector entities.

## 4.2 Proposed Framework

The Data Analytics Framework using Python for the internal audit process in the BPAD was designed to enhance the traditional internal audit process by integrating data analytics at every stage. This framework (see Figure 2) begins with automated audit planning, which involves a comprehensive risk assessment to develop a risk-based audit scope. The size and complexity of the auditees are determined automatically using rule-based audit procedures accordingly. The audit plan is then presented at the MJKA for further endorsement, followed by obtaining approval from the Accountant General to commence the audit.



**Figure 2: Data Analytics Framework using Python for the Internal Audit Process in the BPAD**

Figure 2 illustrates the proposed framework. The Audit Fieldwork stage is divided into Pre-Audit Analytics and Audit Analytics Fieldwork. During the Pre-Audit Analytics phase, auditors perform a materiality assessment to determine the significance of financial statement items and transactions. Analytical reviews are conducted to identify unusual trends or variances in financial data, which help in understanding the public sector's financial performance and areas needing further investigation. Sample sizes are determined from raw data. Data security is a main priority in the AGD. Therefore, if the system is developed, it should not be directly integrated with the raw database.

In the Audit Analytics Fieldwork phase, a dataset is prepared with rules. Sample data are stored in a separate database for analysis to ensure security. Continuous testing is performed to analyse trends, detect anomalies, and identify red flags. This phase also involves determining

sample sizes from raw data for further testing and investigation. Both Pre-Audit Analytics and Audit Analytics Fieldwork follow the ETL process for data preparation and analysis.

The final stage, Post-Audit and Monitoring, involves documenting findings and highlighting any discrepancies, control weaknesses, or areas of non-compliance identified during the audit. Comprehensive audit documentation is prepared to support the audit findings and conclusions and ensure transparency and verifiability of the audit process. Unlike the traditional audit process, an analytical dashboard can visualise the data, providing descriptive, predictive, and prescriptive analytics. Python is the recommended tool. Descriptive analytics summarises and visualises the audit findings; predictive analytics identifies potential future risks or issues based on historical data patterns; and prescriptive analytics recommends actions or strategies for addressing identified issues or improving processes. By leveraging data analytics, the framework ensures that internal audits in government agencies are more efficient, accurate, and aligned with modern auditing standards, ultimately improving the accountability and effectiveness of the public sector.

## 5.0 Conclusion

Integrating data analytics into continuous internal auditing presents a transformative opportunity for government agencies. Traditional internal auditing methods, characterised by periodic reviews and sample testing, have become increasingly inadequate in addressing the complexities and data volume of modern governance. The proposed data analytics framework aims to address these limitations by leveraging data analytics to enhance the efficiency, accuracy, and comprehensiveness of internal audits.

The framework integrates data analytics at every stage of the audit process, from planning and fieldwork to post-audit monitoring. This approach allows for real-time insights, proactive risk management, and improved decision-making. By automating data analysis and utilising advanced techniques, such as machine learning, the framework can identify anomalies, detect fraud, and ensure compliance more effectively than traditional methods.

Nevertheless, implementing continuous internal auditing in the public sector faces several challenges, including data privacy and security concerns, skill gaps among auditors, and the need for robust data quality and integration strategies. Addressing these challenges requires a comprehensive data strategy, investment in technology infrastructure, and ongoing training and capacity-building for audit teams.

Therefore, future research and development efforts to enhance the framework in government agencies should focus on developing monitoring dashboards using big data analysis language, such as Python, which can integrate analytics to improve audit accuracy and predictive capabilities while providing real-time and continuous audits with data privacy and security measures. In addition, empirical studies to validate the framework's effectiveness in improving audit outcomes and achieving objectives in the public sector are proposed for future work. These efforts will help improve the potential of continuous internal auditing, thereby enhancing accountability, transparency, and efficiency of government operations.

Given that the study is directed towards one (1) case study involving the BPAD of the AGD, generalisations on the applicability and suitability of the Python-based data analytics framework to other government agencies should be made with care.

## Acknowledgement

We gratefully acknowledge the funding support from the AGD, the cooperation and contribution of its BPAD and the guidance and unwavering support of Universiti Utara Malaysia (SO Code: 21694) throughout this journey.

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# Investigating Accountants' Perceptions and Adoption Intentions Towards Artificial Intelligence in Malaysian Public Sector Accounting

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<https://doi.org/10.58458/ipnj.v14.02.03.0106>

Received: 30 June 2024

Reviewed: 23 September 2024

Accepted: 30 September 2024

Published: 20 December 2024

## Abstract

**Purpose:** The current study aims to investigate the awareness and potential readiness among accountants in Malaysian governmental departments to adopt artificial intelligence (AI) in anticipation of the implementation of an AI-embedded accounting system.

**Design/ Methodology/ Approach:** A quantitative online survey was employed to assess the awareness and potential readiness for AI adoption among Malaysian governmental accountants. The unified theory of acceptance and use of technology (UTAUT2), which is a well-established framework in technology acceptance research, guided the conceptualisation of adoption readiness.

**Findings:** The results demonstrated that accountants had a moderate level of AI awareness as compared to their previous knowledge. Nonetheless, most respondents expressed a high willingness to adopt AI in daily tasks, while only minimal job security concerns regarding the substitution by AI were expressed. The UTAUT2 revealed that only performance expectancy emerged as a significant predictor of AI usage intention, which posited that Malaysian public sector accountants primarily focused on the perceived benefits when considering adopting AI. Comparatively, other factors, such as effort expectancy and facilitating conditions, played a less prominent role.

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This article is part of a research on Artificial Intelligence in Public Sector Accounting: Opportunities and Challenges to Improve Service delivery and Quality of Financial Reporting supported by the Accountant General's Department of Malaysia through *Geran Penyelidikan Perakaunan dan Kewangan Sektor Awam Tahun 2024* (JANM.100-12/2/1 (15)).

**Research Limitations/ Implications:** The limitations included a relatively low response rate and the sole focus on UTAUT2, which did not incorporate other potential factors explored in different research frameworks.

**Practical Implications:** Training that emphasises real-world benefits for accountants can assist in bridging the gap between willingness and AI usage in Malaysian public sector accounting, apart from prioritising functionalities that can improve existing workflows. Resultantly, higher accountant confidence and AI adoption are achieved.

**Originality/ Value:** The findings contributed valuable insights pertinent to the current Malaysian governmental efforts in promoting AI adoption across various sectors.

**Keywords:** Malaysian public sector accounting, AI adoption, accounting information systems, UTAUT2

## 1.0 Introduction

The rapid evolution of AI has disrupted while simultaneously transforming numerous industries, including the accounting field. Specifically, AI-powered accounting systems may significantly revolutionise existing accounting systems by streamlining workflows, enhancing data accuracy, enabling accountants to dedicate more time to strategic decision-making, and improving overall efficiency and effectiveness (Ahn & Chen, 2022; Brown et al., 2020; Wirtz et al., 2018). Meanwhile, user awareness and readiness are key factors to successful AI adoption in the accounting domain. While a growing interest in AI adoption for accounting has been observed, relevant studies exploring Malaysian public sector accountants' readiness in terms of AI-embedded accounting systems remain scarce. Moreover, existing studies concentrate on private firms or specific AI functionalities (Brown et al., 2020; Lee & Tajudeen, 2020). Nonetheless, incorporating AI in public sector accounting presents both opportunities and challenges. AI can potentially lead to enhanced efficiency, effectiveness, and decision-making processes (Wirtz et al., 2018). Understanding public sector accountants' preparedness for AI adoption is also vital as the Malaysian government actively promotes AI integration across various sectors, including the Malaysia National Artificial Intelligence Roadmap 2021-2025, 'AI untuk Rakyat' and AI Sandbox 2024. Therefore, determining the factors that can significantly influence AI adoption in public sector accounting is essential to ensure successful integration while effectively addressing potential obstacles (Al Wael, 2023) and maintaining highly accountable, transparent, and ethical AI usage (Bracci, 2022).

The present study aims to address the existing literature gap by investigating the awareness and potential readiness for AI adoption among accountants in Malaysian governmental departments. Predominantly, a quantitative survey approach was applied to explore Malaysian public sector accountants' current levels of awareness, potential adoption willingness, and job security concerns regarding AI in daily job responsibilities. The unified theory of acceptance and use of technology (UTAUT2), which is a well-established framework in technology acceptance research, was also employed to identify the key factors influencing adoption intentions by analysing performance expectancy (belief in AI usefulness), effort expectancy (perceived

ease of using AI), and social influence (impact of colleagues' opinions) to understand the behavioural intention to adopt alternative technologies (Venkatesh et al., 2003). Resultantly, valuable insights that could inform future policy decisions and capacity-building initiatives were contributed. Thoroughly comprehending the current state of preparedness will aid policymakers in developing targeted training programmes to elevate accountants' knowledge and skills in mastering AI-powered accounting systems. Additionally, addressing potential concerns while fostering a positive attitude towards AI can facilitate a smoother transition and maximise the benefits for Malaysian public sector accounting. The findings also contributed to the growing knowledge corpus on AI adoption in accounting by focusing on the unique Malaysian context.

## 2.0 Literature Review

The accounting profession is undergoing a significant transformation propelled by rapid AI advancement, which allows for more streamlined workflows, improved data accuracy, and a higher focus on more strategic tasks (Brown et al., 2020; Fedyk et al., 2022). Successful AI adoption also depends on sufficient user awareness, readiness, and acceptance. This study explored current research on AI adoption in the Malaysian public sector accounting domain. Numerous past researchers have examined the potential benefits and challenges associated with AI implementation in accounting. The findings underscored the capabilities of AI to automate repetitive tasks, generate real-time insights, and increase accountants' decision-making abilities (Cifuentes-Faura, 2024; Hussin et al., 2024). Task automation, including data reconciliation, transaction processing, and fraud detection, allows accountants to dedicate more valuable work time to higher-level analyses and strategic planning (Brown et al., 2020). Incorporating AI in public sector accounting can also generate and capture higher public value through various applications, such as knowledge management, process automation, predictive analytics, and data visualisation (Maione & Leoni, 2021). Therefore, AI adoption in the public sector necessitates a deep understanding of the key elements contributing to successful implementation (van Noordt & Misuraca, 2020). Developing frameworks extending beyond technical aspects and considering contextual elements, including public management, agency characteristics, and individual involvement can assist the public sector in effectively embracing and applying AI technologies (van Noordt & Misuraca, 2022). Reliability in the public sector is critical due to assessing risk acceptability and accountability in decision-making processes (Kindzeka, 2023; Loukis et al., 2020). Concerns regarding job displacement and the need for human oversight also remain prevalent (Marr, 2018).

Rawashdeh (2023) discovered a significant linkage between AI adoption in accounting and job displacement, which propounded that the ability of AI to automate tasks (data analyses and repetitive work) would lead employers to integrate AI for cost-saving and productivity enhancement purposes. The finding also postulated potential job losses, especially for accountants whose roles involved the aforementioned tasks. The finding also corresponds to the contemporary belief that AI will simultaneously create alternative jobs while rendering existing accounting positions obsolete. Accordingly, regulations, such as the recently passed European AI Act 2024, seek to mitigate risks associated with human interaction and AI. Moreover, effective human oversight (Sterz et al., 2024) requires four (4) key qualities, namely (a) causal power to influence the system and corresponding outcomes, (b) access to relevant information, (c) self-control, and (d) alignment with respective roles, which can aid in establishing user trust and fostering user acceptance to ensure successful implementation (Maican et al., 2021; Rana et al., 2015). While more research on AI adoption in accounting has been observed,

the focus has primarily been on private corporations (Lee & Tajudeen, 2020). Limited findings on the specific context of public sector accounting and the unique challenges (Amalia, 2023) may become a significant concern when governments worldwide actively promote AI integration across various sectors, including public finance (Workday, 2021). Therefore, comprehending public sector accountants' preparedness for AI adoption is pivotal to ensuring a smooth transition while maximising the benefits of AI for governmental accounting practices.

Sustainable implementation necessitates dialogue, deliberation, and collaboration among multiple stakeholders to guarantee an ethical transformation and efficacious AI governance (Leikas et al., 2022). Furthermore, engaging developers, decision-makers, deployers, end users, and the general public in the AI implementation process enables public sector organisations to promote innovation and ensure the responsible utilisation of AI technologies (Leikas et al., 2022; Samsurijan et al., 2022; Selten & Klievink, 2023). The co-creation of toolkits to facilitate multi-stakeholder discussions can also improve transparency, accountability, and decision-making procedures (Kawakami et al., 2024; McBride et al., 2021). The Malaysian government has actively pursued initiatives to promote AI integration across various sectors, including public sector accounting. The national AI roadmap emphasises a collaborative approach, urging governmental agencies, industries, academia, and society to effectively collaborate to deploy AI solutions for top national priorities (MOSTI, 2021). Therefore, the prioritisation requires exploring the preparedness of the public sector workforce, including accountants, to adapt to and leverage the latest technologies.

This study aims to address the identified gap in knowledge by investigating awareness and potential readiness for AI adoption among accountants in Malaysian government departments. We employ a quantitative survey approach utilising the UTAUT2 model to explore their current level of awareness, potential adoption willingness, and job security concerns regarding AI in their daily tasks. Focusing on public sector accountants and their specific context within the Malaysian government's AI initiatives, this research offers valuable insights that can inform future policy decisions and capacity-building programs to facilitate a smooth and successful transition towards AI-powered accounting practices in Malaysia's public sector. Performance expectancy, which refers to the belief in the technology's usefulness, is identified as a significant predictor of technology adoption in various contexts (Venkatesh et al., 2012). In the context of AI adoption in accounting, accountants are likely to adopt AI if they perceive it to enhance their job performance by improving efficiency and accuracy. Effort expectancy, or the perceived ease of use, also plays a crucial role in technology adoption. However, research shows mixed results on its impact, suggesting that while ease of use is important, it may not always be the primary factor driving adoption decisions (Venkatesh et al., 2012). Therefore, consistent with previous research utilising UTAUT2, we propose the following hypotheses:

- H1: Performance expectancy positively influences the intention to adopt AI in Malaysian public sector accounting.
- H2: Effort expectancy positively influences the intention to adopt AI in Malaysian public sector accounting.

Another critical factor is social influence, which encompasses the impact of colleagues' opinions and organisational culture. In the public sector, where hierarchical structures and peer influence are significant, the attitudes and behaviours of colleagues can significantly affect an individual's intention to adopt new technologies (Venkatesh et al., 2012). Facilitating

conditions, referring to the availability of resources and support systems, are essential for enabling AI adoption. Organisational infrastructure, training programs, and technical support ensure accountants have the necessary tools and knowledge to effectively use AI systems (Venkatesh et al., 2012). Hence, our subsequent hypotheses are stated as follows:

- H3: Social influence positively influences the intention to adopt AI in Malaysian public sector accounting.
- H4: Facilitating conditions positively influence the intention to adopt AI in Malaysian public sector accounting.

Hedonic motivation refers to the fun or pleasure derived from using technology. It is an intrinsic motivator that significantly influences technology acceptance and use, particularly in contexts where the technology offers enjoyable experiences (Venkatesh et al., 2012). Research has shown that hedonic motivation can strongly predict behavioural intention to use technology, especially in non-work-related contexts where enjoyment plays a crucial role (Brown & Venkatesh, 2005; Venkatesh et al., 2012). In addition, habit refers to the extent to which people tend to perform behaviours automatically because of learning. It reflects how individuals have become accustomed to using technology as part of their routine (Venkatesh et al., 2012). Habit is a significant predictor of technology use, often mediating the relationship between behavioural intention and actual usage (Limayem et al., 2007; Venkatesh et al., 2012).

Therefore, our final hypotheses are:

- H5: Hedonic motivation positively influences the intention to adopt AI in Malaysian public sector accounting.
- H6: Habit positively influences the intention to adopt AI in Malaysian public sector accounting.

This literature review provides a foundational understanding of AI adoption in accounting, highlighting the potential benefits, existing frameworks for understanding user acceptance, and the limited research on public sector adoption. By focusing on the specific context of Malaysian public sector accountants, this study contributes to the ongoing dialogue on AI and its potential to transform the accounting profession in a government setting.

### **3.0 Research Design**

The current study utilised a quantitative research design through a web-based survey to assess the awareness and potential readiness for AI adoption among Malaysian public sector accountants.

#### **3.1 Participants**

The target population included accountants between W21 and W54 job grades in Malaysian governmental departments. A representative sample was ensured and data collection was facilitated by administering the survey with the Institut Perakaunan Negara (IPN) in June 2024. The IPN assisted in distributing the survey to relevant members within the targeted governmental departments to increase the study's reach and credibility.

### 3.2 Research Instruments

This study employed a web-based survey instrument to assess the awareness and potential readiness for AI adoption among Malaysian governmental accountants. The questionnaire was developed based on the well-established UTAUT2 by Venkatesh et al. (2003), who explored various factors influencing technology adoption intentions (AI-Okaily et al., 2023; Ismatullaev & Kim, 2022; Razzak & Jassem, 2021; Mohd Thas Thaker et al., 2021). The survey incorporated several key factors. Specifically, performance expectancy (PE) was measured by assessing accountants' beliefs about the capability of AI to enhance job performance and efficiency via the perception of benefits and the overall usefulness of AI in daily tasks. Effort expectancy (EE) was appraised by determining the perceptions of difficulty or complexity in applying AI-powered accounting tools. The dimension reflected the perceived ease of use and learning of AI systems. Meanwhile, the social influence (SI) factor was evaluated by examining the extent to which accountants perceived encouragement or discouragement by colleagues, superiors, and professional networks to adopt AI, which captured the impact of social circles on technology adoption. Facilitating conditions (FC) were gauged by investigating the perception of whether belonging organisations provided the necessary resources, technical support, and infrastructure for successful AI adoption. The variable highlighted the perceived availability of the aforementioned factors. Hedonic motivation (HM) was measured by determining the degree to which accountants perceived AI as an enjoyable or stimulating instrument for performing daily tasks. The dimension represents the enjoyment and fun derived from utilising an alternative technology. Habit (HAB), a relevant factor in technology adoption theories, was also assessed, although the factor was not initially included in the UTAUT2. Particularly, the variable explored the level of accountants' developed routines or habits that might significantly impact the AI adoption willingness. The intention to adopt AI (INT), the core dependent variable, reflected accountants' willingness and intention to employ AI in daily work.

### 3.3 Data Collection and Analysis

The specific population of accountants employed between the W21 and W54 job grades in Malaysian public sector organisations was targeted. The IPN aided in distributing the web-based survey to relevant members working within the targeted governmental departments, which significantly elevated the reach and credibility of the study. The one-month data collection period ensured a sufficient timeframe for acquiring a meaningful sample size. The collected data underwent partial least squares structural equation modelling (PLS-SEM), which is highly suitable for investigating complex relationships between multiple variables, including latent constructs (Hair et al., 2021). The procedure can be summarised in three (3) key stages:

- i. The initial stage involved the measurement model assessment, which focused on evaluating the reliability and validity of the scales employed to represent the study constructs. Cronbach's alpha and composite reliability (CR) were utilised to assess internal consistency, whereas convergent validity was appraised through average variance extracted (AVE) scores. The stage ensured adequate accuracy for the measures employed to explore the intended constructs.



- ii. The focus shifted to analysing the hypothesised relationships between the constructs outlined in the UTAUT2 and the additional factor of habit via the structural model assessment after establishing the measurement model. Path coefficients and significance levels were utilised to evaluate the strength and direction of the relationships between the variables, which assisted in understanding the degree of impact of the identified factors on public sector accountants' AI adoption intention.
- iii. While conventional PLS-SEM assessed model fit through indices, such as R-squared ( $R^2$ ) and normed fit index (NFI), the present study prioritised appraising the explanatory and predictive power of the research model. The difference reflected the PLS-SEM objective in developing robust models that could effectively explain relationships between variables and predict future outcomes. The  $R^2$  value of each endogenous construct and path coefficients indicated the strength of relationships by serving as crucial indicators of explanatory power. Two (2) other techniques, including blindfolding and effect sizes ( $f^2$ ), which predict values for a subset of the data, were also employed to compare the values of both techniques with actual values to estimate predictive accuracy.

Resultantly, the PLS-SEM analysis offered significant insights into the factors contributing to the awareness and potential readiness for AI adoption among Malaysian public sector accountants.

#### 4.0 Findings

The current section presents the key findings derived from the data collected through the web-based survey. A total of 167 usable responses were obtained from the targeted population. The PLS-SEM was conducted to assess the factors influencing public sector accountants' awareness and potential readiness for AI adoption. Table 1 summarises the key demographic characteristics of the respondents. Specifically, a majority of respondents were females (68%), with a strong presence of experienced professionals (58% with over 16 years of experience). The most common educational background was a bachelor's degree (47%), and job grades ranged from W19 to W54, with the highest concentration being W41 and W48 (32%). All respondents were employed in various Malaysian governmental departments, which reflected the successful targeting of the intended population (W21 to W54 job grades). Most respondents exhibited a wide range of accounting experience, with tenures varying from one (1) to over 16 years. The majority (78%) possessed at least 11 years of public sector experience, demonstrating a robust accounting knowledge foundation within the sample.

**Table 1: Respondents' Descriptive Statistics**

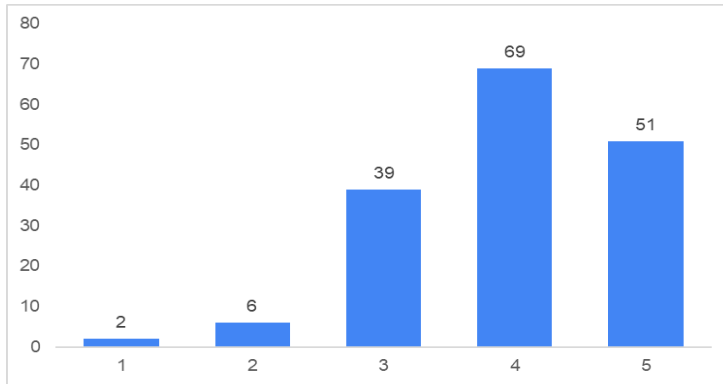
Demographic	Frequency	Percentage (%)
<b>Gender</b>		
Male	53	32
Female	114	68
<b>Total</b>	<b>167</b>	<b>100</b>
<b>Education</b>		
Certificate	21	13
Diploma	30	18
Bachelor's Degree	78	47
Master's or Professional	34	20
Ph.D.	4	2
<b>Total</b>	<b>167</b>	<b>100</b>
<b>Experience</b>		
0 to 2 years	5	3
3 to 5 years	10	6
6 to 10 years	21	13
11 to 15 years	34	20
16 years and above	97	58
<b>Total</b>	<b>167</b>	<b>100</b>
<b>Accountant Job Grade</b>		
W19 to W22	35	21
W26 to W36	41	25
W41 to W48	54	32
W52 to W54	37	22
<b>Total</b>	<b>167</b>	<b>100</b>

#### 4.1 AI Awareness in Accounting

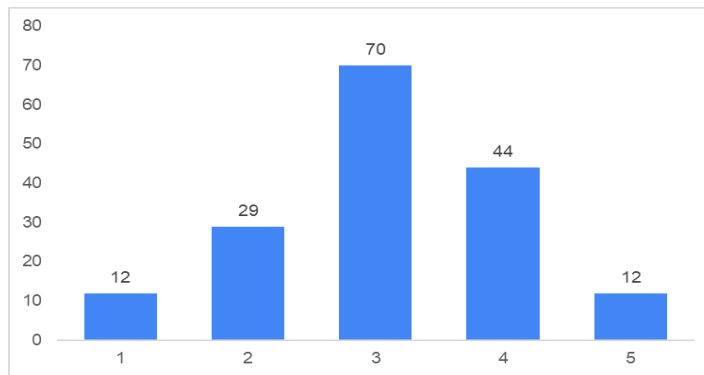
This section uses three (3) survey questions to explore the awareness level regarding AI features in accounting-related functions. The histograms portray a potential knowledge gap, wherein most respondents were highly aware of AI features while only a certain proportion of respondents were moderately familiar with AI accounting features and had applied AI features in current jobs. The findings suggested that a significant proportion of the respondents possessed limited knowledge about the integration process of AI into accounting practices. Hence, the potential requirement exists for implementing educational initiatives and awareness programmes to elevate AI understanding and adoption within the accounting domain. Meanwhile, approximately one-third of the respondents indicated that the current accounting systems contained several AI functionalities. Table 2 presents a ranking of the employed AI functionalities, arranged in order of frequency of usage. Notably, the functionalities were rated based on respondents' perceptions without being independently verified. Nevertheless, bank reconciliation automation was the most prevalent AI function employed by respondents (35%), followed by account receivables ageing analysis (22%). Anomaly detection within the general ledger was also utilised at a 19% rate while forecasting tasks, including inventory usage and sales, which demonstrated lower adoption rates (11% and 4%, respectively). The findings



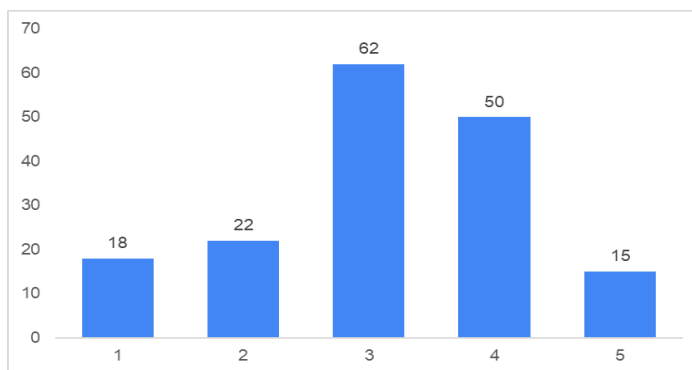
propounded that the low usage level for sales forecasting was due to the limited sales function in most governmental departments. The overall trend highlighted the focus on leveraging AI to automate well-defined tasks in accounting practices.



**Awareness Regarding AI Features in Accounting-Related Functions**



**Familiarity with AI Features in Accounting**



**The Current Application of AI Features in Daily Tasks**

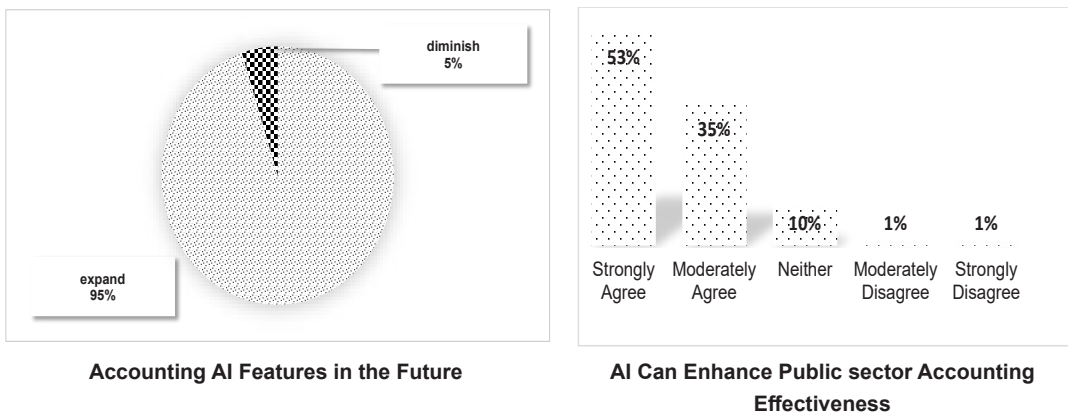
**Figure 1: Public sector Accountants' AI Awareness Levels**

**Table 2: AI Functionalities Employed in the Current Accounting Systems**

AI Functionalities	Percentage (%)
Automating bank reconciliation	35
Performing account receivables ageing analysis	22
Detecting anomalies in the general ledger	19
Forecasting inventory usage	11
Forecasting future sales	4
Others	9

**4.2 Anticipated Impacts and Potential Concerns**

The results revealed a generally positive outlook on the future of AI in accounting. Most respondents (95%) agreed with the statements regarding the expansion of AI features in accounting systems and the potential to improve public sector accounting effectiveness. The finding postulated that Malaysian public sector accountants acknowledged the potential of AI to improve existing work practices and lead to higher efficiency and effectiveness, with the benefits listed in Table 3 expected to materialise in the future. Improved accuracy in financial reporting emerged as the top priority, with 64% agreeing that AI potentially engenders more reliable financial statements. Streamlining data analyses (78%) and time-savings on routine tasks (81%) were also highly anticipated, which propounded that Malaysian public sector accountants perceived AI as an instrumental tool to increase efficiency and accuracy within accounting practices. Therefore, continuous training and support programmes are integral to equipping public sector accountants with the necessary skills to work effectively with AI technologies. Nonetheless, the positive outlook does not necessarily negate potential concerns. Table 4 depicts the ranking of potential concerns based on the percentage of respondents who endorsed each option. A perceived over-reliance on AI was the top concern (75%), followed by security risks associated with AI usage (66%). While job displacement due to AI automation was a worry for 38% of the respondents, 34% of the respondents also expressed concerns about inadequate transparency in AI decision-making processes. The results posited that Malaysian public sector accountants were apprehensive about potential overdependence on AI and security vulnerabilities, whereas job displacement concerns were less pronounced.



**Figure 2: Perceived Expansion of AI Features**

**Table 3: Perceived Benefits of AI in Accounting Tasks**

Benefits of AI	Percentage (%)
Time savings in routine tasks	81
Increased efficiency in data analyses	78
Improved accuracy in financial reporting	64
Enhanced decision-making capabilities	61

**Table 4: Perceived Concerns Regarding AI Adoption**

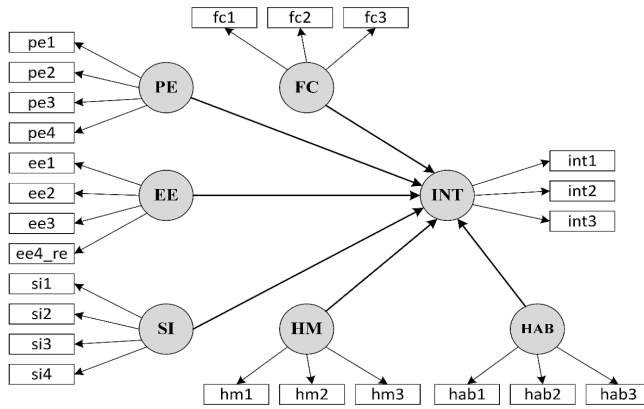
AI Functionalities	Percentage (%)
Over-reliance on AI	75
Security risks	66
Biases in AI algorithms	39
Job displacement	38
Lack of transparency	34

### 4.3 Factors Influencing AI Adoption Intentions

This section assesses the key factors contributing to Malaysian public sector accountants' AI adoption intentions in daily work practices. The PLS-SEM was performed to analyse the hypothesised relationships between the constructs delineated in the UTAUT2: performance expectancy, effort expectancy, social influence, facilitating conditions, and the intention to adopt AI.

#### 4.3.1 Measurement Model Assessment

The initial measurement model assessment prioritised establishing reliability and validity to ensure the survey instrument accurately captured the intended constructs. Figure 3 illustrates that all constructs utilise reflective measures. Hair et al.'s (2021) recommended procedure was adhered to by evaluating individual item reliability within each construct, followed by assessing internal consistency, convergent validity (measuring the intended concept), and discriminant validity (ensuring the constructs are distinct). Item ee4 was initially included in the analysis to measure the EE construct. A high score would indicate a low EE level as the item was reverse-coded. The analysis also revealed that the item achieved a weak loading score (-0.398), which postulated that Item ee4 did not adequately represent the EE construct. The results in Table 5 support the decision, wherein all constructs exhibit acceptable reliability by surpassing the thresholds of 0.708 for indicator loadings, 0.70 for consistency reliability, and 0.50 for AVE after removing Item ee4. The discriminant validity assessment was performed by adhering to Hair et al.'s (2021) guide and accepting constructs with a heterotrait-monotrait (HTMT) ratio below 0.90. Table 6 portrays that all constructs fulfil the criterion.



**Figure 3: The Current Conceptual Framework**

**Table 5: Measurement Model Assessment**

Constructs	Loadings	Rho <sub>a</sub>	Rho <sub>c</sub>	Alpha	AVE
<b>PE</b>		0.913	0.917	0.891	0.822
pe1	0.939				
pe2	0.941				
pe3	0.829				
pe4	0.826				
<b>EE</b>		0.884	0.891	0.812	0.737
ee1	0.927				
ee2	0.957				
ee3	0.660				
<b>SI</b>		0.916	0.921	0.888	0.746
si1	0.878				
si2	0.917				
si3	0.848				
si4	0.808				
<b>FC</b>		0.885	0.867	0.806	0.686
fc1	0.885				
fc2	0.828				
fc3	0.768				
<b>HM</b>		0.928	0.916	0.901	0.858
hm1	0.935				
hm2	0.910				
hm3	0.864				

**Table 5: Measurement Model Assessment (continued)**

Constructs	Loadings	RhoA	Rhoc	Alpha	AVE
<b>HAB</b>		0.867	0.875	0.861	0.828
hab1	0.963				
hab2	0.877				
hab3	0.850				
<b>INT</b>		0.765	0.859	0.756	0.670
int1	0.817				
int2	0.840				
int3	0.938				

**Table 6: Discriminant Validity**

	PE	EE	SI	FC	HM	HAB	INT
<b>PE</b>							
<b>EE</b>	0.830						
<b>SI</b>	0.692	0.745					
<b>FC</b>	0.587	0.636	0.875				
<b>HM</b>	0.855	0.870	0.749	0.749			
<b>HAB</b>	0.314	0.400	0.715	0.787	0.331		
<b>INT</b>	0.699	0.696	0.489	0.437	0.605	0.286	

### 4.3.2 Structural Model Assessment

The structural model assessment focused on examining the associations hypothesised between the constructs. Hair et al. (2021) developed a framework for structural model assessment in PLS-SEM by emphasising the importance of examining path coefficients, relevant significance, and the explanatory and predictive power of the model. The comprehensive evaluation ensures that the model reflects the theorised relationships and offers valuable insights for prediction and decision-making. Accordingly, the absence of multicollinearity was confirmed by ensuring that all variance inflation factors (VIFs) between constructs were below the recommended threshold of 5. Subsequently, the significance and relevance of each path coefficient and the explanatory power ( $R^2$ ) were investigated. Table 7 portrays only PE emerges as a significant INT predictor among Malaysian public sector accountants. The findings suggest that the other predictors might not directly impact the intention. The model exhibited moderate explanatory power with an  $R^2$  value of 0.379, which indicates a moderate proportion of the variance in the intention to adopt AI.

**Table 7: Structural Model Assessment**

	$f^2$	Path	t-value	Significance
PE → INT	0.051	0.400	3.356	Yes
EE → INT	0.013	0.172	1.390	No

**Table 7: Structural Model Assessment (continued)**

	<i>f</i> <sup>2</sup>	Path	<i>t</i> -value	Significance
SI → INT	0.002	- 0.081	-0.723	No
FC → INT	0.000	0.015	0.112	No
HM → INT	0.006	0.097	0.745	No
HAB → INT	0.003	0.073	0.902	No

## 5.0 Conclusion

The present study sought to examine the factors contributing to Malaysian public sector accountants adoption of AI intention in existing accounting practices. The PLS-SEM approach was applied to analyse the relationships between the proposed constructs and the intention to adopt AI via the UTAUT2. Empirical data were collected through a survey questionnaire distributed to Malaysian public sector accountants. All UTAUT2 constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions, were hypothesised to positively influence the intention to employ AI. The model assessment corroborated the satisfactory reliability and validity of all constructs. Nonetheless, only performance expectancy proved a significant predictor, whereas other UTAUT2 constructs did not exert direct impacts. The model also demonstrated moderate explanatory power ( $R^2 = 0.379$ ), which called for further research to appraise the contrasting results. The current study contains several limitations. Focusing only on UTAUT2 constructs might have overlooked other relevant factors contributing to AI adoption in the accounting domain. Variables like organisational readiness, regulatory compliance, or external pressures could offer a deeper understanding of AI adoption dynamics in public sector accounting. The study context was also specific to the Malaysian public sector, with unique cultural, organisational, and regulatory aspects that could influence the results, making the findings less applicable elsewhere. Lastly, this study's snapshot approach, collecting data at a specific time, does not consider the evolving nature of AI technology and public sector policies. Future researchers can assess potential variables moderating or mediating the correlations between the UTAUT2 constructs and the intention to adopt AI. For instance, perceived security concerns could act as a moderator, weakening the influences of other UTAUT2 constructs. Additional constructs relevant to the information technology (IT) or innovation context, such as perceived security, complexity, and compatibility, can also be evaluated in future studies. The factors may contain higher explanatory power in technology adoption settings. Moreover, exploring these factors could identify potential barriers to adoption that might not be immediately evident, offering insights into mitigating these obstacles. This holistic approach could pave the way for more effective strategies to promote AI adoption across different sectors and contexts. Finally, future research should consider the potential impact of organisational policies and external pressures, such as regulatory requirements or industry standards, which could significantly influence AI adoption.

## Acknowledgements

The current study would like to appreciate the Accountant General's Department of Malaysia for financial support, the invaluable participation of public sector accountants, and the encouragement and resources provided by Universiti Malaysia Terengganu.

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# A Systematic Review of Accounting Practices for Reporting Investments in Associates and Joint Ventures: Equity Method and Consolidation Method

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<https://doi.org/10.58458/ipnj.v14.02.04.0107>

Received: 30 June 2024

Reviewed: 23 September 2024

Accepted: 30 September 2024

Published: 20 December 2024

## Abstract

**Purpose:** This paper presents findings from empirical studies related to the adoption of accounting practices, namely the equity and consolidated methods of accounting, for reporting investments in associates and joint ventures.

**Design/ Methodology/ Approach:** This review considered 21 published articles sourced from Scopus and Web of Science (WoS) databases, with the publication date spanning from January 1980 to December 2022. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method was employed for article retrieval.

**Findings:** Based on the search results, the empirical research was synthesised and segregated into three (3) major domains: usefulness, value relevance and level of compliance. Despite having mixed empirical evidence across countries, the equity method is more beneficial to investors due to its positive relationship with market values and lower volatility. While crucial for creditors, the consolidation method significantly impacts financial statements and explains price fluctuations. The review suggests that future research should address implementation challenges, incorporate more qualitative studies and explore Asian datasets, which are currently underrepresented.

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This article is part of a research on Consolidation Method for Reporting Investments in Controlled Entity in the *Menteri Kewangan Diperbadankan*: Issues and Challenges supported by the Accountant General's Department of Malaysia through *Geran Penyelidikan Perakaunan dan Kewangan Sektor Awam Tahun 2024* (JANM.100-12/2/1 (17)).

**Originality/ Value:** This review synthesizes 44 years of empirical research on accounting practices for reporting investments in associates and joint ventures, focusing on the equity method and consolidation method. It identifies three distinct thematic domains within this body of literature, providing a comprehensive mapping of its development.

**Keywords:** Investment in associates and joint ventures, accounting practices, equity method, consolidation method

## 1.0 Introduction

The study of accounting practices that account for investments in associates and joint ventures has received a great deal of attention in the literature. This observation is likely attributable to the inexorable link between securities market valuations and reported financial information, indicating that business stakeholders and market participants have been attentive to changes in reported accounting figures. Early works, such as that of Ball and Brown (1968), showed that stock prices adjust to the release of income reports. More recent studies, such as those by Alfraih (2016), Sotti (2017) and Busari and Bagudo (2021), also support the view that financial statements share a significant portion of relevance to investors. The changes in accounting figures could be due to the accounting method used to reflect these changes, in addition to the company's operating performance, financing decisions and investments. Previous empirical studies have documented findings that provide the basis for such a view, particularly with regard to capital investment reporting. Reported investment income, conditioned to respective accounting practices, is said to be 'useful' and has 'value relevant' if it is informative for investors to form a price. For example, Sarquis and Santos (2018) documented that the change in accounting for investments from proportionate consolidation to the equity method has led to an impairment in assessing companies' financial indicators and rankings. In a much earlier note, Badenhorst and Brümmer (2015) claimed that individual components of disclosed financial numbers have the greatest incremental value as a group compared to a single entity, implying that those investments in subsidiaries, associates, joint ventures or partnerships as a group have greater usefulness.

The current accounting method for reporting such investments in accordance with the mandatory requirements of the Financial Accounting Standards Board (FASB) is the equity method (The IFRS Foundation, 2024). In general, the equity method is an alternative to proportionate consolidation and cost methods for recognising investments in associates and joint arrangements, encompassing the recognition of profits as well as net assets and liabilities. The equity method, in contrast to proportionate consolidation, requires investors to recognise their investments as a single-line item in the balance sheet at cost (Sarquis et al., 2021). After acquisition, the carrying amount changes by an amount equal to the investor's shares in the listed associates and joint ventures. In contrast, equity income is recognised by investors in their income statements as they share the post-acquisition profits of the associates and joint ventures, regardless of distributed. The following expectations arise from these differences: First, the equity method is more efficient as it does not inflate core earnings. Second, the earnings of associates and joint ventures reported in one (1) line might provide new data to the market (Tutticci, 2002). Third, the difference in the level of control and influence exerted by investing companies over their investees also raises concerns about the usefulness of

these methods for financial reporting data, particularly in scenarios where companies hold joint arrangements with other entities. These expectations have resulted in an increase in the research examining the empirical implications of these methods.

Despite abundant studies on this topic, efforts to systematically review the research are still meagre. Therefore, this paper attempts to report empirical research findings on equity and consolidated methods of accounting for reporting in associates and joint ventures. Reports on the adoption of accounting methods and how they provide incremental value will demonstrate a baseline overview of the implications. The retrieval of current articles to construct a relevant review was guided by the main research question: Which method is more useful and value-relevant? The answer to this question will determine the magnitude of impact on which method carries informational content to the investors in such a way that it is reflected in stock prices and risk premiums. If it does, then we can assume that the market perceives the practice of not inflating earnings as well as net assets and liabilities reported in the financial statements through the receipt of dividends and profit from non-arm length transactions as informative. The current study's analysis will not only furnish new evidence to the corpus of accounting policy literature but also extend the existing line of qualitative findings by clustering empirical evidence that has not yet been the subject of academic studies. More importantly, the results of this study will provide important insights to various stakeholders, including the standard setters, as a reference to facilitate them in formulating relevant policies related to these methods.

Following the introduction, Section 2 presents the methodology utilised for conducting the review based on the PRISMA statement approach. Section 3 synthesises and demonstrates the results of the retrieved relevant articles. Sections 4 and 5 discuss the major themes related to the topic and provide concluding remarks, respectively.

## **2.0 Methodology**

This section describes the approach used to retrieve the articles that relate to the equity and consolidated approaches to reporting investments in associates and joint ventures. The methodology called PRISMA was employed to perform the systematic review process using the resources retrieved from Scopus and manage the clustering of the criteria, the flow of the review process (identification, screening, eligibility and inclusion) and the data abstraction and analysis.

### **2.1 PRISMA**

The PRISMA approach is an updated version of the QOURUM<sup>1</sup> statement introduced by an international group in 2009 to address meta-analyses and improve the suboptimal reporting of systematic reviews, a conceptual and practical advance that the QUOROM statement should have covered. It consists of a 27-item checklist and a flow diagram that guides authors in developing and writing systematic review protocols.

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<sup>1</sup> QOURUM refers to Quality of Reporting of Meta Analyses.

## 2.2 Resources

This study retrieved articles from Scopus and WoS. Scopus is the second-largest abstract and citation database for peer-reviewed literature, consisting of scientific journals, books, conference proceedings and specialised publications. To date, Scopus comprises over 71 million records with more than 23,700 peer-reviewed journals from 5,000 publishers worldwide. The content is divided into four (4) main areas: Health Sciences (31%), which accounts for the largest share of the total content, Natural Sciences (28%), Social Sciences (25%) and Life Sciences (15%).

## 2.3 Criteria Clustering (Inclusion and Exclusion)

This study performed a criteria cluster to find the relevant articles and better manage the retrieved articles, whereby several eligibility criteria were defined. The search for articles based on the defined criteria was conducted using the refinement tool provided by each database. Four (4) criteria were used for the search: document type, language, source type and indexes. First, with regard to document type, only research articles were selected, excluding conference papers, book chapters and review articles. Second, articles published in non-English were excluded for reviewing convenience and to avoid difficulty in translating. In addition, only journal articles were included, and those in books, book series and conference proceedings were excluded. Lastly, only articles published in WoS and Scopus-indexed journals were reviewed.

**Table 1: Criteria for Inclusion and Exclusion**

Criterion	Inclusion	Exclusion
Document type	Research article	Conference paper, conference review, book chapter, review article
Language	English	Non-English
Source type	Journal	Book, book series, conference proceeding
Indexes	WoS and Scopus-indexed journal	Non WoS and Scopus-indexed journal

## 2.4 Systematic Review Process

As mentioned above, a simple identification, screening, selection and inclusion approach modelled on the PRISMA method was used. The systematic review process comprised four (4) phases and was conducted in June 2024. The first phase consisted of identifying the keywords used for the search. Based on previous studies and the keywords suggested in the databases' refinement tool, keywords related to the two (2) accounting methods were utilised. A total of 120 articles were found in Scopus, while 49 were found in the WoS, which were eligible for the review. The second phase was screening. Only articles that met the criteria listed in Table 1 were selected. Of the 169 articles, 53 were excluded, leaving only 116 for the review. The third stage was article selection, where the full articles were viewed and carefully scrutinised. A total of 103 articles were eliminated for failing to focus on the equity or consolidated method, lacking emphasis on associates or joint ventures, or were not empirical investigations. This removal resulted in only 21 articles eligible to be included and reviewed for the qualitative analysis.

**Table 2: The Query String Used for Article Retrieval**

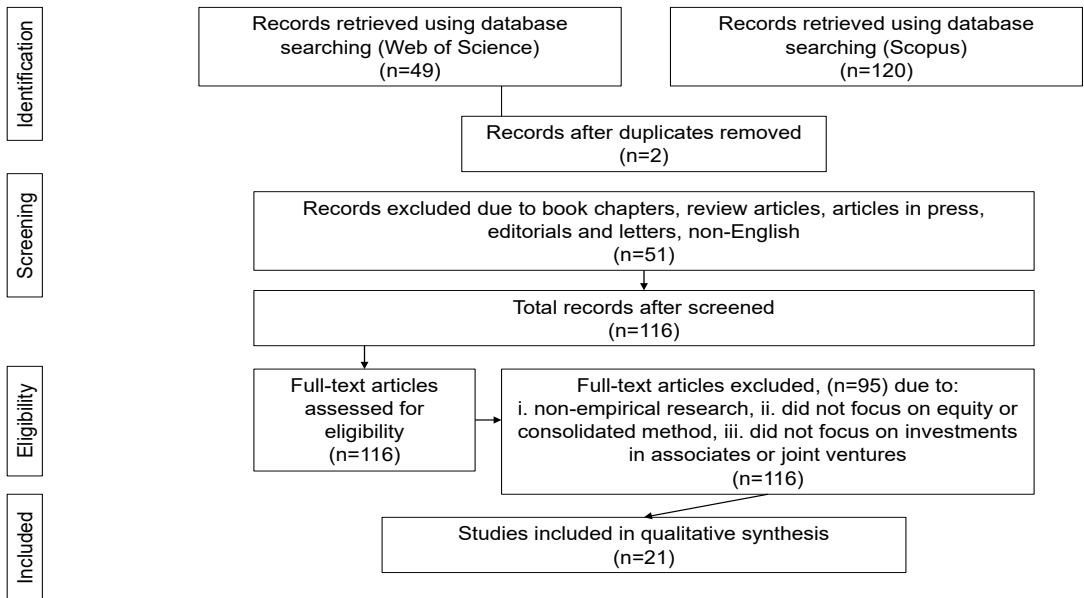
Database	Keywords used
Scopus	TITLE-ABS-KEY (("equity" OR "consolidated") AND ("method" OR "practic*" OR "approach") AND ("investment") AND ("associates" OR "joint ventur*"))
Web of Science (WoS)	TS=("equity" OR "consolidated") AND ("method" OR "practic*" OR "approach") AND ("investment") AND ("associates" OR "joint ventur*"))

### 2.5 Data Abstraction and Analysis

The remaining articles were then assessed and analysed, focusing on studies that addressed the formulated questions. Data were extracted by first skimming the abstracts, followed by an in-depth review of the full articles to identify relevant themes. Qualitative content analysis was conducted to determine themes related to the equity or consolidated method for reporting investments in associates and joint ventures. The themes were organised around the established typology.

### 3.0 Results

The review results are presented in three (3) themes to reflect the usefulness, value relevance and compliance of both methods from the buy-side and sell-side perspectives. Below is a flow diagram detailing the application of the PRISMA method in retrieving the existing empirical studies to the qualitative synthesis conducted between 1998 and June 2024. The flow of the diagram is adapted from Moher et al. (2009).



**Figure 1: Flow Diagram**



### 3.1 Study Characteristics

Twenty-one empirical studies were analysed, with four (4) originating from Australia (Bradbury et al., 2022; Tutticci, 2002; Morris & Gordon, 2006; Eddey & Sullivan, 1980), four (4) from the United States (Lee et al., 2013; Bauman, 2007; Stoltzfus & Epps, 2005; Graham et al., 1998), three (3) from Canada (Graham et al., 2001; Graham et al., 2003; Kothavala, 2003), two (2) from Singapore (Lim et al., 2003; Mazay et al., 1993) and one (1) each from Hong Kong (So et al., 2018), Brazil (Sarquis & Santos, 2018), China (Lai et al., 2019), Spain (Inchausti et al., 2017), Denmark (Schøler, 2016), the United Kingdom (O’Hanlon & Taylor, 2007) and the global dataset (Sarquis et al., 2021), respectively. Of these, 11 studies focused on firms with investments in joint ventures, five (5) on associated companies, and the remaining studies covered both types of investments, with sample sizes ranging from 1 to 8,962 listed firms. Due to the absence of control, studies on associated companies used only equity accounting rather than the consolidated method. Table 3 summarises an overview of previous empirical works related to equity and consolidated methods of accounting by the dataset used, concentration on investments, methods employed and their findings.

**Table 3: General Description of the Articles Included in the Review**

No.	Reference	Sample	Country	Type of Investment	Method	Theme
1.	Bradbury et al. (2022)	154 listed companies,	Australia	Associate	Multiple regression	Usefulness
2.	Sarquis et al. (2021)	551 firms, 26 countries	Global	Joint venture	Multiple regression	Compliance
3.	So et al. (2018)	Listed companies	Hong Kong	Joint venture	Multiple regression	Value relevance
4.	Sarquis and Santos (2018)	Single firm	Brazil	Joint venture	Comparison of information in financial statement	Value relevance
5.	Lai et al. (2019)	8,962 listed companies	China	Associate and joint venture	Probit regression	Usefulness
6.	Inchausti et al. (2017)	385 firms	Spain	Joint venture	Regression model	Value relevance
7.	Schøler (2016)	97 companies	Denmark	Subsidiary	OLS regression	Value relevance
8.	Lee et al. (2013)	8,302 firms	United States	Associate	Correlation coefficients	Usefulness
9.	Bauman (2007)	Manufacturing firms	United States	Associate and joint venture	OLS regression	Value relevance
10.	O’Hanlon and Taylor (2007)	Listed non-financial firms	United Kingdom	Joint venture	Regression model	Value relevance



**Table 3: General Description of the Articles Included in the Review (continued)**

No.	Reference	Sample	Country	Type of Investment	Method	Theme
11.	Morris and Gordon (2006)	100 companies	Australia	Associate and joint venture	Multiple regression	Compliance
12.	Stoltzfus and Epps (2005)	567 companies	United States	Joint venture	Multiple regression and financial ratios	Value relevance
13.	Graham et al. (2001)	172 firms	Canada	Joint venture		Usefulness
14.	Graham et al. (2003)	172 firms	Canada	Associate	Regression	Value relevance
15.	Kothavala (2003)	117 firms	Canada	Joint venture	Accounting ratios	Value relevance
16.	Graham et al. (2003)	78 ventures	Canada	Joint venture	DuPont and regression	Usefulness
17.	Lim et al. (2003)	122 firms	Singapore	Joint venture		Value relevance
18.	Tutticci (2002)	303 companies	Australia	Associate	OLS regression	Value relevance
19.	Graham et al. (1998)	133 firms	United States		Regression model	Value relevance
20.	Mazay et al. (1993)	200 firms	Singapore	Associate	Multiple regression	Value relevance
21.	Eddey and Sullivan (1980)	100 firms	Australia	Joint venture	Qualitative	Usefulness

### 3.2 Three Major Related Themes

#### 3.2.1 Value Relevance

Early works in examining the value relevance of adopting an accounting method began in the 1990s (refer to Table 4). It was noticed that considerable efforts of prior studies to the analysis primarily focused on assessing whether asset prices moved in a direction that reflected the reported earnings and balance sheet under the equity method vis a vis its counterpart, proportionate consolidation when financial statements were disclosed to the market. If it did, such changes conditioned to which accounting treatment used would conceivably be perceived as 'value relevance'. Greater relevance of both methods indicated that the clausal structure between price and content in financial statements was more crucial, especially in investment decision setting, and vice versa. Nevertheless, the perspectives drawn in the previous studies differed in the context of types of investments involved – either in associates or jointly controlled entities, market coverage, securities in question, equities or debts and entities involved, buy-side or sell-side.

Among the pioneers, Graham et al. (1998) tested the association between stock price returns and disclosures of fair value investments in publicly listed stocks accounted for by the equity method. They found that stock price linked positively to differences between disclosed fair values and recognised book values, suggesting the irrelevance of information contained therein. Later, Graham et al. (2001) compared the effects of proportional consolidation and equity methods on firms with selected financial ratios and stock returns in 78 Canadian ventures. The former was more usable for an ex-ante analysis than the latter. In particular, a stronger linkage was evidenced between return on investment and profit margin, asset turnovers, leverage ratios and stock returns under the proportional consolidation method in relation to the application of the equity method. Supporting a similar view to Graham et al. (2001) are Kothavala (2003), Stoltzfus and Epps (2005), Bauman (2007) and Sarquis and Santos (2018). Kothavala (2003) compared value relevance between the alternative methods of accounting, proportionate consolidation and equity from the perspective of market risk. Yield spread and standard deviation to proxy for bond risk premium and stock price volatility were measured. Evidence that favoured proportionally consolidated financial statements was found, which possessed a greater risk relevance than equity method statements in explaining stock price fluctuations. Lim et al. (2003) also supported similar evidence. They examined the impact of additional information disclosure on information asymmetry in joint ventures among Singapore companies, as measured by bid-ask spreads. The results showed that such disclosures significantly reduced bid-ask spreads, with the reduction greater when investments were substantial. Smaller firms that invested experienced a greater reduction in information asymmetry than larger firms. These results suggested that providing additional information about joint ventures could reduce information asymmetry in equity markets, providing important insights for policymakers.

Nevertheless, in terms of bonds, equity method statements were more risk-relevant. Likewise, Bauman's (2007) findings supported Kothavala's (2003) results for bond ratings. In a similar line, Stoltzfus and Epps (2005) argued that the proportionate consolidation method gave higher value relevance to bond risk premiums when investees were debt-guaranteed by investors. Otherwise, the value was distorted. A much more recent work by Sarquis and Santos (2018) discovered that total assets, liabilities and revenues reported under proportionate consolidation were substantially higher than the equity method, resulting in a significant impact on the largest private firm in Brazil in terms of financial indicators, its rankings and other financial analyses reported.

**Table 4: Comparison of the Value Relevance Between the Two Methods**

No.	Reference	Value Relevance	Key Findings
1.	So et al. (2018)	Equity method	Proportionate consolidation offers less value to investors than the equity method.
2.	Sarquis and Santos (2018)	Proportionate consolidation	<ol style="list-style-type: none"> <li>Total assets, liabilities and revenues reported using the consolidation method are higher than the equity method.</li> <li>This variation affects financial indicators, industry rankings and the need to renegotiate covenants.</li> </ol>

**Table 4: Comparison of the Value Relevance Between the Two Methods (continued)**

No.	Reference	Value Relevance	Key Findings
3.	Inchausti et al. (2017)	Inconclusive	The choice of the accounting regime does not affect the bias, accuracy or dispersion of earnings forecasts, target prices or stock recommendations, regardless of whether firms provide information in the notes. It is inconclusive whether such variation is attributable to the method chosen.
4.	Schøler (2016)	Equity method	The equity method exhibits lower volatility than alternate measures, even when industry differences and transparency levels are controlled.
5.	Bauman (2007)	Proportionate consolidation method	The consolidation method better explains bond ratings than the equity method.
6.	O'Hanlon and Taylor (2007)	Negative valuation impact of disclosures of the liabilities of equity-accounted investees	A negative valuation impact of disclosures of the liabilities of equity-accounted investees.
7.	Stoltzfus and Epps (2005)	Proportionate consolidation method	Switching to proportionate consolidation would provide creditors with more value-relevant information when companies guarantee the debt of a joint venture.
8.	Graham et al. (2003)	Significant positive relation between the equity method's fair value disclosures and investor firms' market values and security returns.	A significant positive relation between the equity method's fair value disclosures and investor firms' market values and security returns.
9.	Kothavala (2003)	Proportionate consolidation for price volatility and equity method for bond ratings	The proportionate consolidation method better explains price fluctuations, whereas the equity method better explains bond ratings.
10.	Lim et al. (2003)	Equity method	Supplementary information disclosure significantly reduces bid-ask spreads, with greater reductions when investments are substantial.
11.	Tutticci (2002)	Equity method	The equity method has greater value relevance than the cost method.
12.	Graham et al. (1998)	Equity method	<ol style="list-style-type: none"> <li>Standard setters should consider requiring the recognition of fair values for equity method investments, especially in publicly traded stocks.</li> <li>Concerns over control premiums or seller discounts do not limit market participants from using fair value disclosures for firm valuation.</li> </ol>

### 3.2.2 Usefulness

A total of seven (7) out of 21 studies focused on the usefulness of both methods. Studies by O'Hanlon and Taylor (2007), Lee et al. (2013) and Lai et al. (2019) provided empirical consensus on the lack of usefulness of the equity method. O'Hanlon and Taylor (2007) conducted an observation on the viewpoint of investees in UK-listed firms. They found a negative valuation impact of disclosures of the liabilities of equity-accounted investees. The usefulness of investee-liability disclosures was more pronounced for guaranteed joint venture liabilities than for guaranteed associate liabilities. According to Lee et al. (2013), opacity effects showed that the equity method yielded less accurate and more dispersed annual earnings forecasts. Lai et al. (2019) indicated that firms with declining core incomes were more likely to engage with equity method investments and that equity method earnings did not improve earnings persistence, though found to be relevant.

Contrary to the above studies, findings by Tutticci (2002), So et al. (2018) and Bradbury et al. (2022) offered many tangential thoughts on this, where their conclusions pointed towards incremental usefulness of the equity method. Tutticci (2002), for instance, using a sample of 303 Australian companies investing in associates during the pre-recognition of the regulatory period and found that the equity method was value-relevant over the cost method. However, the market did not perceive the information in the supplementary notes was reliable or relevant. Supporting a similar view to Tutticci (2002) are recent works by So et al. (2018) and Bradbury et al. (2022). Bradbury et al. (2022) argued that the equity method was useful when alternative methods, such as fair value and proportionate consolidation, were not available. So et al. (2018), on the other hand, claimed that proportionate consolidation did not offer higher value relevance than the equity method. The equity method's vertical aggregation of a portion of the operations, assets and liabilities of the jointly controlled entities with those of the venturer was more informative to investors than the proportionate consolidation method.

**Table 5: Summary of Studies on the Usefulness of Equity Method and Consolidated Method Accounting**

No.	Reference	Usefulness	Key findings
1.	Bradbury et al. (2022)	Equity method	The equity method is useful when other alternate measures are not available – fair value or proportionate consolidation.
2.	So et al. (2018)	Equity method	Proportionate consolidation's horizontal aggregation of a portion of the operations, assets and liabilities of the jointly controlled entities with those of the venturer is less informative to investors than the equity method's vertical aggregation.
3.	Lai et al. (2019)	Equity method earnings do not improve earnings persistence though relevant.	<ol style="list-style-type: none"> <li>1. Firms with declining core earnings are more likely to have equity method investments than firms with increasing core earnings.</li> <li>2. Firms with lower core earnings report higher equity method earnings.</li> <li>3. Moreover, equity method earnings do not improve earnings persistence but are found to be relevant.</li> </ol>

**Table 5: Summary of Studies on the Usefulness of Equity Method and Consolidated Method Accounting (continued)**

No.	Reference	Usefulness	Key findings
4.	Lee et al. (2013)	Equity method yields less accurate and more dispersed annual earnings forecasts	<ol style="list-style-type: none"> <li>1. Opacity effect: The disclosure of the equity method leads to increased information asymmetry, which results in higher forecast errors and a greater dispersion of forecasts among analysts.</li> <li>2. Diversification effect: The diversification of the income streams of investors and investees improves the predictability of earnings and thus reduces forecasting errors and the dispersion of forecasts among analysts.</li> </ol>
5.	O'Hanlon and Taylor (2007)	Negative valuation impact of disclosures of the liabilities of equity-accounted investees.	Negative valuation impact of disclosures of the liabilities of equity-accounted investees.
6.	Graham et al. (2001)	Proportionate consolidation method	The proportionate consolidation method has predictive value over equity when accounting for joint ventures.
7.	Eddey and Sullivan (1980)	Equity method	The equity method is preferred against the proportionate consolidation method.

### 3.2.3 Level of Compliance

Table 6 demonstrates the level of compliance and adoption of both methods by Sarquis et al. (2021) and Morris and Gordon (2006). Sarquis et al. (2021) revealed widespread non-compliance with disclosure requirements outlined in IFRS 12. Firm-level characteristics, such as size, leverage level and ownership focus, are more influential in explaining compliance levels than country-level variables. Additionally, the materiality of joint ventures is positively linked to compliance and vice versa. Morris and Gordon (2006) examined the adoption of the equity accounting method in both regulated and unregulated environments. Before introducing Australian Accounting Standard (AAS 14) in 1984, many Australian companies voluntarily used equity accounting in their consolidated accounts. AAS 14 and the subsequent Accounting Standard Review Board (ASRB) 1016 mandated that equity accounting be disclosed separately, either in supplementary disclosures or footnotes, not consolidated accounts. Companies adopting equity accounting tended to do so when it increased reported earnings. Before AAS 14, adopters often had declining Earnings per Share (EPS) and were less likely to be audited by large firms, and leverage was a factor in adoption. Post-AAS 14, adopters showed equity accounting in ways that either increased reported earnings or disclosed it in footnotes when it decreased earnings. Higher associate investments were more common among post-AAS 14 adopters, indicating that adopting the method is 'opportunistic' rather than efficient motives. In a much earlier note, Mazay et al. (1993) found that non-compliance with the standard occurred through using the equity method in primary statements or the cost method without supplementary disclosures. The findings advocated the contractual efficiency motive, linking accounting choices to the proportion of listed associates and the materiality of investments and guarantees but not to the ownership degree. These results contradicted Morris and Gordon's

(2006) study, which suggested that opportunistic behaviour drove the choice of accounting method.

**Table 6: Level of Compliance of Accounting Methods**

No.	Reference	Level of Compliance/ Adoption	Key Findings
1.	Sarquis et al. (2021)	Low	<ol style="list-style-type: none"> <li>1. Firm-level characteristics, such as size, leverage, ownership concentration and materiality of joint ventures, influence the level of compliance with IFRS 12 disclosure requirements.</li> <li>2. Larger, less leveraged firms, lower ownership concentration and more material joint ventures exhibit higher compliances.</li> </ol>
2.	Morris and Gordon (2006)	Opportunistic adoption	The adoption of equity accounting predominates when it boosts earnings upwards and vice versa, suggesting opportunistic practice.
3.	Mazay et al. (1993)	Contractual efficiency motive	The adoption of the accounting method is more of a contractual efficiency motive, linking accounting choices to the proportion of listed associates, the materiality of investments and the existence of guarantees, but not to the ownership degree of associates.

#### 4.0 Discussion

This review attempted to systematically analyse and synthesise the existing studies on equity and consolidated methods of accounting practices for reporting investments in associates and joint ventures. A rigorous review obtained from two (2) databases has resulted in 21 articles related to both methods. Within the scope of this review, three (3) major themes of empirical studies related to accounting practices for reporting such investments emerged: usefulness, value relevance and level of compliance. In relation to value relevance, research examining the integrative function of equity and consolidated methods in terms of value relevance, including how each method impacts the behaviour of security prices, earnings forecasts and risk premia, has increased since the work of Ohlson (1995). Nevertheless, the results of the empirical works are ambivalent. In particular, two strands of evidence are notable: the proponents and opponents of the method. The first argued that the equity method offered greater value relevance than its alternatives. The second emphasised that the equity method was less useful in explaining asset price changes, provided a less accurate profit forecast and was less relevant to risk. Examples of studies supporting the former included Bradbury et al. (2022), So et al. (2018), Graham et al. (2003) and Tutticci (2003). They generally documented evidence of the increasing usefulness of the equity method and the importance of variables, such as book value, earnings and accounting ratios. Meanwhile, Sarquis and Santos (2018), Lai et al. (2017), Scholer (2016), Bauman (2007), Stoltzfus and Epps (2005) and Kothavala (2003) were studies that supported the latter. These studies highlighted the dominance of alternative methods, especially proportionate consolidation, to possess value relevance greater than the equity method when judging security returns, forecasts and risks. Whereas in terms of the

level of compliance, Sarquis et al. (2021) found that compliance with the standard is generally low, influenced by firm characteristics, such as size, leverage, ownership concentration and the materiality of joint ventures. Morris and Gordon (2006) observed that adopting equity accounting was often opportunistic and used primarily to increase earnings. This is contrary to the report by Mazay et al. (1993), which argued the choice of accounting method was driven by contractual efficiency motives, linked to the proportion of listed associates, the materiality of investments and the presence of guarantees, but not the number of ownerships in associates.

This systematic review provided insightful information on the adoption of accounting methods for regulators, especially on how it affects the financial indicators of the firms and their value relevance on both stock price and risks. Nevertheless, there are several limitations worth noting. First, absent concentration pertaining to challenges or issues in implementing each method in-house necessitates further investigations. This aspect remains unknown. Second, the majority of studies are quantitative in nature. Future works should consider qualitative designs as they might offer more detailed explanations towards understanding the effects of practising each method. In addition, unequal attention to the Asian dataset (with the exception of Lai et al., 2017 on China) leaves room for an interesting case study.

## **5.0 Conclusion**

This systematic review demonstrated the usefulness, value relevance and degree of compliance with different accounting methods in reporting on investments in associates and joint ventures. Despite the ambiguous results of empirical evidence in various country contexts, investors view the equity method as more valuable due to its positive relationship with market values and lower volatility. On the other hand, the proportionate consolidation method provides important information that affects financial statements, is crucial for creditors, and explains price fluctuations. The review recommends several directions for future studies. First, the lack of focus on implementation challenges requires further investigation. Second, predominantly quantitative studies suggest a need for qualitative research to understand the effects of each method better. Finally, insufficient evidence of Asian data suggests a potential area for future case studies.

## **Acknowledgements**

This research was supported by the Accountant General's Department of Malaysia (Jabatan Akauntan Negara Malaysia).



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# Pengukuran Susulan Bagi Aset Hartanah, Loji dan Peralatan Sektor Awam: Perbandingan Amalan Semasa di Empat Negara Terpilih

*(Subsequent Measurement of Property, Plant, and Equipment in the Public Sector: A Comparison of Current Practices in Four Selected Countries)*

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<https://doi.org/10.58458/ipnj.v14.02.05.0108>

Received: 30 June 2024

Reviewed: 11 September 2024

Accepted: 30 September 2024

Published: 20 December 2024

## Abstrak

**Tujuan:** Kajian ini bertujuan untuk mengenal pasti dan membuat perbandingan asas pengukuran susulan aset hartanah, loji dan peralatan (HLP) yang diguna pakai di empat (4) negara yang dipilih iaitu United Kingdom (UK), New Zealand, Australia dan Kanada.

**Rekabentuk/ Metodologi/ Pendekatan:** Analisis kandungan dokumen termasuk laporan kewangan kerajaan, piawaian perakaunan dan manual laporan kewangan telah dijalankan. UK, New Zealand, Australia dan Kanada dipilih kerana negara-negara ini telah lama mengguna pakai perakaunan asas akruan yang memerlukan aset bukan kewangan termasuk aset HLP dinilai dan dipermodalkan. Sebagai perintis dalam pelaksanaan perakaunan asas akruan, pengalaman mereka dalam memperakaun aset HLP khususnya pengukuran aset berkenaan boleh dijadikan panduan untuk diaplikasikan di negara membangun seperti Malaysia.

**Dapatan:** Secara keseluruhan, bagi pengukuran susulan aset HLP sektor awam, model kos sejarah dan nilai semasa kedua-duanya diguna pakai bergantung kepada jenis atau kategori aset yang dikenalpasti kecuali Kanada yang hanya mengguna pakai model kos sejarah. Terdapat persamaan antara New Zealand dan Australia yang mengguna pakai asas nilai saksama di bawah model nilai semasa bagi kebanyakan aset HLP. Manakala unik bagi UK, asas

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Artikel ini adalah sebahagian daripada projek Kajian Kaedah Terbaik Pengukuran Susulan bagi Aset Hartanah, Loji dan Peralatan Sektor Awam yang dibiayai oleh Jabatan Akauntan Negara Malaysia di bawah Geran Penyelidikan Perakaunan dan Kewangan Sektor Awam Tahun 2024 (JANM.100-12/2/1 (9)).

nilai pengoperasian semasa (*current operational value* – COV) diguna pakai bagi aset HLP tertentu seperti tanah dan bangunan serta aset infrastruktur.

**Limitasi/ Implikasi Kajian:** Data kajian dikumpulkan daripada sumber sekunder dan bergantung sepenuhnya kepada apa yang dilaporkan dan yang terkandung dalam dokumen yang dianalisis sahaja. Selain itu, hanya amalan semasa empat (4) negara sahaja yang dikaji, justeru adalah mustahil untuk digeneralisasi kepada keseluruhan organisasi sektor awam.

**Implikasi Praktikal:** Hasil dapatan kajian dijangka dapat menjadi input berguna untuk mencadangkan kaedah terbaik pengukuran susulan aset HLP yang boleh dipraktik dalam sektor awam di Malaysia. Seterusnya dapatan kajian boleh dijadikan panduan oleh Jabatan Akauntan Negara Malaysia (JANM) untuk menggubal piawaian dan polisi perakaunan bagi pengukuran susulan aset HLP sektor awam.

**Ketulenan/ Nilai:** Kajian yang dilaporkan dalam artikel ini merangkumi perbandingan amalan pengukuran susulan aset HLP di empat (4) negara maju terpilih yang telah lama mengamalkan perakaunan asas akruan. Hasil kajian boleh memangkin kajian tentang implikasi setiap asas pengukuran susulan terhadap prestasi dan kedudukan kewangan negara dan seterusnya mengutarakan cadangan kaedah terbaik pengukuran susulan bagi aset sektor awam di Malaysia.

**Kata Kunci:** Pengukuran aset sektor awam, pengukuran susulan, asas pengukuran aset, nilai pengoperasian semasa

### **Abstract**

**Purpose:** *This study aims to identify and compare the basis for subsequent measurement of property, plant and equipment (PPE) assets used in four (4) selected countries, namely the United Kingdom (UK), New Zealand, Australia and Canada.*

**Design/ Methodology/ Approach:** *Content analysis of documents, including government financial reports, accounting standards and financial report manuals, was carried out. The UK, New Zealand, Australia and Canada were selected because these countries have long used accrual basis accounting, which requires non-financial assets, including PPE assets to be valued and capitalised. Being pioneers in the implementation of accrual basis accounting, their experience in accounting for HLP assets, especially the measurement of the assets, can be used as a guide to be applied in developing countries such as Malaysia.*

**Findings:** *Overall, for subsequent measurement of public sector PPE assets, both historical cost and current value models are used depending on the type or category of assets identified, except for Canada which only uses the historical*

*cost model. There are similarities between New Zealand and Australia which apply the fair value basis under the current value model for most PPE assets. While unique to the UK, the current operating value basis is used for certain PPE assets such as land and buildings and infrastructure assets.*

**Research Limitations/ Implications:** *Data for the study was collected from secondary sources and depends entirely on what was reported and contained in the analyzed documents. In addition, only the current practices of four countries were studied, thus it is impossible to generalize to the entire public sector organisation.*

**Practical Implications:** *The results of the study are expected to be a useful input to suggest the best method of subsequent measurement of PPE assets that can be practiced in the public sector in Malaysia. Next, the findings of the study can be used as a guide by the Accountant General's Department of Malaysia (AGD) to draft accounting standards and policies for the subsequent measurement of public sector PPE assets.*

**Originality/ Value:** *The study reported in this article includes a comparison of PPE asset subsequent measurement practices in four (4) selected developed countries that have long practiced accrual basis accounting. The results of the study may fuel more studies to examine the implications of each subsequent measurement basis on the performance and financial position of the country and further suggest the best method of subsequent measurement for public sector assets in Malaysia.*

**Keywords:** *Measurement of the public sector assets, subsequent measurement, basis of asset measurement, current operational value*

## 1.0 Pengenalan

Pengukuran memainkan peranan penting dalam menentukan nilai kewangan sesuatu item penyata kewangan dengan memastikan asas pengukuran yang sesuai diguna pakai. Setiap asas pengukuran mempunyai sifat-sifat berbeza yang dapat membantu pengguna penyata kewangan menilai kos perkhidmatan yang disediakan oleh sesuatu entiti sektor awam, keupayaan entiti menyediakan perkhidmatan pada masa hadapan dan kapasiti entiti berkenaan membiayai aktiviti-aktivitinya (McDonough & Yan, 2023). Pengukuran bagi aset hartanah, loji dan peralatan (HLP) sektor awam adalah sesuatu yang mencabar. Ini adalah kerana sebahagian besar aset HLP dalam sektor awam dipegang untuk potensi perkhidmatannya iaitu aset operasi yang digunakan untuk menyediakan perkhidmatan manakala sebahagian lagi aset HLP dipegang untuk menjana aliran tunai. Ia menjadi perbincangan berterusan tentang model pengukuran susulan manakah di bawah perakaunan asas akrual yang paling baik memenuhi keperluan pihak berkepentingan sektor awam (Oulasvirta, 2021).

Dalam konteks pengukuran aset HLP sektor awam di Malaysia, selari dengan Piawaian Antarabangsa Perakaunan Sektor Awam (IPSAS), Piawaian Perakaunan Sektor Awam Malaysia (MPSAS) membenarkan asas kos sejarah dan asas nilai saksama diguna pakai. Walau bagaimanapun, jika sesuatu aset HLP itu dipegang untuk kapasiti operasinya iaitu

penyampaian perkhidmatan, penggunaan nilai saksama adalah sukar dan mungkin tidak sesuai kerana aset tersebut tidak digunakan dengan sebanyak dan sebaik mungkin untuk tujuan kewangan. Dalam perkembangan terkini, bagi aset yang dipegang bagi tujuan operasi, Badan Piawaian Antarabangsa Sektor Awam (IPSASB) telah memperuntukan asas pengukuran susulan baru iaitu nilai pengoperasian semasa (COV) dan menerima pakai asas nilai saksama bagi aset HLP sektor awam yang dipegang bagi tujuan menjana aliran masuk tunai (IPSASB, 2022). Dalam konteks sektor awam di Malaysia, bagi pengukuran susulan aset HLP termasuk aset infrastruktur dan aset pertahanan, MPSAS 17 membenarkan sama ada model kos atau model penilaian semula yang melibatkan penentuan nilai saksama.

Dari aspek pengukuran susulan aset HLP ini, kajian perbandingan tentang amalan sedia ada antara negara-negara yang telah mengguna pakai perakaunan asas akruan didapati masih kurang. Tambahan pula, perkembangan terkini piawaian perakaunan berkaitan pengukuran aset seperti yang diperkenalkan IPSASB telah membuka ruang persoalan sejauh mana asas pengukuran susulan aset HLP seperti asas nilai semasa telah diamalkan. Justeru, kajian yang dilaporkan dalam artikel ini bertujuan untuk mengenal pasti dan membuat perbandingan asas pengukuran susulan aset HLP yang diguna pakai di empat (4) negara yang dipilih iaitu UK, New Zealand, Australia dan Kanada. Pemilihan negara-negara ini adalah kerana negara-negara tersebut adalah negara peneraju yang telah lama melaksanakan perakaunan asas akruan. Pelaksanaan perakaunan akruan yang telah matang di negara-negara berkenaan mewajarkan pengalaman dan amalan negara-negara ini dalam memperakaunkan aset khususnya berkaitan pengiktirafan dan pengukuran aset HLP dijadikan sebagai panduan. Hasil dapatan kajian dijangkakan dapat menjadi input berguna untuk mencadangkan kaedah terbaik pengukuran susulan aset HLP yang boleh dipraktik dalam sektor awam di Malaysia dan seterusnya dapat dijadikan panduan oleh JANM untuk menggubal piawaian dan polisi perakaunan serta kerangka kerja konseptual khusus bagi pengukuran susulan aset HLP sektor awam.

Seksyen selepas ini membincangkan tentang kajian lepas berkaitan pengukuran aset sektor awam serta panduan piawaian perakaunan antarabangsa bagi pengukuran susulan aset. Seksyen seterusnya adalah penerangan tentang pendekatan yang diambil dalam melaksanakan kajian dan diikuti dengan laporan dapatan kajian serta perbincangan. Artikel ini diakhiri dengan kesimpulan.

## 2.0 Sorotan Kajian Lepas

Peralihan kepada perakaunan asas akruan telah menimbulkan beberapa cabaran dalam pelaksanaannya seperti pengiktirafan serta penilaian aset sektor awam. Persoalan tentang bagaimana seharusnya aset sektor awam perlu diperakaunkan masih menjadi perbincangan sejak lebih 30 tahun yang lalu (Roje & Redmayne, 2020). Menurut Caruana (2021) isu berkaitan pengiktirafan, pengukuran dan pendedahan aset (termasuk juga liabiliti) adalah paling sukar untuk diatasi. Secara khusus tentang pengukuran aset sektor awam, di bawah perakaunan asas akruan, menurut Oulasvirta (2021) masih terdapat perbincangan berterusan tentang kaedah pengukuran susulan manakah yang paling baik memenuhi keperluan pihak berkepentingan sektor awam.

*The Institute of Chartered Accountants in England and Wales* (ICAEW, 2023) menyatakan bagi pengukuran aset sektor awam, nilai saksama sukar diguna pakai kerana 1) kebanyakan

aset sektor awam dipegang untuk kegunaan operasi berterusan dan tiada keperluan untuk mendapatkan harga jualannya, 2) jika sesuatu aset tiada keperluan untuk dijual maka kos untuk menilai semula aset tersebut mungkin melebihi manfaat membuat penilaian terkini dan 3) kebanyakan aset sektor awam adalah sama ada mempunyai ciri khusus atau kegunaan terhad yang hampir tiada pasaran aktif untuk menentukan nilai pasarnya. Apabila aset dipegang untuk kapasiti operasinya, penggunaan nilai saksama adalah tidak sesuai kerana aset tersebut tidak digunakan dengan sebanyak dan sebaik mungkin untuk tujuan kewangan. Penggunaan nilai saksama adalah sukar bukan sahaja untuk menentukan nilai tersebut tetapi untuk menginterpretasikannya. Maklumat aset pada nilai saksama tidak membantu pengguna penyata kewangan dalam membuat keputusan kerana ia tidak menggambarkan penggunaannya sebagai aset operasi. Timbul persoalan jika sesuatu aset itu tidak berubah penggunaannya iaitu ia terus digunakan untuk tujuan operasi menyampaikan perkhidmatan, mengapa ia perlu dinilai seolah-olah ia digunakan untuk menjana aliran tunai, dan adakah tepat untuk memegang aset berkenaan pada penilaian semasa?

IPSASB (2023) bagaimanapun mengiktiraf bahawa nilai saksama mempunyai peranan dalam menilai aset yang dipegang untuk kapasiti kewangannya iaitu dalam menjanakan aliran tunai. Bagi aset yang dipegang bagi tujuan operasi, IPSASB telah mencadangkan asas pengukuran baru iaitu COV. Asas pengukuran baru ini boleh aplikasikan apabila IPSASB telah meluluskan pada tahun 2022 *the Conceptual Framework Update: Chapter 7 – Measurement of Assets and Liabilities in Financial Statements* dan dua (2) piawai antarabangsa perakaunan sektor awam pada Mac 2023 iaitu IPSAS 45 yang menggantikan IPSAS 17 yang menyentuh tentang pengolahan perakaunan bagi aset HLP dan IPSAS 46 tentang pengukuran termasuk pengukuran aset HLP. IPSAS 45 dan IPSAS 46 ini terpakai untuk kedua-dua pengukuran awal dan pengukuran susulan.

Sepertimana peruntukan dalam IPSAS 17 dan piawai perakaunan sektor awam di Malaysia, MPSAS 17, bagi pengukuran awal HLP, ia perlu diukur pada harga transaksinya ditambah kos transaksi aset berkenaan. Yang membezakan MPSAS 17 dengan IPSAS 45 dan IPSAS 46 adalah bagi pengukuran susulan aset HLP. MPSAS 17 membenarkan sama ada model kos (yang mengambil kira kos perolehan aset ditolak susut nilai terkumpul dan rosot nilai terkumpul) atau model penilaian semula diguna pakai. Di bawah model penilaian semula ini, nilai saksama pada tarikh penilaian semula yang ditentukan daripada penilaian berasaskan nilai pasaran akan ditolak dengan susut nilai terkumpul dan rosot nilai terkumpul. Manakala IPSAS 45 dan IPSAS 46 memperuntukkan sama ada model kos sejarah atau model nilai semasa boleh diguna pakai. Di bawah model kos sejarah, asas kos sejarah diguna pakai. Manakala di bawah model nilai semasa, dua (2) asas pengukuran boleh diguna pakai iaitu sama ada asas COV bagi aset yang dipegang bagi kapasiti pengoperasian iaitu bagi menyampaikan perkhidmatan atau nilai saksama (*fair value – FV*) bagi aset yang menjana aliran tunai atau yang mempunyai kapasiti kewangan. Perincian tentang IPSAS 45 dan IPSAS 46 ini boleh didapati dalam bahagian berikutnya dalam artikel ini.

Menurut ICAEW (2023), dua (2) faktor utama dalam menentukan pemilihan model pengukuran susulan adalah 1) keperluan maklumat pengguna sama ada untuk tujuan pembuatan keputusan atau akauntabiliti dan 2) ketersediaan data nilai semasa yang boleh didapati dalam pasaran (seperti harga saham) yang menawarkan nilai maklumat terbaik. ICAEW (2023) juga berpandangan, di bawah asas pengukuran COV, teknik pendapatan juga perlu dibenarkan (IPSASB, 2023) hak penggunaan (*right of use assets*), yang diukur menggunakan nilai kini



aliran tunai masa hadapan. Perkara lain yang perlu diambil kira adalah ciri khusus bagi sebahagian besar aset sektor awam seperti rangkaian jalanraya, stesen janakuasa, hospital dan aset warisan. Semakin khusus sesuatu aset, semakin sedikit pasaran aktif yang wujud dan kemungkinan besar pendekatan kos akan diguna pakai. Sepertimana di UK, *the Central Government Financial Reporting Guidance* menyatakan bahawa aset yang dipegang untuk potensi perkhidmatan perlu diukur pada nilai semasa penggunaan sedia ada aset berkenaan. Di UK, aset yang mempunyai ciri khusus dibezakan daripada aset yang tidak mempunyai ciri khusus. Bagi yang mempunyai ciri khusus, teknik pengukuran yang diguna pakai di UK adalah kos penggantian yang disusut nilaikan (*depreciated replacement cost – DRC*).

Di Australia (merujuk kepada *the Victoria Audit General's Office*), dalam konteks pengukuran susulan, kebanyakan aset fizikal bukan kewangan sektor awam (seperti tanah, bangunan dan infrastruktur) adalah diukur pada nilai saksama. Walau bagaimanapun, penggunaan piawaian perakaunan tentang pengukuran nilai saksama iaitu AASB 13 *Fair Value Measurement* menghadapi masalah apabila diaplikasikan dalam konteks sektor awam kerana ciri unik kebanyakan aset sektor awam menyebabkan amalan yang pelbagai dalam memberi nilai saksama terutamanya bagi aset yang tidak dipegang untuk menjana aliran tunai bersih. Disebabkan ini, Badan Piawaian Perakaunan Australia (AASB) telah menerbitkan panduan tambahan dalam menentukan nilai saksama bagi aset sektor awam yang tidak dipegang untuk tujuan utamanya menjana aliran masuk tunai iaitu AASB 2022-10 *Amendments to Australian Accounting Standards – Fair Value Measurement of Non-Financial Assets of Not-for-Profit Public Sector Entities*. Pendekatan berbeza diambil di Kanada dalam membuat pengukuran susulan aset sektor awam. *The Public Sector Accounting Board of Canada* (PASB) menetapkan bahawa aset sektor awam diiktiraf pada kos sejarah kecuali PASB menentukan kaedah pengukuran lain yang lebih baik bagi mencapai tujuan akauntabiliti.

Biondi dan Oulasvirta (2023) menyokong pengiktirafan aset sektor awam pada kos sejarah kerana menurut mereka walaupun tidak menggambarkan nilai semasa aset, model kos sejarah sepatutnya diguna pakai dan diutamakan oleh entiti sektor awam bagi tujuan pengukuran susulan aset sesuai dengan ciri-ciri dan pengkhususan sektor awam dalam menyediakan maklumat bagi tujuan akauntabiliti. Model perakaunan kos sejarah menekankan penyata pendapatan, yang mana prinsip pepadanan dan realisasi digunakan bersama. Perakaunan yang berfokuskan nilai semasa boleh menyebabkan pihak pengurusan tersasar daripada tujuan kebajikan sosial contohnya perakaunan bagi pusat kebudayaan yang dimiliki kerajaan pada nilai semasa boleh menggalakkan pihak pengurusannya untuk menyewakan secara komersil ruang atau bilik di pusat kebudayaan tersebut. Oleh kerana itu, model nilai semasa tidak sesuai untuk diaplikasikan dalam sektor awam. Sebaliknya model kos sejarah perlu diaplikasikan bukan hanya disebabkan pendekatannya yang lebih ringkas dan mudah difahami, tetapi lebih daripada itu pendekatan kos sejarah dikaitkan dengan aspek akauntabiliti dalam penggunaan sumber untuk menyedia dan mengekalkan aktiviti sektor awam di sepanjang masa. Selain itu, justifikasi mengapa asas kos sejarah perlu diutamakan adalah kerana pelaporan kewangan sektor awam lebih memfokuskan kepada penggunaan sumber dan pengukuran bukannya kepada penilaian nilai semasa aset dan liabiliti.

Sanchez dan Mocavini (2023) menyatakan bahawa pengukuran aset bukan kewangan yang dipegang bagi tujuan perkhidmatan berbanding yang dipegang bagi tujuan kapasiti kewangan adalah sesuatu yang mencabar dalam sektor awam. Cabaran wujud apabila tiada maklumat tentang aset berkenaan bagi pengukuran awal dan tiada juga pasaran aktif untuk menilai



keadaan semasa aset bukan kewangan. Menurut mereka lagi walaupun entiti sektor awam perlu menzahirkan akauntabiliti terhadap aset berkenaan, terdapat entiti sektor awam yang tidak berupaya untuk mengiktiraf aset tersebut dalam penyata kewangan disebabkan cabaran dan kekangan berkaitan pengukuran. Mereka mengkaji kesesuaian asas COV dalam mengukur aset di sektor awam. Dapatan kajian ini menunjukkan bahawa pihak berkepentingan sektor awam menekankan soal kebolehbandingan yang menuntut keseragaman dalam pengukuran aset.

Dalam satu kajian khusus berkaitan aset warisan di New Zealand (Redmayne, Laswad dan Ehalaiye, 2023) mendapati aset warisan khususnya di Muzium New Zealand, diiktiraf pada sama ada nilai saksama, kos sejarah atau tidak diiktiraf langsung dalam penyata kewangan. Lombardi, Schimperna, Smarra dan Sorrentino (2021) membuat sorotan kajian antarabangsa serta membandingkan pendekatan beberapa negara tentang perakaunan bagi aset infrastruktur. Mereka mendapati masih tiada kesepakatan tentang pengolahan perakaunan terbaik aset infrastruktur. Juga berkaitan aset infrastruktur, Isa, Hasan dan Saleh (2023) mengkaji amalan semasa perakaunan bagi aset infrastruktur di Malaysia dan beberapa negara lain iaitu Australia, Austria, Kanada, Perancis dan New Zealand. Mereka mendapati amalan perakaunan aset berkenaan adalah pelbagai antara negara yang dikaji. Tidak terdapat piawaian khusus untuk mengakaunkan aset berkenaan ditambah pula dengan garis panduan yang terlalu umum berkaitan pengiktirafan dan pengukuran. Ini menyebabkan pengolahan perakaunan yang tidak konsisten dan tidak boleh dibandingkan antara negara. Mereka merumuskan wujudnya cabaran dalam pengiktirafan dan penilaian aset infrastruktur termasuk aspek pengukuran susulan.

Satu lagi kajian antara negara dijalankan oleh Roje dan Redmayne (2020) yang mengkaji tentang pengurusan dan pelaporan kewangan bagi Croatia dan New Zealand. Kajian mereka adalah untuk menentukan kesesuaian mengaplikasikan pengalaman New Zealand dalam pengurusan dan pelaporan aset di Croatia. Secara keseluruhan kajian ini mendapati kemungkinan untuk mengaplikasikan pengalaman negara maju kepada negara membangun adalah bergantung kepada pelbagai faktor yang mempengaruhi pembangunan negara tersebut dan juga faktor tekanan daripada badan antarabangsa.

Sebagai rumusan, sebahagian besar kajian lepas bersependapat tentang cabaran untuk mengakaunkan khususnya dari segi pengiktirafan dan pengukuran aset sektor awam. Sebahagian kajian lepas menyokong penggunaan asas kos sejarah bagi pengukuran susulan aset HLP, manakala sebahagian lagi kajian lepas menyokong penggunaan asas nilai semasa seperti nilai saksama terutama bagi aset yang boleh menjana aliran masuk tunai. Sehingga kini tidak terdapat lagi kajian perbandingan antara negara yang mengkhusus kepada pengukuran susulan aset HLP. Justeru, kajian terperinci dan khusus tentang amalan semasa pengukuran susulan aset HLP negara-negara peneraju awal pelaksanaan perakaunan asas akruan seperti New Zealand, UK, Australia dan Kanada adalah perlu untuk mengenal pasti dan mendapat gambaran jelas tentang model, asas dan teknik pengukuran susulan yang diguna pakai bagi setiap kategori atau jenis aset HLP sektor awam. Sebagai negara peneraju dan negara yang telah lama mengamalkan perakaunan asas akruan dalam sektor awam, negara-negara ini mempunyai kerangka perakaunan bagi aset yang komprehensif, garis panduan khusus untuk pengiktirafan dan pengukuran aset dan sistem pengurusan aset yang baik (Isa, Hasan dan Saleh, 2023). Maka amalan semasa perakaunan aset sektor awam di negara-negara berkenaan khususnya berkaitan pengukuran susulan aset HLP perlu dikaji untuk menentukan

kesesuaian amalan mereka diaplikasikan di negara yang baru beralih kepada perakaunan asas akrual seperti Malaysia. Keperluan kajian sebegini adalah signifikan untuk mendapatkan input berguna bagi mencadangkan kaedah terbaik pengukuran susulan aset HLP dalam konteks sektor awam di Malaysia.

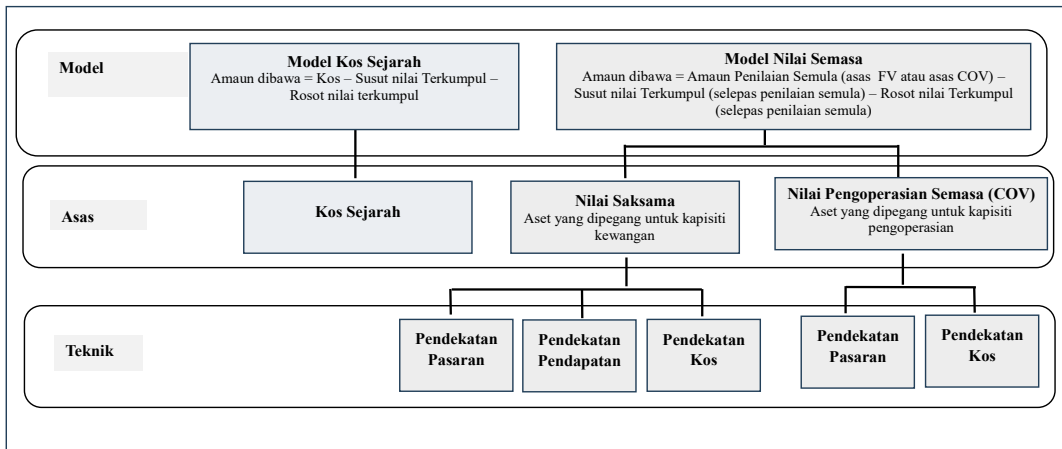
### 3.0 Panduan Piawaian Perakaunan Antarabangsa bagi Pengukuran Susulan

Pada 26 Mei 2023, IPSASB telah menerbitkan dua (2) piawaian baharu iaitu IPSAS 45 *Property, Plant and Equipment* dan IPSAS 46 *Measurement*. IPSAS 45 yang menggantikan IPSAS 17, menyentuh tentang pengolahan perakaunan bagi aset HLP manakala IPSAS 46 yang merupakan piawaian baharu memberi panduan tentang bagaimana asas pengukuran perlu diaplikasikan untuk tujuan pelaporan kewangan sektor awam. Selain daripada memberi panduan tentang nilai saksama, IPSAS 46 telah memperkenalkan satu asas ukuran baharu iaitu COV yang boleh digunakan untuk pengukuran aset sektor awam. Asas pengukuran COV ini juga telah diperkenalkan sebagai salah satu asas pengukuran susulan bagi aset HLP di bawah IPSAS 45.

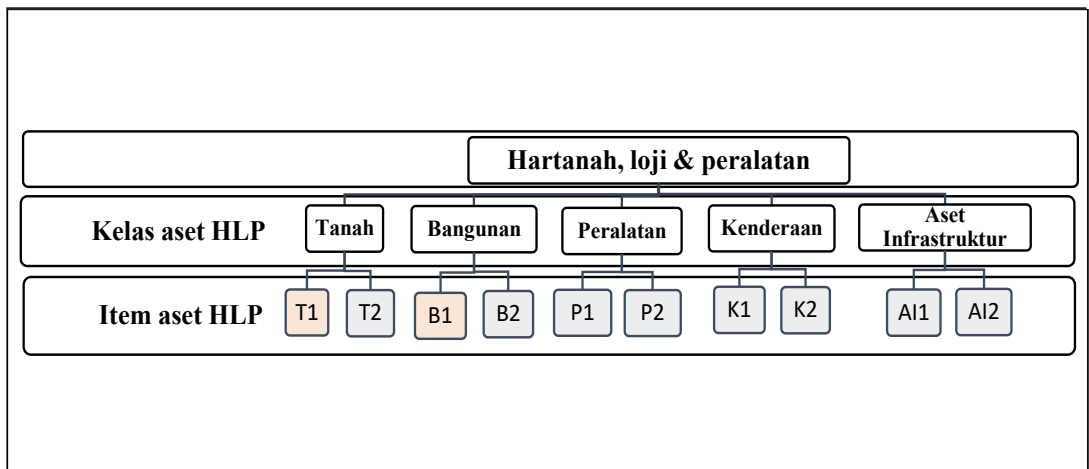
Sebelum IPSAS 45, model pengukuran susulan yang digunakan untuk aset HLP ialah model kos atau model penilaian semula selaras dengan keperluan IPSAS 17. Di bawah IPSAS 45, model penilaian semula telah digantikan dengan model nilai semasa. Menurut IPSAS 45, selepas aset HLP diiktiraf, entiti pelapor boleh menggunakan sama ada model kos sejarah atau model nilai semasa untuk tujuan pengukuran susulan. IPSAS 45 menetapkan model nilai semasa digunakan sebagai pengukuran susulan aset bagi aset yang nilai semasanya boleh diukur dengan munasabah. Rajah 1 meringkaskan pengukuran susulan untuk aset HLP selaras dengan keperluan IPSAS 45.

Merujuk kepada Rajah 1, di bawah model kos sejarah aset diukur berdasarkan kos sejarah dan amaun dibawa bagi aset ditentukan dengan menolak daripada kos, susut nilai terkumpul dan rosot nilai terkumpul. Manakala di bawah model nilai semasa, asas nilai saksama (*fair value* – FV) digunakan bagi menilai semula aset yang dipegang untuk kapasiti kewangan dan asas COV digunakan untuk menilai semula aset yang dipegang untuk kapasiti pengoperasian. Amaun dibawa bagi aset ditentukan dengan menolak daripada amaun penilaian semula (sama ada asas FV atau asas COV), susut nilai terkumpul dan rosot nilai terkumpul selepas penilaian semula. IPSAS 45 tidak menetapkan kekerapan penilaian semula, walau bagaimanapun, entiti pelapor perlu melakukan penilaian semula aset secara berkala bagi memastikan tiada perbezaan ketara di antara amaun dibawa (*carrying amount*) aset dengan amaun dibawa yang ditentukan berdasarkan nilai semasa pada tarikh pengukuran.

Model pengukuran susulan yang dipilih sebagai polisi perakaunan iaitu sama ada model kos sejarah atau model nilai semasa perlu diaplikasi kepada kelas aset HLP secara keseluruhan. Manakala asas pengukuran (contohnya asas FV atau asas COV) boleh diaplikasi kepada item atau sebahagian daripada item aset HLP. IPSAS 45 menetapkan bahawa pengaplikasian asas pengukuran yang dipilih perlu selari dengan keperluan IPSAS 46. Rajah 2 memberikan contoh pengkelasan aset HLP. Merujuk kepada Rajah 2, sekiranya entiti memilih model nilai semasa untuk penilaian susulan aset tanah, maka kesemua item yang dikelaskan di bawah tanah perlu menggunakan model nilai semasa. Walau bagaimanapun, entiti boleh menggunakan sama ada asas FV atau asas COV bagi menilai item aset tanah bergantung sama ada item aset tanah tersebut dipegang atas kapasiti kewangan (contoh T1) atau kapasiti pengoperasian (contoh T2).



Rajah 1: Pengukuran Susulan Aset HLP



Rajah 2: Contoh Pengkelasan Aset HLP

Menurut IPSAS 46 kos sejarah bagi aset merujuk kepada balasan yang diberi untuk memperolehi, membina dan/ atau membangunkan sesuatu aset dicampur kos transaksi atau kos anggapan (*deemed cost*) bagi sesuatu aset. Balasan ialah tunai atau kesetaraan tunai atau nilai balasan lain yang diberi pada masa atau sepanjang tempoh aset diperolehi, dibina atau dibangunkan. Selepas pengukuran awal, amaun dibawa kasar bagi aset tidak terkesan akibat perubahan pasaran kecuali kesan perubahan yang mencetus rosot nilai aset. Sehubungan itu, amaun pada mana aset direkod kekal tidak berubah. Kos sejarah merupakan ukuran yang berkonsepkan nilai masuk (*entry value*) dan adalah khusus kepada entiti pelapor (*entity-specific measurement*).

Nilai saksama (FV) ialah harga yang akan diterima untuk menjual sesuatu aset dalam urusan niaga teratur antara peserta pasaran pada tarikh pengukuran. Nilai saksama ialah pengukuran yang berkonsepkan nilai keluar (*exit value*) dan dengan itu tidak mengambil kira kos transaksi.

Tiga (3) tahap input yang boleh digunakan mengikut keutamaan Hierarki Nilai Saksama ialah 1) input Tahap 1 iaitu harga pasaran disebut (tidak diselaraskan) dari pasaran aktif (pasaran utama atau pasaran yang paling menguntungkan sekiranya tiada pasaran utama) bagi aset atau liabiliti yang boleh diakses oleh entiti pelapor pada tarikh pengukuran; 2) input Tahap 2 iaitu input selain dari harga pasaran disebut dalam Tahap 1 yang boleh diperhatikan sama ada secara langsung atau tak langsung bagi aset atau liabiliti; dan 3) input Tahap 3 iaitu input yang tidak boleh diperhatikan. Pengaplikasian asas FV memaksimumkan input Tahap 1 dan meminimumkan input Tahap 3. Selain itu, ukuran nilai saksama juga merupakan ukuran yang berasaskan pasaran dan bukannya ukuran khusus entiti pelapor. Ini bermakna, dalam menentukan nilai saksama aset, andaian yang digunakan adalah andaian yang digunakan oleh peserta pasaran dan bukan andaian khusus entiti pelapor.

Penentuan FV bagi HLP yang merupakan aset bukan kewangan dilakukan dengan mengambil kira penggunaan tertinggi dan terbaik (*highest and best use*) untuk aset yang dinilai. Dalam mempertimbangkan penggunaan tertinggi dan terbaik, cara penggunaan tersebut mestilah boleh dilaksanakan dengan mengambil kira aspek fizikal aset (*physically possible*), dibenarkan oleh peraturan (*legally permissible*) dan mampu dari segi kewangan (*financially feasible*). Dalam menentukan nilai saksama aset, cara penggunaan semasa aset diandaikan sebagai penggunaan tertinggi dan terbaik kecuali terdapat bukti yang sebaliknya. Penentuan FV boleh dilakukan dengan menggunakan sama ada pendekatan pasaran atau pendekatan pendapatan atau pendekatan kos. Pendekatan pasaran menggunakan harga pasaran atau maklumat relevan lain yang dijana melalui urusan niaga pasaran yang melibatkan aset atau kumpulan aset yang serupa atau sama. Pendekatan kos merujuk kepada amaun yang diperlukan sekarang untuk menggantikan kapasiti perkhidmatan sesuatu aset (*current replacement cost*) melalui perolehan, pembinaan atau pembangunan aset pengganti dengan utiliti yang setara, yang diselaraskan untuk mengambil kira keusangan. Konsep keusangan adalah lebih meluas daripada susut nilai untuk tujuan pelaporan kewangan, di mana keusangan merangkumi keusangan fizikal, keusangan fungsian atau teknologi serta keusangan ekonomi. Pendekatan pendapatan menukar amaun masa depan seperti aliran tunai atau hasil dan belanja kepada satu amaun semasa. Apabila pendekatan pendapatan digunakan, anggaran yang dibuat perlu menggambarkan jangkaan semasa tentang amaun masa depan berkenaan.

COV adalah amaun yang perlu dibayar oleh entiti pelapor pada tarikh pengukuran bagi menggantikan potensi perkhidmatan sesuatu aset untuk mencapai objektif pemberian perkhidmatan semasa. Berbeza dari FV, COV berkonsepkan nilai masuk (*entry value*) dan merupakan ukuran khusus entiti pelapor bagi aset yang dipegang untuk tujuan operasi dengan cara penggunaan semasa, di lokasi semasa dan dalam keadaan semasa. Oleh kerana COV mewakili nilai masuk, maka kos transaksi diambil kira dalam menentukan COV. Empat (4) faktor yang perlu diambil kira dalam penentuan COV ialah 1) harga yang perlu dibayar untuk memperolehi aset yang serupa atau sama dalam pasaran aktif atau kos yang akan dilibatkan (yang paling menjimatkan) untuk membangunkan aset yang serupa atau sama; 2) baki potensi perkhidmatan aset yang dinilai (usia, fungsi dan keadaan aset yang turut merangkumi keusangan fizikal, keusangan fungsian atau teknologi serta keusangan ekonomi); 3) lokasi serta penggunaan semasa aset; dan 4) teknik pengukuran bersesuaian mengambil kira ketersediaan data yang memberi perwakilan benar tentang andaian khusus mengenai entiti pelapor. Penentuan COV bagi sesuatu aset boleh dilakukan dengan menggunakan pendekatan pasaran atau pendekatan kos. Sekiranya maklumat tentang kos aset yang serupa atau sama tiada, atau sekiranya aset yang dipegang tidak boleh digantikan dengan aset yang serupa,

maka anggaran COV boleh dilakukan dengan merujuk kepada kos aset moden sama yang setara (*modern equivalent asset*) dengan membuat pelarasan bagi mengambil kira keusangan dan pengoptimuman.

#### 4.0 Metodologi Kajian

Bagi mencapai objektif kajian, analisis kandungan dijalankan ke atas dokumen bagi empat (4) negara yang dipilih iaitu UK, New Zealand, Australia dan Kanada. Pemilihan empat (4) negara tersebut adalah berdasarkan teknik persampelan bertujuan disebabkan kriteria khas yang dimiliki oleh negara-negara berkenaan yang dapat membantu menjawab objektif kajian. Antara kriteria pemilihan negara-negara tersebut adalah dari segi pengalaman luas dalam melaksanakan perakaunan asas akrual, memiliki piawaian perakaunan perakaunan sektor awam tersendiri, garis panduan khusus bagi perakaunan aset dan laporan kewangan kerajaan terkini yang boleh diakses secara atas talian.

Menurut Creswell (2009), analisis kandungan dokumen adalah salah satu teknik khusus bagi kajian kualitatif dan digunakan bagi tujuan menganalisis data dokumen dan temu bual berbentuk teks. Analisis kandungan dokumen adalah alat saintifik yang melibatkan prosedur khusus yang bertujuan untuk memberi pandangan baharu dan meningkat kefahaman pengkaji berkaitan sesuatu fenomena (Krippendorff, 2004). Krippendorff juga mengaitkan analisis kandungan dokumen dengan pendekatan interpretif kerana memerlukan bacaan yang mendalam terhadap bahan teks dan melibatkan artikulasi semula (interpretasi) terhadap teks berkenaan secara analitikal, diskonstruktif, emansipasi, atau kritikal.

Dalam konteks kajian ini, pendekatan analisis kandungan dipilih kerana berdasarkan Bryman dan Bell (2007), pendekatan ini membenarkan pengkaji menganalisis dan mengesan 'apa' yang boleh diperolehi dalam sesuatu dokumen dan merupakan satu pendekatan anjal yang boleh diaplikasikan kepada pelbagai jenis dokumen yang tidak berstruktur. Berdasarkan Panduan Piawaian Perakaunan Antarabangsa pengukuran susulan yang dibincangkan dalam seksyen sebelum ini dan seperti yang digambarkan dalam Rajah 1, amalan semasa pengukuran susulan aset HLP di empat (4) negara terpilih dan dibandingkan dengan menggunakan pendekatan analisis kandungan dokumen berkaitan bagi setiap negara berkenaan termasuk laporan kewangan kerajaan, piawaian perakaunan dan manual perakaunan dan pelaporan bagi aset termasuk aset HLP.

#### 5.0 Dapatan Kajian dan Perbincangan

Jadual 1 menunjukkan rumusan secara perbandingan bagi model, asas, dan teknik pengukuran susulan aset HLP serta perincian kategori atau jenis aset HLP bagi negara-negara tersebut. Dari sudut amalan secara keseluruhan, model kos sejarah dan nilai semasa kedua-duanya diguna pakai bergantung kepada jenis atau kategori aset yang dikenalpasti kecuali Kanada yang hanya mengguna pakai model kos sejarah. Terdapat persamaan antara New Zealand dan Australia yang mengunapakai asas nilai saksama di bawah model nilai semasa bagi kebanyakan aset HLP. Manakala unik bagi UK, asas COV diguna pakai bagi aset HLP jenis tanah dan bangunan.

Perincian amalan bagi setiap negara ditunjukkan dalam jadual berasingan iaitu Jadual 2a hingga 2d. Jadual 2a memperincikan kaedah pengukuran susulan HLP yang diguna pakai di UK bagi setiap kategori atau jenis aset. Contohnya bagi aset tanah dan bangunan, walaupun kedua-duanya mengguna pakai asas COV, teknik penilaian adalah berbeza bagi aset kategori umum (*non-specialised*) dan aset kategori khusus (*specialised*). Aset kategori umum mengguna pakai teknik pasaran manakala aset kategori khusus mengguna pakai teknik kos penggantian yang disusut nilai. Lain-lain jenis aset kebanyakannya mengguna pakai teknik kos sejarah. Amalan semasa pengukuran susulan aset HLP di UK ini dilihat menyahut saranan IPSASB iaitu penggunaan asas pengoperasian semasa bagi aset yang dipegang untuk kapasiti pengoperasian iaitu bagi menyampaikan perkhidmatan terutamanya bagi aset jenis tanah dan bangunan serta infrastruktur. Asas nilai saksama juga turut diamalkan di UK bagi kategori aset warisan yang dapat ditentukan nilainya dengan menggunakan perkhidmatan penilai bebas. Kekekapan penilaian semula aset yang diamalkan oleh negara-negara seperti UK, New Zealand, dan Australia adalah secara umumnya sekitar tiga (3) hingga lima (5) tahun bergantung kepada jenis aset. Namun, terdapat juga jenis aset tanah dan bangunan (aset infrastruktur) yang dinilai sekurang-kurangnya sekali setiap sembilan (9) tahun seperti yang diamalkan oleh New Zealand.

Seterusnya, Jadual 2b memberikan perincian amalan penilaian susulan aset HLP bagi negara New Zealand. Pelaporan aset HLP bagi Kerajaan New Zealand adalah paling terperinci dengan pelbagai butiran jenis aset dan penerangan mengenai kaedah penilaian yang diguna pakai. Kebanyakan aset HLP Kerajaan New Zealand dinilai dibawah model nilai semasa dengan asas nilai saksama dan hanya sebilangan kecil kategori aset yang menguna pakai model dan asas kos sejarah. Aset HLP bagi kegunaan umum (*non-specialised*) mengguna pakai teknik pasaran yang kebanyakannya dinilai oleh penilai bebas, manakala aset HLP kegunaan khusus (*specialised*) mengguna pakai teknik kos iaitu kos penggantian disusut nilai dioptimumkan yang dinilai sama ada penilai bebas ataupun penilai dalaman dengan semakan penilai bebas. Selain itu, terdapat jenis aset infrastruktur iaitu aset jana kuasa elektrik yang dinilai menggunakan teknik pendekatan pendapatan sama ada kaedah alir tunai terdiskaun atau nilai kini alir tunai masa hadapan.

Jadual 2c memperincikan kaedah penilaian susulan aset HLP yang diguna pakai di Australia. Secara keseluruhannya, negara Australia hanya mengguna pakai model nilai semasa dengan asas nilai saksama. Kesemua teknik pasaran, pendapatan, dan kos diguna pakai mengikut jenis-jenis aset yang dikenal pasti. Contohnya, bagi aset tanah dan bangunan dinilai menggunakan teknik pendekatan pasaran dengan penilaiannya dibuat oleh penilai bebas. Lain-lain aset HLP yang khusus yang menjana tunai mengguna pakai sama ada teknik pendekatan pendapatan iaitu kaedah alir tunai terdiskaun atau teknik pendekatan kos iaitu kaedah kos penggantian disusut nilai. Manakala jenis lain-lain aset HLP yang khusus tetapi tidak menjana tunai mengguna pakai teknik pendekatan pasaran iaitu kaedah nilai saksama yang dinilai oleh penilai bebas.

Amalan semasa di New Zealand dan Australia ini menunjukkan dua (2) negara berkenaan belum lagi menyahut saranan penggunaan asas nilai pengoperasian semasa oleh IPSASB. Ini berkemungkinan disebabkan IPSAS 45 dan IPSAS 46 hanya dikuatkuasakan pada tahun 2025. Amalan kedua-dua negara ini dilihat mempunyai kapasiti untuk membuat penilaian aset secara berkala sama ada menggunakan perkhidmatan penilai bebas atau penilai dalaman selari dengan polisi perakaunan negara berkenaan iaitu mengkehendaki setiap kategori aset termasuk aset warisan perlu dipermodalkan sekiranya nilainya dapat ditentukan dengan pasti. Kelebihan amalan semasa oleh New Zealand dan Australia ini dapat memberi gambaran sebenar tentang kedudukan kewangan negara dari aspek nilai semasa keseluruhan aset kerajaan. Bagi pengukuran susulan aset warisan di New Zealand dan Australia, sama seperti amalan di UK, pendekatan nilai saksama melalui teknik nilai pasaran di guna pakai. Walau bagaimanapun, New Zealand dan Australia dengan jelas melaporkan bahawa nilai pasaran aset warisan ditentukan oleh penilai bebas. Amalan ini menunjukkan New Zealand dan Australia mempunyai kapasiti dalam memberikan gambaran sebenar nilai intrinsik yang sepatutnya kepada aset warisan dan menjangkakan manfaat penggunaan khidmat penilai bebas dalam menilai aset warisannya melebihi daripada kos yang ditanggung.



Jadual 1: Perbandingan Amalan Pengukuran Aset HLP antara Negara UK, New Zealand, Australia, dan Kanada

Model	UK				New Zealand				Australia				Kanada	
	Kos Sejarah	Nilai Semasa		Kos Sejarah	Nilai Semasa		Kos Sejarah	Nilai Semasa		Kos Sejarah	Nilai Semasa		Kos Sejarah	Kos Sejarah
		Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)		Nilai Saksama (exit)	Nilai Pengoperasian Semasa (COV) (entry)		Nilai Saksama (exit)	Nilai Pengoperasian Semasa (COV) (entry)		Nilai Saksama (exit)			
<b>Asas</b>	Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)	Nilai Saksama (exit)	Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)	Nilai Saksama (exit)	Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)	Nilai Saksama (exit)	Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)	Nilai Saksama (exit)	Kos Sejarah	Kos Sejarah
<b>Teknik</b>	Kos - SNT - RNT	Pendekatan Pasaran Kos	Pendekatan Pendapatan Kos	Kos - SNT - RNT	Pendekatan Pasaran Kos	Pendekatan Pendapatan Kos	Kos - SNT - RNT	Pendekatan Pasaran Kos	Pendekatan Pendapatan Kos	Kos - SNT - RNT	Pendekatan Pasaran Kos	Pendekatan Pendapatan Kos	Kos - SNT - RNT	Kos - SNT - RNT
<b>Jenis aset:</b>														
Aset Pengurusan Sisa Nuklear	✓	-	-	-	-	-	-	-	-	-	-	-	-	-
Aset Dalam Pembinaan Tanah & Bangunan: Umum (Non-specialist)	✓	-	-	-	-	-	-	-	-	-	-	-	-	✓
Tanah & Bangunan: Khusus (Specialist)	-	✓	-	-	-	-	-	✓	-	-	-	-	-	✓
Aset Infrastruktur	✓	-	-	-	-	-	-	-	-	-	-	-	-	✓
Peralatan kelengkapan (kereta kebal, pesawat pejuang dan kapal perang)	✓	-	-	-	-	-	-	-	-	-	-	-	-	-
Aset Warisan	✓	-	✓	-	-	-	-	✓	-	-	-	-	-	-
Lain-lain HLP: kenderaan, peralatan pejabat	-	-	-	-	-	-	-	-	-	-	-	-	-	✓

Nota: SNT - Susut Nilai Berkumpulan; RNT - Rosot Nilai Berkumpulan

Sumber: *Whole of Government Accounts of the Government of the United Kingdom for the year ended 31 March 2022; Financial Statements of the Government of New Zealand for the Year Ended 30 June 2023; Consolidated Financial Statements of Commonwealth of Australia for the year ended 30 June 2023; Annual Financial Report of the Government of Canada—Fiscal Year 2022–2023*



**Jadual 2a: Perincian Penilaian Susulan Aset HLP – UK**

		UK			
Piawaian dan peraturan	Pelaporan disediakan berdasarkan the Government Resources and Accounts Act 2000 (GRAA), International Financial Reporting Standards (IFRS), yang diadaptasi dan diterjemahkan melalui the Financial Reporting Manual (FRM)				
	Model	Nilai Semasa		Nilai Saksama (exit)	
Asas	Kos Sejarah Kos Sejarah	Nilai Pengoperasian Semasa (COV) (entry)	Pendekatan Pasaran (exit)	Pendekatan Pasaran	Pendekatan Kos
Teknik	Kos - SNT - RNT	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pasaran	Pendekatan Kos
Jenis aset:			Amaun Penilaian Semula - SNT - RNT	Amaun Penilaian Semula - SNT - RNT	
Aset Pengurusan Sisa Nuklear	Kos Sejarah tolak susut nilai	-	-	-	-
Aset Dalam Pembinaan	Kos tolak rosot nilai (tidak disusut nilaikan)	-	-	-	-
Tanah & Bangunan: Aset umum ( <i>non-specialised</i> )	-	Nilai pasaran berdasarkan nilai penggunaan semasa tolak susut nilai	-	-	-
Tanah & Bangunan: Aset khusus ( <i>specialised</i> )	-	Kos penggantian disusut nilai (penilaian profesional bagi setiap 5 tahun; penggunaan indeks dikeluarkan pejabat penilaian bagi jarak antara waktu penilaian)	-	-	-
Aset bernilai rendah/ jangka hayat rendah	Kos Sejarah tolak susut nilai	-	-	-	-
Aset Infrastruktur (dipegang oleh kerajaan pusat)	-	Kos penggantian disusut nilai (penilaian profesional bagi setiap 5 tahun; penggunaan indeks dikeluarkan pejabat penilaian bagi jarak waktu tersebut)	-	-	-
Aset rangkaian jalan raya (dipegang oleh kerajaan tempatan)	Kos Sejarah tolak susut nilai	-	-	-	-
Aset Infrastruktur air (Northern Ireland)	Kos Sejarah tolak susut nilai	-	-	-	-
Peralatan ketenteraan (kereta kebal, pesawat pejuang dan kapal perang)	Kos Sejarah tolak susut nilai	-	-	-	-
Aset Warisan	Kos Sejarah (bagi aset yang nilai saksamanya tidak dapat ditentukan atau tidak memenuhi kriteria <i>cost-benefit</i> )	-	-	Nilai saksama	-

Sumber: HM Treasury, 2024: Whole of Government Accounts year ended 31 March 2022

**Jadual 2b: Perincian Penilaian Susulan Aset HLP – New Zealand**  
New Zealand

Piawaian dan peraturan		Pelaporan disediakan berdasarkan the Public Finance Act 1989 dan New Zealand Generally Accepted Accounting Practice (NZ GAAP) seperti ditentukan oleh the Financial Reporting Act 2013.			
Model	Kos Sejarah		Nilai Semasa		
	Kos Sejarah	Nilai Pengoperasian Semasa (COV)	Nilai Saksama (exit)		
Asas	Kos - SNT - RNT	Pendekatan Pasaran	Pendekatan Pasaran	Pendekatan Pendapatan	Pendekatan Kos
		Pendekatan Pasaran Amaun Penilaian Semula - SNT - RNT	Amaun Penilaian Semula - SNT - RNT		
Jenis aset:					
Tanah dan Bangunan: Aset umum (non-specialised):					
• Perumahan awam	-	-	Nilai pasaran (dinilai secara tahunan)	-	-
• Tanah sekolah, pusat asuhan kanak-kanak, kuarters guru	-	-	Nilai pasaran (dinilai setiap 3 tahun oleh penilai bebas; penggunaan indeks bagi jarak antara waktu penilaian)	-	-
• Bangunan dan tanah kesihatan	-	-	Nilai pasaran (dinilai setiap 3 ke 5 tahun)	-	-
• Bangunan dan tanah penjara	-	-	Nilai pasaran (dinilai sekurang-kurangnya setiap 3 tahun)	-	-
• Bangunan ketenteraan (di luar kawasan ketenteraan)	-	-	Nilai pasaran (dinilai sekurang-kurangnya setiap 5 tahun oleh penilai bebas)	-	-
• Estet pemuliharaan (taman negara, hutan taman hutan, kawasan pemuliharaan, rizab)	-	-	Nilai pasaran (dinilai secara tahunan)	-	-
• Tanah berkaitan landasan keretapi dan lebuh raya	-	-	Nilai pasaran atau anggaran berdasarkan harga pasaran tanah berhampiran	-	-
• Tanah dan bangunan berkaitan koridor lebuh raya	-	-	Nilai pasaran atau anggaran berdasarkan harga pasaran tanah berhampiran (sekurang-kurangnya sekali setiap 9 tahun)	-	-

Sumber: The Treasury, the Government of New Zealand (2023). Financial Statements of the Government of New Zealand for the Year Ended 30 June 2023

**Jadual 2b: Perincian Penilaian Susulan Aset HLP – New Zealand (Sambungan)**

New Zealand						
Pelaporan disediakan berdasarkan the Public Finance Act 1989 dan New Zealand Generally Accepted Accounting Practice (NZ GAAP) seperti ditentukan oleh the Financial Reporting Act 2013.						
Piawaian dan peraturan	Kos Sejarah		Nilai Pengoperasian Semasa (COV)		Nilai Saksama	
	Kos Sejarah	Kos - SNT - RNT	Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan
Model Asas	Kos - SNT - RNT		Nilai Pengoperasian Semasa (COV)		Nilai Saksama (exit)	
Teknik	Kos - SNT - RNT		Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan
Jenis aset:	Kos - SNT - RNT		Nilai Pengoperasian Semasa (COV)		Nilai Saksama (exit)	
Tanah dan Bangunan: Aset khusus (specialised):	Kos - SNT - RNT		Nilai Pengoperasian Semasa (COV)		Nilai Saksama (exit)	
• Bangunan sekolah dan utiliti	-	-	-	-	-	-
• Bangunan dan tanah kesihatan	-	-	-	-	-	-
• Bangunan kompleks penjara	-	-	-	-	-	-
• Bangunan ketenteraan (di luar kawasan ketenteraan)	-	-	-	-	-	-
• Lebuhraya negeri (tidak termasuk tanah)	-	-	-	-	-	-

Sumber: The Treasury, the Government of New Zealand (2023). Financial Statements of the Government of New Zealand for the Year Ended 30 June 2023

**Jadual 2b: Perincian Penilaian Susulan Aset HLP – New Zealand (Sambungan)**

New Zealand										
Pelaporan disediakan berdasarkan the Public Finance Act 1989 dan New Zealand Generally Accepted Accounting Practice (NZ GAAP) seperti ditentukan oleh the Financial Reporting Act 2013.										
Pleawaian dan peraturan	Kos Sejarah		Nilai Pengoperasian Semasa (COV)		Nilai Semasa		Nilai Saksama (exit)			
	Kos - SNT - RNT	RNT	Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan	Pendekatan Kos			
Amaun Penilaian Semula - SNT - RNT										
Jenis aset:										
Aset infrastruktur:										
• Aset jana kuasa elektrik	-	-	-	-	-	-	-	Nilai kini alir tunai masa hadapan atau alir tunai terdiskaun (dinilai secara tahunan/ kekerapan mencukupi)	-	-
• Aset rangkaian pengagihan elektrik	Kos tolak susut nilai terkumpul	-	-	-	-	-	-	-	-	-
• Rangkaian landasan kereta api	-	-	-	-	-	-	-	-	-	Kos penggantian disusut nilai dioplimumkan (dinilai secara tahunan)
Aset warisan dan kebudayaan khusus	-	-	-	-	-	-	Nilai saksama tolak rosot nilai terkumpul (dinilai sekurang-kurangnya setiap 3 tahun)	-	-	-
Aset peralatan ketenteraan khusus	-	-	-	-	-	-	-	-	-	Kos penggantian disusut nilai dioplimumkan (dinilai sekurang-kurangnya setiap 5 tahun)
Pesawat (tidak termasuk peralatan ketenteraan)	-	-	-	-	-	-	Nilai saksama tolak susut nilai terkumpul (dinilai setiap tahun)	-	-	-
Lain-lain HLP: kenderaan, peralatan pejabat	Kos tolak susut nilai terkumpul	-	-	-	-	-	-	-	-	-

Sumber: The Treasury, the Government of New Zealand (2023). Financial Statements of the Government of New Zealand

for the Year Ended 30 June 2023

**Jadual 2c: Perincian Penilaian Susulan Aset HLP - Australia**

Australia									
Prawaian dan peraturan	Pelaporan disediakan berdasarkan Australian Accounting Standard AASB 1049 Whole of Government and General Government Sector Financial Reporting (AASB 1049), seperti dikehendaki oleh Section 48 of the Public Governance, Performance and Accountability Act 2013 (PGPA Act)								
	Kos Sejarah		Nilai Pengoperasian Semasa (COV)			Nilai Saksama (exit)			
Model	Kos Sejarah	Nilai Pengoperasian Semasa (COV)	Nilai Saksama (exit)		Nilai Semasa				
Asas	Kos - SNT - RNT	Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan	Pendekatan Kos			
		Amaun Penilaian Semula - SNT - RNT		Amaun Penilaian Semula - SNT - RNT					
Teknik	Kos - SNT - RNT	Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan	Pendekatan Kos			
Jenis aset:		Amaun Penilaian Semula - SNT - RNT		Amaun Penilaian Semula - SNT - RNT					
Tanah	-	-	-	Nilai pasaran (dinilai oleh penilai bebas)	-	-	-	-	-
Bangunan	-	-	-	Nilai pasaran (dinilai oleh penilai bebas)	-	-	-	-	-
Aset peralatan ketenteraan khusus	-	-	-	-	-	-	-	-	Kos penggantian disusut nilai (dinilai oleh penilai bebas dengan kekerapan mencukupi)
Lain-lain HLP – aset khusus (special/ised) yang menjana tunai	-	-	-	-	-	-	-	-	Kos penggantian disusut nilai
Lain-lain HLP – aset khusus (special/ised) tidak menjana tunai	-	-	-	Nilai saksama (highest and best use) - (dinilai oleh penilai bebas)	-	-	-	-	-
Aset infrastruktur – menjana tunai (rangkaian landasan, jana kuasa elektrik, rangkaian jalur lebar):									
• Rangkaian landasan	-	-	-	-	-	-	-	Alir tunai terdiskaun	-
• Jana kuasa elektrik	-	-	-	-	-	-	-	Alir tunai terdiskaun	Kos penggantian disusut nilai
• Rangkaian jalur lebar	-	-	-	-	-	-	-	-	Kos penggantian disusut nilai
Aset warisan dan kebudayaan	-	-	-	Nilai pasaran (dinilai oleh penilai bebas)	-	-	-	-	-

Sumber: Department of Finance, the Australian Government (2023). Consolidated Financial Statements for the year ended 30 June 2023

**Jadual 2d: Perincian Penilaian Susulan Aset HLP - Kanada**

Kanada						
Pelaporan disediakan berdasarkan Canadian Public Sector Accounting Standards (seperti dikehendaki oleh Section 64 of the Financial Administration Act)						
Model	Kos Sejarah	Nilai Semasa			Nilai Saksama (exit)	
Asas	Kos Sejarah	Nilai Pengoperasian Semasa (COV)			Pendekatan Pendapatan	Pendekatan Kos
Teknik	Kos - SNT	Pendekatan Pasaran	Pendekatan Kos	Pendekatan Pasaran	Pendekatan Pendapatan	Pendekatan Kos
Jenis aset:						
Tanah	Kos (tidak disusut nilaikan)	-	-	-	-	-
Bangunan		-	-	-	-	-
Aset infrastruktur		-	-	-	-	-
Mesin dan peralatan (termasuk perkakasan komputer)		-	-	-	-	-
Kenderaan (termasuk kapal, pesawat, dan lain-lain)	Kos tolak susut nilai terkumpul	-	-	-	-	-
Aset dalam pembinaan		-	-	-	-	-

Sumber: Department of Finance, the Government of Canada (2023). Annual Financial Report of the Government of Canada—Fiscal Year 2022–2023

Amalan semasa pengukuran susulan di Australia juga menggunakan asas nilai saksama melalui pendekatan pendapatan bagi aset HLP yang menjana aliran tunai kepada entiti sektor awam terlibat. Berdasarkan kajian Biondi dan Oulasvirta (2023), penggunaan asas nilai saksama bagi pengukuran susulan sebahagian aset HLP di Australia ini mungkin boleh dibahaskan atas alasan aset HLP berkenaan dipegang dan dikekalkan untuk menyediakan manfaat sosial kepada rakyat bukan untuk menjana manfaat ekonomi langsung kepada entiti sektor awam terlibat. Maklumat aset HLP pada nilai saksama dilihat tidak membantu pengguna penyata kewangan dalam membuat keputusan kerana ia tidak menggambarkan penggunaan utamanya sebagai aset operasi dalam menyediakan manfaat sosial kepada rakyat keseluruhan.

Dapatan kajian seterusnya jelas menunjukkan bahawa Kanada hanya mengguna pakai model dan asas kos sejarah bagi kesemua jenis aset HLP yang dilaporkan. Seperti yang ditunjukkan dalam Jadual 2d, semua aset HLP yang dilaporkan dinilai pada kos tolak susut nilai terkumpul kecuali bagi aset tanah yang dilaporkan pada kos tanpa disusut dinilai. Amalan semasa pengukuran susulan mengguna pakai asas kos sejarah bagi keseluruhan kategori dan jenis aset HLP di Kanada ini adalah selari dengan kajian oleh Biondi dan Oulasvirta (2023) yang menekankan bahawa asas kos sejarah perlu diaplikasi dan diutamakan sesuai dengan ciri-ciri khusus sektor awam untuk menyediakan maklumat berguna kepada pihak berkepentingan melalui pelaporan kewangan bagi tujuan menzahirkan akauntabiliti.

Dapatan kajian dilihat selari dengan kajian perbandingan amalan semasa antara negara seperti kajian oleh Isa, Hasan dan Saleh (2023) yang mendapati terdapat variasi dari segi amalan perakaunan aset khususnya amalan perakaunan aset termasuk amalan pengukuran susulan aset HLP. Faktor utama yang perlu diambilkira dalam menentukan pemilihan model, asas dan teknik pengukuran susulan aset HLP adalah ketersediaan data nilai semasa seperti nilai pasaran yang boleh menawarkan nilai maklumat terbaik aset HLP berkenaan dan keperluan maklumat oleh pengguna penyata dan pihak berkepentingan sama ada untuk tujuan pembuatan keputusan atau akauntabiliti dan. Sepertimana yang ditekan dalam kajian oleh Sanchez dan Mocavini (2023), pihak berkepentingan sektor awam lebih menekankan soal kebolehbandingan yang menuntut keseragaman dalam pengukuran aset. Selain itu, apa yang boleh dirumuskan daripada dapatan kajian adalah pemahaman tentang latar belakang dan keupayaan serta kapasiti sumber kewangan sesuatu entiti sektor awam adalah amat perlu untuk memastikan pelaksanaan model, asas dan teknik pengukuran susulan yang sesuai mengikut kategori dan jenis aset HLP sektor awam. Pemahaman tentang latar belakang, keupayaan modal insan serta kapasiti sumber kewangan serta factor-faktor lain perlu di kaji dan diambilkira untuk penentuan kaedah terbaik pengukuran susulan aset HLP sektor awam. Berkemungkinan amalan semasa negara-negara yang dikaji ini iaitu negara yang telah matang dalam pelaksanaan asas akruan, yang mempunyai kerangka perakaunan dan pelaporan yang komprehensif serta garis panduan khusus perakaunan aset termasuk aset HLP dan pengurusan aset yang baik boleh diaplikasikan dalam konteks sektor awam di Malaysia. Kenyataan ini adalah merujuk kajian oleh Roje dan Redmayne (2020) yang mendapati kemungkinan untuk mengaplikasikan pengalaman perakaunan negara maju (seperti New Zealand) di negara membangun seperti Croatia dan Malaysia dengan mengambilkira antaranya faktor latar belakang dan persekitaran negara membangun berkenaan.

## 6.0 Kesimpulan

Kajian ini memilih negara UK, New Zealand, Australia dan Kanada sebagai negara maju dan terkehadapan dalam pelaksanaan perakaunan asas akrual. Sebagai negara peneraju dan terkehadapan dalam pelaksanaan perakaunan asas akrual, pengalaman dan amalan negara-negara berkenaan boleh membantu negara membangun seperti Malaysia untuk bergerak ke hadapan dalam melaksanakan sepenuhnya perakaunan asas akrual. Dalam konteks pengukuran susulan aset HLP sektor awam, amalan semasa empat (4) negara berkenaan dikenalpasti dan dibandingkan dan dapatan kajian boleh digunakan sebagai input berguna bagi kajian lanjutan seterusnya untuk memilih kaedah terbaik dan yang paling sesuai diterapkan dalam konteks sektor awam di Malaysia. Bagi tujuan perbandingan ini, kerangka kerja pengukuran susulan aset yang disarankan oleh IPSAB boleh dijadikan sebagai asas perbandingan dari aspek model, asas dan teknik pengukuran susulan aset HLP sektor awam.

Secara keseluruhan, kajian mendapati model kos sejarah dan nilai semasa kedua-duanya diguna pakai di tiga (3) negara yang dikaji iaitu UK, New Zealand dan Australia bergantung kepada jenis atau kategori aset yang dikenalpasti. Manakala Kanada hanya mengguna pakai model kos sejarah bagi pengukuran susulan kesemua kategori aset HLP negara berkenaan. Terdapat persamaan antara New Zealand dan Australia yang mengunapakai asas nilai saksama di bawah model nilai semasa bagi kebanyakan aset HLP mereka. Manakala unik bagi UK, asas nilai pengoperasian semasa diguna pakai bagi aset HLP jenis tanah dan bangunan serta aset infrastruktur.

Sama seperti aspek pengiktirafan dan pendedahan, aspek pengukuran aset HLP sektor awam adalah satu perkara penting kepada penggubal piawai perakaunan sektor awam di peringkat nasional dan antarabangsa. Aspek pengukuran aset HLP termasuk pengukuran susulan adalah berkait dengan perbahasan semasa tentang model, asas dan teknik pengukuran susulan di bawah perakaunan asas akrual iaitu kaedah manakah yang terbaik yang perlu diaplikasikan oleh organisasi sektor awam bagi memenuhi keperluan pihak berkepentingannya. Adalah penting kajian seperti ini dijalankan untuk memandu pemilihan kaedah terbaik pengukuran susulan aset sektor awam yang seterusnya dapat memperkasa sistem perakaunan dan pelaporan entiti sektor awam di Malaysia. Satu sistem perakaunan dan pelaporan yang baik, yang dapat menzahirkan akauntabiliti pengurusan aset kepada pihak berkepentingan akan memandu pada akhirnya tatakelola pengurusan aset awam yang berkesan.

Kajian ini tidak lari daripada mempunyai limitasinya. Kesemua data yang dikumpul adalah daripada sumber sekunder dan bergantung sepenuhnya kepada apa yang dilaporkan dan yang terkandung dalam dokumen yang dianalisis. Hanya amalan empat (4) negara sahaja yang dikaji, justeru adalah mustahil untuk digeneralisasi kepada keseluruhan organisasi sektor awam. Selain sumber sekunder, kajian masa depan boleh disokong dengan melibatkan data daripada sumber prima seperti temu bual dengan mereka yang terlibat secara langsung dalam memperakaunkan aset HLP sektor awam bagi mendapat pandangan mereka tentang kesesuaian asas dan teknik pengukuran susulan aset HLP khususnya dalam konteks sektor awam di Malaysia. Kajian masa depan juga boleh dipanjangkan dengan membuat perbandingan amalan pengukuran susulan aset HLP antara negara-negara lain termasuk negara maju dan negara yang sedang membangun.



## Penghargaan

Kami mengucapkan terima kasih kepada JANM melalui Institut Perakaunan Negara kerana membiayai kajian ini dan juga kepada Universiti Kebangsaan Malaysia khususnya Fakulti Ekonomi dan Pengurusan serta semua pihak yang terlibat secara langsung dan tidak langsung dalam menjayakan projek kajian ini (Kod Projek UKM: EP-2024-003).

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# The Impact of Government Development Expenditure on Economic Growth in ASEAN Countries

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<https://doi.org/10.58458/ipnj.v14.02.06.0109>

Received: 22 June 2024

Reviewed: 24 September 2024

Accepted: 30 September 2024

Published: 20 December 2024

## Abstract

**Purpose:** In the Association of Southeast Asian Nations (ASEAN) context, where strategic investments in infrastructure and public services are important for sustainable development, exploring government development expenditures significantly impacts that link to economic growth. The study covers a crucial dimension: the impact of government development spending on economic growth around this vast region. This study investigates the impact of government development expenditures on economic growth in ASEAN countries from 2000 to 2022. It is specifically interested in charting the history of these expenditures together with their economic effects.

**Design/ Methodology/ Approach:** Based on a quantitative research design, this study applies panel data analysis to an annual secondary data set obtained from ten ASEAN nations. We use the autoregressive distributed lag (ARDL) approach to test long-run cointegration between the identified variables using a panel ARDL model. Government development expenditures are the independent variable, and gross domestic product (GDP) per capita, along with inflation, foreign direct investment (FDI) and gross national expenditure (GNE), are dependent variables.

**Findings:** The findings indicate that government development expenditures are insignificant in the short term. They have a significant effect on the economic growth of ASEAN countries in the long run. This positive relationship underscores the need for continuous, well-targeted government investment to propel an inclusive economic development trajectory. Strategic government

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This article is part of a research on Unravelling Growth Patterns: Government Development Expenditure, ASEAN Economic Performance, and Policy Implications for Malaysia supported by the Accountant General's Department of Malaysia through *Geran Penyelidikan Perakaunan dan Kewangan Sektor Awam Tahun 2024* (JANM.100-12/2/1 (13)).

investments over the long term, particularly in areas that enhance productivity and competitiveness, yield substantial economic returns over time.

**Practical Implication:** Governments in ASEAN states must prioritise sustainable development initiatives that will have long-lasting effects in their countries. The findings indicate that investment in infrastructure, human capital, and innovation is crucial to promote sustainable growth. This study may be useful to policymakers by highlighting the necessity of adequately implementing development expenditures to achieve economic progress in ASEAN countries. This will eventually provide insights to enhance society's long-term development and welfare progress.

**Originality/ Value:** This study has considerable policy implications. It shows the importance of government development expenditures, especially long-term investments in sustainable development projects, in maintaining a growing economic trend.

**Keywords:** Government development expenditure, economic growth, ASEAN countries, panel ARDL

## 1.0 Introduction

The emergence of the ASEAN dated back much earlier to the fact that most of its member countries followed different development patterns, which later led to major economic transformations over the last few decades. At a time when investment-led growth is suffering from stagflation, Malaysia stands out among these countries for its clear emphasis on the role of development expenditure as an instrument of economic growth. Government development investment shapes almost every sector of the economy, from health to education, infrastructure to technology. This is an allocation of money that cannot return to our state, and understanding this spending process leads to better economic policies and real sustainable growth. Greater developmental expenditure in ASEAN countries has shown to be consistent with better economic performance indicators, such as GDP growth and poverty reduction (Asian Development Bank, 2021).

The relationship between government development investment and economic growth is a major topic of interest in modern economics, especially in ASEAN countries like Vietnam. Source: ASEAN comprises Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. The common goal for these countries is to maintain economic stability, grow the economy and develop the region. After all, this is hardly a profound revelation, considering that effective government spending can be pivotal for a number of shared goals, such as productivity, employment, and general economic prosperity. For policymakers across ASEAN, it has been a struggle for decades to encourage inclusive and sustainable economic expansion. It has given rise to continued discussions over the effectiveness of government expenditure as both a way of promoting economic development and creating long-term change in other areas. At the conceptual level, we shed light on the Wagner law and Keynesian view, two (2) established theoretical views regarding the complexity of government spending's effect on national growth. Wagner's

Law theorises that there is a direct relationship between economic development, income distribution in the public sector, and expansion of government activity. In contrast, the Keynesian theory calls for increased government spending to actively stimulate economic growth, representing fiscal policy as a powerful means of combating economic downturns by adding spending or cutting taxes to reduce them. However, the workings of fiscal policy are intricate. Unbalanced government spending and income supported by debt or finance can result in deficits, which can discourage private investment, making repayment impossible and ultimately leading to economic shrinkage. Empirical research also highlights the difficulty of distinguishing between types of spending and taxpayers. Both the prospective and present links between ASEAN regions are intricate, leading to multiple, often conflicting research inferences (Gallopín, 2002). Government expenditures play a vital role in alleviating the country's economic activities as they influence the rate of growth and development (Amusa & Oyinlola, 2019). They found that government spending in Botswana was effective only in the short run but insignificant for an extended period.

Over the years, governments in the ASEAN region have invested heavily in development projects; however, the economic outcomes have varied significantly across member countries. This disparity raises critical questions about whether the expenditures have been effectively directed toward areas that yield the greatest returns. A primary concern lies in the allocation of public spending across different sectors, with some, such as infrastructure and education, consistently prioritised as ministerial portfolios. In contrast, others, such as health, are deemed essential but often receive less focus. The impact of these expenditures is influenced by factors such as financial growth, the quality of institutions, and the existing levels of human capital. In the absence of appropriate institutional oversight, which is often lacking, there is a risk that actual spending priorities may become misaligned with the economy's needs. Furthermore, bureaucratic inefficiencies and corruption can lead to significant waste, hindering the effectiveness of development spending and stifling desired economic growth.

However, these issues are overshadowed by the underlying economic structure and policy environment. Countries with robust private sectors and sound policy frameworks tend to experience government growth rather than decline. Additionally, in our globalised world, economic growth is influenced by external investment flows and prevailing economic conditions. Long-term sustainability is closely related to these factors; without careful management, increased spending can lead to higher public debt, which subsequently limits future fiscal capacity and stability. Therefore, an evaluation is essential to guide ecosystem-based adaptation (EbA) strategies that can provide immediate benefits while ensuring long-term sustainability.

Previous research on the relationship between government development expenditure and economic growth has yielded inconclusive evidence. While public spending can stimulate the economy by creating jobs, boosting demand, and attracting business investment, critics argue that excessive public expenditure may deter private investment and exacerbate fiscal deficits. This indicates a need for a more nuanced analysis tailored to each ASEAN country. Understanding these macroeconomic influences on government spending in ASEAN is crucial for optimising resource allocation for sustainable and equitable development. This insight is vital for policymakers, as it can highlight best practices from other regions and provide lessons on the challenges and constraints faced during implementation in individual countries.

Therefore, this study aims to examine the effects of government development spending on economic growth in ASEAN countries over 20 years from 2000 to 2022. The study will provide insight into the crucial event of government spending related to economic growth, and development in ASEAN. It is important to recognise the role of government expense in ASEAN and the fact that it is at the heart of economic growth for several reasons. It helps by guiding how to effectively allocate resources when striving for sustainable and equitable growth, which is crucial for policymakers to provide the necessary basis. Second, it can help uncover significant and successful practices that other regions should adopt. Finally, it offers lessons on the obstacles and constraints of the country-level processes of implementing developmental initiatives effectively.

## 2.0 Literature Review

As it is in line with the literature on government expenditure and economic growth, government development spending shows some evidence of polarised results, especially among the developing countries of ASEAN. Although some studies have recommended a favourable relationship between government spending and economic growth, it is argued that the expansion of public expenditures can be harmful, which hinders productivity itself and produces a falling return to GDP growth (Nguyen, 2022; Febriani, 2023). Moreover, there is empirical support that irresponsible fiscal behaviour can stymie growth and that the effects of government spending on growth tend to be long-term (Jermsittiparser, 2019). As a result, the public spending strategies of ASEAN countries should be taken with care and in accordance with the objectives marked in the Blueprint 2025 of the ASEAN Economic Community (AEC). The area's economic performance can depend on a number of factors, including global market movements, geopolitical events, technological developments and regulatory changes.

This combination enables the Informal ASEAN Ministerial Meeting (IAMM) study to take into consideration several important aspects of how ASEAN countries interact economically, such as macroeconomic stability, trade trends, investment flows and industry diversification—perennially crucial for ASEAN's economic performance. The effects of regionalising and economic policies are also examined in terms of relying on agreements within ASEAN or intra-regional trade flows to drive economic endeavours over the boundaries of avenues such as the China-Australia Free Trade Agreement (CHAFTA). A rapidly expanding body of work has documented the role of government development expenditure in boosting economic growth, especially its beneficial effect on key sectors like education, health and infrastructure. However, the relationship is multifactorial and multiple transmission factors are involved. According to the literature, effective governance, decreased corruption and political stability reinforce the positive contributions of both consumption and development expenditures on economic growth (Sidek & Asutay, 2021).

In Malaysia specifically, it is shown that healthcare expenditure accelerates economic growth first, followed by social service, defence and education investments can be invested next to grow the nation economically by providing an opportunity for sector-specific investment strategies (Kamis et al., 2020). Nepal: In this case, both current and capital expenditures play a progressively positive impact on economic growth in the short term (static), as well as being significantly important in the long run cointegrating relationship, exhibiting a balanced approach to infrastructure and industrial development for sustainable economic progress needs to be adopted (Rana, 2021). Another benchmarking study in Japan reinforced the



relationship between continual economic growth and investment in two (2) key development areas: education and health, emphasising the role of openly prudent spending as a driver to stimulate growth (Tanaka, 2024).

Through the lens of economic theory, a wide array of possible connections between government spending and economic growth is sketched out, including varied positive to negative and even non-linear links. Mixed results in this relationship also suggest that the association may depend on the development context, timeframe and methodology used (Alqadi & Ismail, 2020). In general, development spending contributes to growth, but the level of these spillovers depends upon institutional quality and efficiency of expenditures. This highlights the fact that research on public expenditure and economic growth still needs further improvement and more contextual development using more advanced methodologies in order for us to understand such nexus.

Several studies have demonstrated a strong positive association between public spending on human capital and economic growth. This view is supported by the empirical evidence in emerging markets, characterised by long-run bi-directional causality between growth and government spending covariation (Anoop et al., 2023). Research from India, for instance, has demonstrated that public revenue and development expenditure translate effectively to GDP real growth, clearly evolving the need to invest in development, which may have pronounced spillover impacts on economic progress. The role of agriculture, transportation and health investments in providing both short- and long-term growth has also been well documented in available sources, emphasising their central role in development (Girum & Dagne, 2022). In the long term, however, government expenditure and economic growth are closely linked (Ndam, 2022), reinforcing the need for careful planning when allocating resources to development expenditure to maintain the necessary foundation of economic growth.

Governments commonly deploy expansive budgetary measures aiming for strong and steady growth. Ahuja and Pandit (2020) outline the case for government spending in economic policy, which upholds Keynesian principles and emphasises the role of government consumption as an economic stimulus during an economic slump. Research that investigates Botswana's expenditures from 1985 to 2016 reveals that development expenditure has a significant short-term impact on growth and a minor long-term impact (Amusa & Oyinlola, 2019). Sidek and Asutay's (2020, unpublished data) findings show that both developed and emerging markets have a similar response to government spending, such as in Malaysia, Botswana and Bangladesh. In contrast, Gifari (2016) revealed that the development spending of Malaysia from 1970 to 2014 seemed to affect "long-term negative economic growth", which suggests that extra spending could impede overall progression, whether through taxes or borrowing. Jin (2020) provided some cross-region and within-case disparities in the effectiveness (multiplier effect) of government development expenditure in China and India from 1985 to 2005. Nurudeen and Usman (2010) further note that the association of government size with increased GDP is inconsistent across countries.

Economically, government expenditure is supposedly doomed to increase GDP and give rise to more production than an economy could exhibit through the absence of public intervention (Loizides & Vamvoukas, 2005), namely Wagner's law (Schuler, 1992). The divergent results among countries require rethinking the relationships between government expenditures within South Asian Association for Regional Cooperation (SAARC) states. Past studies in Malaysia have neglected the growth of disaggregated expenditures and instead focused on overall

government spending (Tang, 2009). According to Keynesian theory, public sector expenditure is an important driver of economic activity, particularly in terms of fiscal policy. This theory contends that government spending may boost economic development by affecting aggregate demand, which in turn influences private consumption and investment. The efficiency of public spending, however, varies according to the type of expenditure and the economic circumstances. For example, government investment in infrastructure and human capital has been demonstrated to boost worker productivity and economic growth, particularly in profit-driven demand regimes (Parui, 2022). Investments in education and healthcare are critical to improving human well-being and guaranteeing fair growth (Sharma et al., 2022). Kandil (2001) persuasively advocated that government expenditures fight for purchasing power with those of the private sector, fuelling crowding out or crowding in effects on deficits, interest rates and private investment. This complexity underlines the need for an in-depth scrutiny of government spending and economic growth patterns in ASEAN nations because their economies have specific features.

The literature critique pertains to the spotty findings on the effectiveness of government spending. For example, Sidek and Asutay (2021) and Kamis et al., (2020) find a positive effect of development inputs on growth, while other studies reveal potential downsides, such as the crowding out of private investment and misallocation of resources. Despite the overall positive effect of government spending on human capital for economic growth, previous research suggested that the quality of governance and institutional frameworks partially determine how government spending affects economic development (Anoop et al., 2023; Girum & Dagne, 2022). Furthermore, the research on government spending has primarily concentrated on total government expenditure and paid little attention to disaggregated spending analysis (Tang, 2009). The gap warrants a more granular analysis of individual sectors. Education, health, and infrastructure are critical to economic growth, and at the same time, we need to appreciate the deleterious effects of unproductive expenses.

This article thus addresses these comments by examining the nexus between government development expenditure and economic growth in ten ASEAN countries from 2000 to 2022. This study aims to develop findings from the ASEAN context and a comprehensive methodological framework to understand the patterns of government development expenditure in ASEAN in short-run and long-run effects that can indicate the way for future policy directions. In this way, it offers evidence-informed suggestions for policymakers on the importance of prioritising resources in order to maximise returns from public expenditure support, promoting sustainable economic growth. Therefore, the study contributes to the existing literature by deciphering the complexity behind government expenditure dynamics in the ASEAN region and providing policy actionable recommendations for effective economic development.

### **3.0 Methodology**

This research examines the impact of government development expenditure on economic growth in ASEAN countries through quantitative methods and econometric models. We use the annual secondary data of ten ASEAN countries from 2000 to 2022 for 23 years, including Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar (Burma), the Philippines, Singapore, Thailand and Vietnam. Data: World Bank Development Indicators; country reports from the departments of statistics of these countries. This paper will examine the cointegrating relationships between government expenditures, including development expenditures, and



economic growth over time for various Asian countries. The study utilised the panel ARDL methodology, introduced by Pesaran et al. (2001), which is adequate to undertake both panel and time series long-run cointegration testing. If there are multiple cross-sectional units ( $N > 1$ ) over time periods ( $T > 1$ ), Panel ARDL is more robust than a single time series, traditional ARDL method.

This procedure is particularly valuable to data with low sample sizes for its ability to capture instant and long-run impacts by following Granger's (1983) and Lewbel's (2012) efforts. Criteria like Akaike information criterion (AIC), Bayesian information criterion (BIC) and Schwarz's Bayesian criterion (SBC) are utilised to determine the optimal lag length and get the best-fitting model. We also employ the ARDL and Vector Error Correction Model (VECM) framework to measure this adjustment rate in disequilibrium, which accounts for short-run dynamic relationships apart from long-run ones (Engle & Granger, 1987; Pedroni, 1999, 2004; Apergis & Payne, 2009). These models are integrated to provide a complete examination of cointegration and short-run effects on economic growth.

$$\Delta \ln G D P C_{i t} = \beta_0 + \sum_{j=1}^p \delta_{i j} G D P C_{i, t-1} + \sum_{j=0}^q \beta_{i j} X_{i, t-1} + \mu_i + \varepsilon_{i t} \quad (1)$$

Pesaran et al. (1999) define  $X_{i,t-1}$  as the vector of explanatory factors for group  $i$ ,  $\mu_i$  as the nation-specific fixed effect, and  $j$  as the examined country, with lag lengths  $p$  and  $q$ . Using annual data, Pesaran et.al (1999) suggest that there are two (2) lags at most. The last stage involves using the long-run estimates to build an Error Correction Model (ECM) to estimate short-run dynamics. Equation (2) Model specifications for unique panel ARDL system used in this study. The reparametrised ARDL ( $p, q, q, \dots, q$ ) error-correcting model is shown below:

$$\Delta \ln G D P C_{i t} = \sum_{j=1}^{p-1} \delta_{i j} G D P C_{i, t-j} + \sum_{j=0}^{q-1} \beta_{i j} \ln X_{i, t-j} + \vartheta E C M_{i, t-1} + \mu_i + \varepsilon_{i t} \quad (2)$$

Whereas, Gross Domestic per Capita (GDPC) is an indicator of economic growth,  $X$  combines some extra economic indicators, including gross national expenditure, inflation, foreign direct investment and government development spending. Meanwhile, the short-run coefficients are  $\delta$  and  $\beta$ , whereas  $\varepsilon_{it}$  represents the error term.  $\vartheta$  is the adjustment rate to long-run equilibrium, while  $i$  and  $t$  are the country and period, respectively. The criteria outlined are used to establish the lag order ( $p, q$ ). ARDL models consist of lagged and differenced variables that may provide long-run relationships between variables, as well as short-run relationships that could be part of these cointegrating interactions.

The ARDL model was introduced by Pesaran et al., (1999) as an econometric tool. This multimarket model provided a framework (Anderson, 2001) to test the dynamic relationship between the variables in both short and long runs. The panel ARDL methodology allows for analysing these relationships in a panel data framework. The first step is to fit the panel ARDL model, for which extensive data collection and pre-processing of large datasets were conducted, encompassing various types of variables across several entities at different periods. The researchers must define their dependent and independent variables carefully, include a balanced data set, and handle missing values. Following this, unit root tests were performed (Levin, Lin & Chu, 2002 and Im, Pesaran & Shin, 2003) to identify the order of integration and to confirm that both series were integrated of degree one. After establishing the stationarity,

the panel ARDL model was fitted to fix the lag lengths required in capturing the short-run relationship between dependent and independent variables.

The criteria were the AIC and Schwarz information criterion (SIC), and the methods were used to determine the optimal lag length. Ordinary least squares (OLS) estimation was then performed on the model and bounds testing was used to examine if any long-run relationships existed between the variables. Followed by unit root testing was followed by order of integration and lag lengths. The residuals were also subjected to primary diagnostic tests, such as serial correlation, heteroscedasticity or normality, to verify the model's performance. We examined the significance and interpretation of the estimated coefficients and identified government development expenditure as an independent variable to capture short-run and long-run relationships between government development expenditure and economic growth. The results were supported by sensitivity analyses and robustness checks, which ended with a comprehensive summary discussion about policy implications and economic development.

#### 4.0 Result and Discussion

Table 1 contains descriptive statistics and the correlation matrix as the preliminary analysis that serves as a foundation to understand the characteristics of the sample and data for this study. The correlation matrix quantifies the relationships that are as strong and to which direction among the variables, with correlation coefficients of -1 to +1. In general, GNE and Final Consumption Expenditure (FCE) at 0.601 and 0.622 have a strong positive correlation with GDP per capita (LGDPC). The results indicate that as national expenditure and consumption grow, GDP per capita tends to rise, implying a possible association between these economic events. This is consistent with the results of Barro (1990), who argued that an increase in government spending, especially on infrastructure and education, had a positive effect on economic growth. On the other side, LGDPC is negatively pocket-padded correlated with inflation (LINF) -0.4904 and the coefficient of FDI is -0.1509, intimating that a greater frequency of inflation and lower levels of lukewarmness to foreign capital investment are causing GDP per capita to decrease. The negative effects of inflation on economic growth have been well documented in the work of economists such as Romer (1986), who postulate that inflation breeds uncertainty, which adversely affects investment and confidence. Moreover, Government Development Expenditure (GDE) has a weak negative relationship with GDP per capita (-0.3775), implying the growth of GDP does not necessarily require increasing government expenditure in this perspective, which somewhat coincides with the arguments of concerns raised by Afonso and Furceri (2008) over efficiency cost being suffered from public spending.

In other relationships, Gross National Expenditure (LGE) shows a strong positive correlation with Final Consumption Expenditure (LC) 0.7785 and LEX (0.3979), indicating that more government expenditure corresponds to high consumption and exports. This confirms Jermittiparser's (2019) claim that public investment can increase consumption and trade. Another interesting point is the negative correlation between LGE and LINF (-0.6012), implying that when a nation has a larger expenditure, the inflation rate is lower, which brings to attention how an effective fiscal policy can contribute to stabilising an economy. Nevertheless, the relationship between Foreign Direct Investment (LFDI) and LGDPC is low (0.1509), suggesting that it may be hard to attract foreign investment while pursuing economic growth and frowned upon the results obtained from this profound research by Ndam (2022) in his discussion on achieving sustainable economic growth through FDI.

**Table 1: Correlation Matrix**

	<b>LGDPC</b>	<b>LGE</b>	<b>LINF</b>	<b>LEX</b>	<b>LC</b>	<b>LFDI</b>	<b>LGDE</b>
<b>LGDPC</b>	1.0000						
<b>LGE</b>	-0.6012	1.0000					
<b>LINF</b>	-0.4904	0.1753	1.0000				
<b>LEX</b>	-0.0496	-0.5346	0.2684	1.0000			
<b>LC</b>	-0.6661	0.7785	0.3978	-0.1801	1.0000		
<b>LFDI</b>	0.4228	-0.2727	-0.1509	0.1681	-0.2597	1.0000	
<b>LGDE</b>	0.3775	-0.2310	-0.2598	-0.1138	-0.3619	-0.0578	1.0000

Note: LGDPC is a dependent variable measure based on GDP per capita (constant 2015 US\$); LGE= Gross national expenditure (% of GDP); INF= Inflation (annual %); LEX= Exports of goods and services (% of GDP); LC= Final consumption expenditure (% of GDP); LFDI= Foreign direct investment (% of GDP); LDGE= Government development Expenditure (% of GDP).

It also gives a clearer view of these relationships by providing descriptive statistics such as the mean and standard deviation. For that reason, in Table 2 with descriptive statistics, you will find valuable information about the central tendencies of each variable, and their variation. The average economic output of people across the dataset is about 3.990 (LGDPC). By contrast LGE averages 1.964, a much less extreme level of other fiscal spending compared to GDP. In addition, a mean value of 4.645 for LINF (annual inflation rates) can result in stability problems in some countries. The mean of LEX is 4.9135, and it represents a moderate level of exports concerning GDP and has some potential to stimulate economic growth as history (suggests) that increases in the relative amount of trade can enhance total factor productivity and are congruent with many theories posed by Lucas (1988).

The standard deviations in the descriptive statistics speak to how much we vary from data set to data set. The standard deviation of LGE is 0.8551, which indicates that the level of government expenditure observed for the entities has a moderate spread. Adversely, LINF shows a standard deviation of 2.916, indicating larger differences across inflation rates affecting economic conditions and government policies in general. The between-country variation for LGDPC (2.7164–4.8284) is correspondingly large, representing both low- and high-income extremes within the dataset. Likewise, the minimum in EU LINF of -1.2605 and maximum of 5.2046 imply significant divergence in inflation rates, which might influence economic development.

**Table 2: Descriptive Statistics**

Variable	Mean	Standard deviation	Minimum	Maximum
<b>LGDP</b>	3.5990	0.5656	2.7164	4.8284
<b>LGE</b>	1.9649	0.0851	1.6840	2.2741
<b>LINF</b>	4.6548	4.9612	-1.2605	5.0246
<b>LEX</b>	1.9135	0.7176	1.0188	4.2833
<b>LC</b>	1.8339	0.1382	1.4983	2.4827
<b>LFDI</b>	5.4714	6.3788	-1.7529	32.6912
<b>LGDE</b>	1.3680	0.4584	0.9941	4.4736

Note: LGDP is a dependent variable measure based on GDP per capita (constant 2015 US\$); LGE= Gross national expenditure (% of GDP); INF= Inflation (annual %); LEX= Exports of goods and services (% of GDP); LC= Final consumption expenditure (% of GDP); LFDI= Foreign direct investment (% of GDP); LGDE= Government development Expenditure (% of GDP).

The analysis of the correlation matrix and descriptive statistics reveals complex relationships among government expenditure, economic growth, inflation, and other economic indicators. The positive correlations between government development expenditure, consumption, and GDP suggest that strategic public spending could support economic growth, as Ahuja and Pandit (2020) argued in their exploration of expansive budgetary measures to foster sustainable development. However, the negative correlation with inflation emphasises the need for careful fiscal management to avoid potential economic instability, a sentiment echoed by Durlauf and Johnson (1995).

This study utilised panel ARDL estimation, followed by a discussion of the findings from the panel ARDL analysis to assess the impact of government development expenditure on economic growth in ASEAN countries. Initially, the models were executed after conducting all relevant pre-test diagnostics in Stata. The results of the Im-Pesaran-Shin (IPS) unit root test are summarised in Table 3. This summary indicates that all variables exhibit first-order integration, suggesting that the variables will achieve stationarity after one differencing. Additionally, this finding implies that the variables are cointegrated, as they are non-stationary in their level form. Large coefficients in the long-run equations further support the evidence of cointegration.

**Table 3: Panel Unit Root Tests: Im, Pesaran and Shin (IPS) test**

Variable	Level		First Difference		Order of integration
	Intercept+	Intercept+ trend	Intercept+	Intercept+ trend	
LGE	0.6739	1.2272	-6.0224***	-4.9617***	I(1)
LINF	-1.8503**	-0.1147	-8.0947***	-6.5225***	I(1)
LEX	-0.6879	1.0998	-4.4191***	-3.7502***	I(1)
LC	2.7355	1.3365	-5.0082***	-4.2563***	I(1)
LFDI	-3.1623***	-3.3092***	-9.7427***	-7.9529***	I(0)
LGDE	1.9569	-0.0021***	-0.0010***	-0.0081***	I(1)

Note: \*\*\* indicate significant at 1 percent, \*\* 5 percent and \* 10 percent significance level. LGDPC is a dependent variable measure based on GDP per capita (constant 2015 US\$); LGE= Gross national expenditure (% of GDP); INF=Inflation (annual %); LEX= Exports of goods and services (% of GDP); LC= Final consumption expenditure (% of GDP); LFDI= Foreign direct investment (% of GDP); LDGE= Government development Expenditure (% of GDP).

After determining that each variable is integrated into order one (1), the study used Pedroni's (1995, 1999, 2004) cointegration test for panel analysis. Pedroni's technique uses seven (7) cointegration test statistics: four (4) for cointegration within dimensions and three (3) for group mean panel cointegration across dimensions. Table 4 displays the results of Pedroni panel cointegration testing. The test results reveal that panel and group statistics reject the null hypothesis of no cointegration. Pedroni (1999) claims that the panel and group ADF tests have better sample quality and are more reliable. It can be concluded that the variables are cointegrated.

**Table 4: Results of Cointegration Test Based on Pedroni (1999, 2004)**

Test Statistics	Cointegration value
$Z_V$ (Panel v-statistic)	-2.0690
$Z_\rho$ (Panel $\rho$ -statistic)	3.2040
$Z_t$ (Panel t-statistic)	-0.8555
$Z_t^*$ (Group t-statistics (non-parametric))	7.4890
$\tilde{z}_\rho$ (Group $\rho$ -statistic)	4.5120
$\tilde{z}_t$ (Group t-statistics (parametric))	-1.5960
$\tilde{z}_t^*$ (Group t-statistics (non-parametric))	8.0220

Note: Figures in parentheses are p-values.

To design efficient economic policies, it is critical to understand how government and development expenditures affect economic growth. Using panel ARDL analysis, broad trends and linkages across all ASEAN countries, providing a complete knowledge of the region's

economic dynamics can be identified. For optimal lag selection, the study used the Schwarz information criterion (SIC), choosing a model with lag specifications (1, 2, 1, 1, 1, 1) based on its lowest value.

**Table 5: Result of panel ARDL**

<b>Estimation</b>	<b>Short Run (i)</b>	<b>Long Run (ii)</b>
ECT	-0.1236*** (0.0180)	-
LGE	0.1173 (0.1387)	-2.5332 (0.2822)
LINF	-0.0003 (0.0004)	0.0132*** (0.0048)
LEX	0.0486 (0.0363)	0.3053** (0.1265)
LC	-0.4073*** (0.0941)	-3.1069*** (0.4401)
LFDI	0.0008 (0.1120)	0.0134** (0.0070)
LGDE	-0.1022** (0.0469)	1.8312*** (0.1075)
Cons	-0.0650 (0.1241)	-2.5332 (0.2822)

Note: \*\*\* indicate significant at 1%, \*\* 5% and \* 10% significance level, first value indicates the coefficient value and value in parentheses is a standard error. LGDPC is a dependent variable measure based on GDP per capita (constant 2015 US\$); LGE= Gross national expenditure (% of GDP); INF= Inflation (annual %); LEX= Exports of goods and services (% of GDP); LC= Final consumption expenditure (% of GDP); LFDI= Foreign direct investment (% of GDP); LDGE= Government development Expenditure (% of GDP).

Table 5 illustrates the panel ARDL estimates, revealing both short- and long-run relationships between government expenditure, government development expenditure, and economic growth across a selection of ASEAN countries, with GDP per capita as the dependent variable. The Error Correction Term (ECT) is calculated at -0.1236 and is significant at the 1% level. This indicates that the model effectively corrects deviations from long-run equilibrium following short-run shocks; specifically, 12.36% of this deviation is rectified in each period.

LGE has a coefficient of 0.1173, but the p-value is higher than 5%, which follows LGE and has a short-term effect on GDP per Capita (Mauro, 1998). Likewise, LINF rejects its effect on economic growth as the LINF coefficient is -0.0003 with a p-value of 4704. This confirms the result drawn by Barro (1996), who found that inflation may still not affect short-run economic growth. On the other hand, the positive sign of exports suggests that increases in export values do not change GDP per capita in the short run (the coefficient of LEX is 0.0486, but it is statistically insignificant). This is in line with the results of Wang and Zhang (2017), who argue that export growth may have a long-run impact rather than immediate GDP contributions.

FCE shows a coefficient of -0.4073, again a significant and coherent sign at 1%, which is significant at the 1% level, implies that an increase in final consumption expenditure results in reduced GDP per capita in the short run (Khan & Senhadji, 2000). The LFDI result was also significant on GDP per capita, but with a coefficient of 0.0008 that it is not statistically distinct from zero, indicates FDI has no effects, over the short term, regarding GDP per capita level which is in an agreement with Aitken and Harrison result (1999) showing little results over the first year of analysis the Influence FDI towards shock performance like GDP Per Capita. However, the coefficient of GDE is -0.1022 and significant at 5%, indicating that there would be an increase in GDPC if the government development expenditure were cut. However, this effect would only show itself over a short duration based on current levels of data. Therefore, the result can be related to the results shown by Aschauer (1989), which state that government expenditures on development could have short-run positive effects when allocated inefficiently. The system has no use for the constant term at -0.0650.

In the long run, the GNE is not significant to the GDP per capita; inflation and export appear to affect growth in the long run by 0.0132 and 0.3053, respectively. This result lines well with the literature since inflation typically leads to erosion of economic growth in the long run (Fischer, 1993), and exports supposedly contribute a big part of long-run growth in light of their influential position for value-added activities, likewise enhancing productivity and competitiveness (Baldwin & Wyplosz, 2015). LC also negatively affects GDP per capita in the short and long run. However, as Barro (2000) argued, it is not significant at 5%, highlighting that domestic government expenditures could help decrease investment recovery. On the other side, LFDI and Government Development Expenditure (LGDE) have a significant positive impact on the 1% level of the income to be maintained in the long run, supporting that investment through infrastructure, such as government development expenditure is vital to keep economic growth sustained. This indicates that strategic development planning will stimulate such ideas (Aschauer, 1989; Zhang & Heshmati, 2009). Because of these reasons, our findings support the idea that spending on infrastructure can be counter-productive from a transitory perspective while promoting sustainable long-term economic growth in ASEAN countries by recognising the need for strategic investment or immobilisation. On the other hand, household consumption spending has a negative impact on economic performance because its accumulation is at the cost of investment. Our finding aligns with recent research that overconsumption can result in resource misallocation and economic growth inefficiency (Easterly, 1993; Chang et al., 2021). As such, exports and FDI remain essential for regional growth sustainability. Research in the recent literature (Zhou et al., 2022; Aschauer, 1989) asserts that government expenditure on infrastructure and development can lay a solid foundation for long-term economic growth. Hence, the findings indicate that strategic long-term investments in development and infrastructure are indispensable for achieving sustainable economic growth in the ASEAN region.

## 5.0 Conclusion and Recommendation

The results suggest that despite the government development expenditure not always showing its quick effects (in the short run), it is crucial for generating sustainable economic growth in ASEAN in the long run. The future of ASEAN countries would depend on how they secure interests and achieve development to localise their strategy, where policies push for sustainable and flexible growth. Strategies regarding improving infrastructure and human resources (strengthening energy, transport, and communication networks) are of the highest importance.



These investments can greatly reduce the cost and help enhance productivity (Calderón & Servén, 2010). Moreover, these investments should be made considering not only the present generation but also future generations, which emphasises greatly inculcating higher human capital through vast education and healthcare expenditure (Hanushek & Woessmann, 2015).

Policymaking along these lines has to be geared towards enriching the stock of human capital, promoting technological and organisational innovation, and supporting research endeavours that would redound to advancing economic prospects through a prepared workforce (Schultz, 1961). Continuous financial assessment and reviews are essential for good government spending and resource management. National development objectives should also be aligned with the FDI strategy. The early studies examining the determinants of FDI posit that an appropriate economic story is necessary for encouraging FDI inflow, primarily focused on infrastructure development, technology transfer and job creation that can synergistically enhance growth in the host countries to a great extent (Borensztein et al., 1998). Therefore, by following this strategic approach, countries can maximise the advantages of foreign direct investment and set a roadmap to progressive, long-term growth.

Finally, sustainable economic growth in ASEAN countries will require a holistic approach, covering persistent investment in infrastructure and human capital, improvement in the efficiency of public spending, fiscal discipline and establishing a favourable environment for foreign direct investment. This will help drive sustainable development and quality of life and allow economies to properly respond to global challenges. In this study, we used the method of panel ARDL estimation to find the short- and long-run effects of several economic variables on GDP per capita in ASEAN countries. The findings suggest reasonable public expenditure programmes by the government are essential in paving the way for future economic success (Aschauer, 1989; Calderón & Servén, 2010) and assert that targeting versus general expenditures matter even if it comes at an interim cost to society. Accordingly, ASEAN countries are essential in sustaining and improving infrastructure investments, education programmes, health promotion efforts, and sustainable development policies (World Bank 2018).

Moreover, the positive long-term effects of exports and foreign investment emphasise the importance of good trade policies and an environment conducive to investments (Baldwin & Wyplosz, 2015; Lee et al., 2006). The results indicate that under-consumption depresses per-worker economic growth, and that the long-run effects (for a dynamic quantity like GDP per capita) are substantial as compared to short-run impacts (Barro & Lee, 1994). Resource Misallocation Technological upgrading coupled with savings and investment are important to avoid resource misallocations (Rodrik, 2005). Furthermore, anchoring high-impact inflation and macroeconomic stability directly affects the GDP model (Fischer, 1993; Blanchard, 2017). According to the IMF (2017), fiscal discipline and the curbing of public debt need to be improved so that government finances can be used effectively for development rather than misallocation. In addition, mid- and long-term planning, monitoring and evaluations are essential in the successful implementation of overarching national development plans. A regional economic plan integrates strategic government expenditure programmes from time to time (Asian Development Bank, 2021). Politicians of all stripes can always find something to cut, but we can hope that regular monitoring and evaluation will make it easier to see where spending priorities need readjustment. If adopted, these recommendations can provide ASEAN countries with a



collective guideline on using government expenditure and other critical economic variables to achieve sustainable regional-wide economic growth and development.

Several significant limitations of the present study potentially affect its degree of accuracy and comprehensiveness. One important limitation is the decentralisation of data on government development expenditure, particularly in distinguishing basic and non-basic expenditures. Due to this lack of disaggregated data, the authors have limited their power to speculate about different budget categories and their effect on economic growth. Without accounting for their nature, the analysis may have also missed other possible important influences on economic outcomes because of alternative spending behaviours. The study concluded that the impact of government development expenditure on economic growth would be non-specific and may give us only a global view without providing how much impact is due to variations in expenditure.

Further research should address these limitations to provide a comprehensive understanding of the relationship between government expenditures and economic growth. Subsequent research should disaggregate information on government development expenditures more comprehensively. Aim by type with sub distinction while disaggregating these expenditures into specific categories; 1) basic: expenditure to upgrade the academics infrastructure like organising education, 2) non-basic: investment in empowering education. Such a measure of austerity would help future researchers determine more precisely how different government expenditures affected economic outcomes. This nuanced understanding can lead to better policy recommendations that are more targeted and effective, ensuring (to a small extent) that public funds are spent in a way that benefits economic life.

### **Acknowledgements**

The authors would like to express their appreciation and gratitude to the National Accounting Institute, Accountant General's Department of Malaysia for funding this publication.

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## **Acknowledgements**

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