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A Thematic Review on Accountability Index Publications

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ABSTRACT

The Accountability Index is typically used to scrutinise and assess the organisational accountability level. Accordingly, this study explored the various contexts of the accountability index and investigated its function in controlling organisational behaviour towards good governance related to management and reporting. Hence, this study adopted a thematic review based on searches of past publications on the accountability index in Scopus, Web of Science (WoS), and Mendeley Web databases using specific keywords. A total of 203 published articles were identified in the first step, but only 29 papers were thoroughly reviewed upon screening the inclusion and exclusion criteria. Results from the code-to-document reports using ATLAS.ti 9 software revealed patterns, trends, and mapping of the accountability index contexts in various forms of study. This study employed descriptive and thematic analysis. The descriptive analysis discusses the source title, research countries, research setting, and methodology. Through thematic analysis, this study highlighted the following themes: index development, index elements, and evaluation. These themes are interrelated, which enables monitoring of the strengthening of accountability in organisations. As a result of this thematic analysis, practitioners and academics can use it as a guideline to draw up an accountability index to assess the level of accountability in the scrutinised context. This study also highlighted academic information gaps for future research directions.

Keywords: Accountability index; accountability level; thematic review; themes; ATLAS.ti

Introduction

Accountability is frequently discussed as a universal issue but has yet to be addressed extensively. Accountability is one of the mechanisms that can stimulate good governance. Strengthening accountability can curb various forms of misconduct, such as abuse of power and fraud (Siddiquee 2005; Stafford & Stapleton 2017). Thus, accountability is highly emphasised in the public sector, including management and transparency of information disclosure.

Accountability practices in the public sector are essential in establishing oversight mechanisms, measuring performance, and improving service quality (Samaratunge et al. 2008). As the executive, the government is responsible for ensuring that the entrusted powers and tasks are performed properly and justifying the decisions and actions taken, specifically public resources expenditure and reports on the performance and services for society. This responsibility aligns with the definition of accountability, which Gray and Jenkins (1993) described as an obligation to present accounts in response to the entrusted responsibilities. Bovens (2007) defined accountability more specifically by outlining the relationship between an actor and a forum where the actor has responsibility to justify their action, while the latter can ask questions and give judgment. Summarily, accountability functions as the concept that expects responsible parties to act consistently with accepted behaviour standards.

The level of accountability can be measured using an Accountability Index (AI), either to assess organisational management or performance. This makes it easier for the organisation to spot areas that need improvement and implement remedial measures. Although AI is among the best mechanisms for measuring accountability (Setyaningrum 2017), there is no review paper discussing it. Therefore, this study will consolidate the knowledge and viewpoints of various scholars on AI and analyse them to identify themes, patterns, and trends. Due to the limited number of articles on the topic published by previous scholars, researchers have decided to select papers for the period from 2001 to 2021 to be examined. That long period allows researchers to gather relevant information and insights from broader sources of literature on the topic for analysis.

Overview of Accountability Index

The Accountability Index is a mechanism used to assess and measure the level of accountability (Dumont 2013; Kamaruddin & Auzair 2020) in a variety of entity settings, including businesses, government agencies, and non-profit organisations, to reflect the extent to which entities

are responsible for their actions. Therefore, the AI has been designed to offer a structured approach to assessing and improving various aspects of accountability, covering key dimensions as follows:

1. Transparency: Assesses the extent to which the organisation openly communicates its actions, decisions, and financial information to stakeholders;
2. Performance: Assesses the organisation's ability to achieve its goals and objectives effectively and efficiently;
3. Governance: Examined existing governance structures and processes to ensure responsibly decision-making and compliance with regulations; and
4. Compliance: Measures the organisation's adherence to established standards, policies, and legal requirements.

This makes AI a valuable tool for internal stakeholders, such as executives and managers, to identify organisational strengths and areas for improvement in terms of accountability (Anuar et al. 2019). For external stakeholders, including investors, customers, and the public, AI plays a role in fostering trust and confidence in organisational practices (Guo et al. 2016). Additionally, the increasing need for effective oversight and monitoring mechanisms to ensure that checks and balances are in place has also seen AI gain significant attention in recent years. This has piqued our interest in conducting this thematic review study to seek an in-depth understanding of the issues discussed.

Methodology

A thematic review is a type of systematic review (Zairul 2020). The main purpose of this type of review is to examine research papers from previous scholars to identify themes across scholarly discussion topics and then critically synthesise and elaborate on the literature. Through this study, the trends and patterns have also been descriptively discussed.

Unlike systematic literature review (SLR), which must be conducted based on a review protocol (e.g., PRISMA) (Jamaluddin et al. 2023), this thematic review applies thematic analysis, as proposed by Zairul (2020), to analyse qualitative data from the previous studies to form themes. In conducting the thematic analysis, the six steps introduced by Braun and Clarke (2006) have been applied, which consist of familiarising with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. To facilitate the process, this study uses ATLAS.ti 9 software to produce descriptive and thematic data analysis.

This study begins with the selection of articles for review purposes, which includes four steps. Firstly, the thematic review of the documents starts with identifying insights regarding AI. Thus, the literature search was performed using three search engines: Scopus of Elsevier, WoS of Clarivate Analytics, and Mendeley Web. The Scopus database covers the largest number of serial publications, which is a cross-disciplinary research publication (Gavel & Iselid 2008). Meanwhile, the WoS database was chosen for its advantages as the top scientific citation search and analytical information platform (Li et al. 2018). The Mendeley Web was used to expand the search results. The initial search revealed 203 documents restricted to articles and proceedings papers only. Table 1 summarises the search results from the selected database.

Secondly, the essential information in the documents was exported and listed in Microsoft Excel. All similar information was identified from the list, which amounted to 108 lists of duplicate documents being excluded. Thirdly, PDF files for the remaining 95 papers downloaded from various search mediums and uploaded to Mendeley Desktop were evaluated based on inclusion and exclusion criteria. Although the search process also includes the keyword 'accountability disclosure', the search results were reviewed only if the content discussed AI. Irrelevant materials to the research objective were also removed. As this study focused on AI functions as a measurement in strengthening accountability, unrelated documents such as statistics and reports on AI were excluded. The review only included articles written in English and Malay and excluded other languages. Finally, the screening phase removed 14 unrelated documents, 3 incomprehensible languages, and 49 different contexts, making a total of 66 documents removed. Thus, only 29 papers were considered most appropriate for the review process. Figure 1 illustrates the procedure flow of identifying the articles.

TABLE 1. Search strings and results from SCOPUS, WoS and Mendeley Web

Database	Search strings	Results
SCOPUS	TITLE-ABS-KEY ((“accountability index” OR “accountability indices” OR “accountability reporting index” OR “accountability reporting indices” OR “accountability disclosure index” OR “accountability disclosure indices” OR “accountability disclosure”)) AND (LIMIT-TO (DOCTYPE, “ar”) OR LIMIT-TO (DOCTYPE, “cp”))	53
Web of Sciences	ALL=(“accountability index” OR “accountability indices” OR “accountability reporting index” OR “accountability reporting indices” OR “accountability disclosure index” OR “accountability disclosure indices” OR “accountability disclosure”) and Articles or Proceedings Papers (Document Types)	32
Mendeley Web	“accountability index” OR “accountability indices”	66
	“accountability disclosure index” OR “accountability disclosure indices”	7
	“accountability reporting index”	0
	“accountability reporting indices”	0
	“accountability disclosure”	45
	Total	203

All 29 papers were exported from Mendeley to ATLAS.ti 9 software to be analysed. The data analysis using ATLAS.ti began by thoroughly reading all materials. The crucial content across articles (similarities and differences argument) was manually coded to determine data patterns. Subsequently, all the codes were reviewed to identify their relationship and form a code group. The code classification allowed for more manageable, systematic, and easy data retrieval. This condition also simplified the thematic review analysis by hyperlinking the coding into themes. Therefore, ATLAS.ti facilitated the thematic review studies notably by converting unprocessed data and early code concepts to the final theme for data analysis.

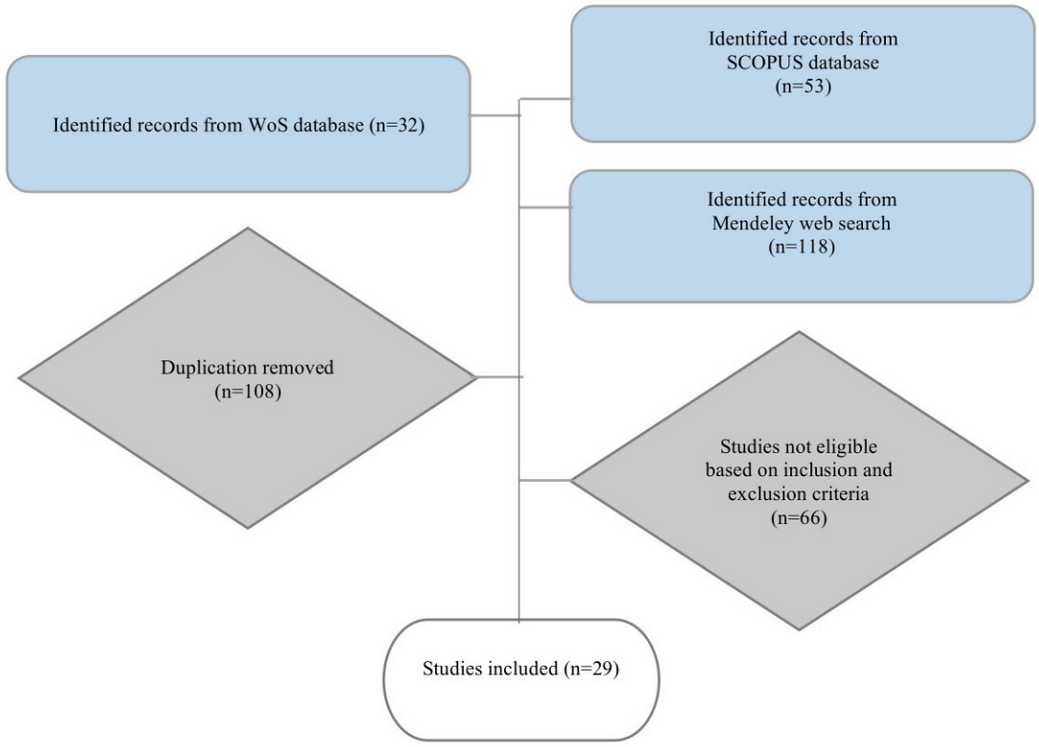

FIGURE 1. The procedure of identifying the articles for thematic review

Results and Discussion

The findings were divided into two segments: descriptive and thematic analysis. In the first part of the discussion, the descriptive analysis discovery was reported in terms of numerical points of view. These descriptive analysis results were classified into four categories: source title, research countries, research setting, and methodology. Meanwhile, the second segment outlined the qualitative component and established themes based on the content reviewed.

Descriptive Analysis

SOURCE TITLE

The publications emphasising AI as a measurement tool were debated in various sources, mainly accounting (44.83%). Nevertheless, this topic began gaining attention from other sources, such as public affairs and public policy journals. Additionally, the AI discussion mostly emerged with issues measuring accountability via disclosure practice in organisational annual reports (e.g., Connolly & Kelly 2020; Guo et al. 2016; Ntim et al. 2017). Conversely, publications in other sources examined performance-based accountability (e.g., Kamaruddin & Auzair 2020; Tan 2014) and measured the organisational disclosure practice via websites (e.g., Hermosa del Vasto et al. 2019; Tremblay-Boire & Prakash 2015). Another study compared information disclosure practices in annual reports compared to those on websites (Ismail & Bakar 2011). Table 2 summarises the publications based on source title and year with the highest number of publications in 2016. Although AI topics were less studied by previous scholars, it is discovered to have started to draw researcher interest based on consistent publications from 2013 onward.

RESEARCH COUNTRIES

Figure 2 displays the geographical dispersal of past AI studies, which became the focus of developing countries (72.5%), including Malaysia and Indonesia. This situation is most likely because many developing countries struggle with weak and virtually ineffective accountability systems (Siddiquee 2005)and are attempting to mitigate such weaknesses. Part of the research context conducted in Malaysia and Indonesia as developing countries pertains to the institution of zakat. For instance, Anuar et al. (2019) evaluated the financial management practices and Malaysian Zakat Institution's performance in adopting greater transparency and accountability to the public. Meanwhile, Rini et al. (2021) emphasised the accountability of financial statement disclosure by zakat management institutions in Indonesia to meet stakeholders' expectations. The sole research conducted in China by Tan (2014) constructed a normative analysis model to examine current practices of Chinese government performance evaluation and accountability. Other studies were from developed countries, such as New Zealand, the United Kingdom, and the United States, which are generally used as a reference among researchers from other countries.

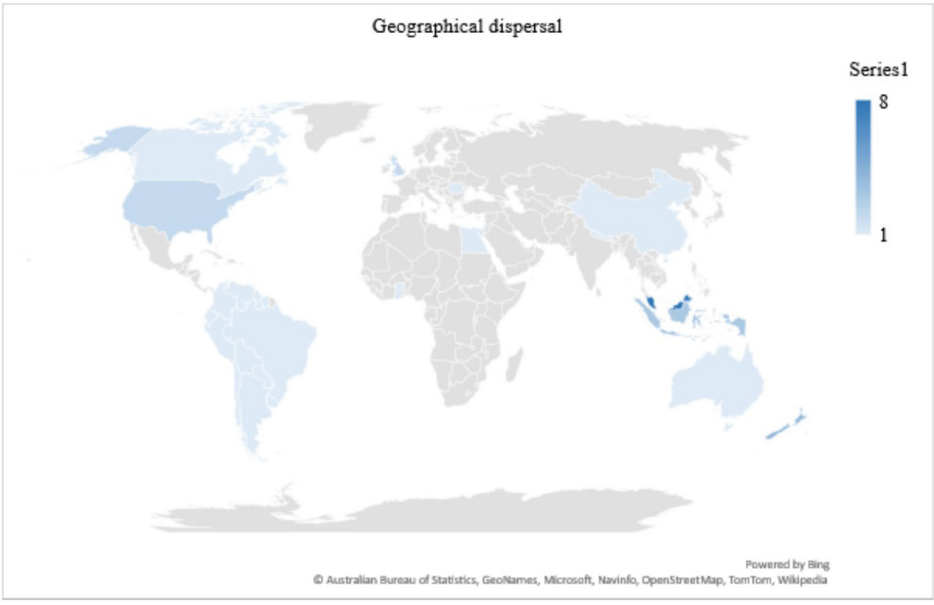

FIGURE 2. Articles based on research countries

TABLE 2. Publication by source title and year

Publication source	Author	Article Title	2001	2002	2003	2004	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Accounting, Auditing and Accountability Journal	Ntim, C.G., Soobaroyen, T. & Broad, M.J. (2017)	Governance structures, voluntary disclosures and public accountability: The case of UK higher education institutions	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Accounting, Auditing and Accountability Journal	Connolly, C. & Kelly, M. (2020)	Annual reporting by social enterprise organizations: "Legitimacy surplus" or reporting deficit?	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Africa Spectrum	Gyampo, R.E. Van. (2016)	Transparency and accountability in the management of oil revenues in Ghana	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
African Journal of Business Management	Ismail, S. & Bakar, N. barizah A. (2011)	Reporting practices of Malaysian public universities: The extent of accountability disclosure	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Canadian Accounting Perspectives	Nelson, M., Banks, W. & Fisher, J. (2003)	Improved accountability disclosures by Canadian Universities	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Central European Journal of Public Policy	Hermosa del Vasto, P., del Campo, C., Urquía-Grande, E. & Jorge, S. (2019)	Designing an accountability index: A case study of South America Central Governments	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1

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Publication source	Author	Article Title	2001	2002	2003	2004	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Economics and Management	Noaman, N., Ouda, H. & Christiaens, J. (2018)	Indexing financial reporting information for heritage management	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Financial Accountability and Management	Ryan, C., Stanley, T., & Nelson, M. (2002)	Accountability disclosures by Queensland Local Government Councils: 1997-1999	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6th International Accounting Conference	Setyaningrum, D. (2017)	Proposing accountability index for Indonesia's Local Government	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
8th Asia-Pacific Interdisciplinary Research in Accounting Conference	Guo, C., Ahmed, Z. U., Kabir, H. & Narayan, A. (2016)	Use of Public Accountability Index (PAI) to assess the accountability practices of New Zealand Universities	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Proceedings of International Conference on Accounting Research and Education	Bani, H., Katan, M., Noor, A.H.M. & Fatah, M. M. A. (2014)	Applying stakeholder approach in developing accountability indicators for Tahfiz Centers	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
International Journal of Accounting and Financial Reporting	Kurt, G., Marsap, B. & Uysal, T.U. (2013)	The possible effects of organization's corporate accountability sense on continuous auditing: The case of ISE 100	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
International Journal of Educational Organization and Leadership	Aly, E.R., Hodge, D. & Elmahdy, S. (2019)	The relationship between preferred leadership style and personality predisposition	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1

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Publication source	Author	Article Title	2001	2002	2003	2004	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
International Journal of Islamic and Middle Eastern Finance and Management	Kamaruddin, M.I.H. & Auzair, S.M. (2020)	Measuring 'Islamic Accountability' in Islamic Social Enterprise (ISE)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
International Journal of Voluntary and Non-Profit Organisations	Tremblay-Boire, J. & Prakash, A. (2015)	Accountability.org: Online disclosures by U.S. Nonprofits	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
IPN Journal of Research and Practice in Public Sector Accounting and Management	Anuar, F.S., Alwi, N. M. & Ariffin, N.M. (2019)	Financial management practices and performance of Zakat Institutions in Malaysia	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Journal of Accounting and Management	Nistor, C.S., Ştefănescu, C.A. & Sintejudeanu, M.A. (2016)	Performance management and Balanced Scorecard – a link for public sector	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Journal of APF Command and Staff College	Paudel, N.R. & Pahari, S. (2020)	Local election in Nepal: Means for ensuring electoral accountability	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Journal of Management Information and Decision Sciences	Mahamud, M.H., Arshad, R., Ismail, A. M. & Nair, R. (2021)	Determinants of non-profit organisations accountability information disclosure: Empirical evidence in Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Journal of Management Information and Decision Sciences	Rini, R., Purwanti, A. & Farah, W. (2021)	Accountability index for zakat management institutions in Indonesia	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

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Publication source	Author	Article Title	2001	2002	2003	2004	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Journal of Public Affairs	Tan, X. (2014)	Constructing a performance-based accountability system for the Chinese government	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Journal of Public Budgeting, Accounting and Financial Management	Keerasuntonpong, P., Dunstan, K. & Khanna, B. (2014)	Examining statements of service performance: Evidence from wastewater services in New Zealand	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Jurnal Akuntansi dan Bisnis	Trisaptya, Y., Perdana, H.D. & Sulardi. (2016)	Evaluasi akuntabilitas laporan keuangan pemerintah daerah di Indonesia (studi empiris pada pemerintah kabupaten/kota di provinsi Jawa Tengah)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Management and Accounting Review	Masruki, R., Hussainey, K. & Aly, D. (2018)	Developing an accountability disclosure index for Malaysian State Islamic Religious Councils (SIRCS): Quantity and quality	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Management and Accounting Review	Abang Ahmad, D.H., Joseph, C. & Said, R. (2021)	Disclosure of accountability practices on websites of Malaysian City Councils	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Non-Profit and Voluntary Sector Quarterly	Dumont, G.E. (2013)	Nonprofit virtual accountability: An index and its application	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1

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Publication source	Author	Article Title	2001	2002	2003	2004	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Research Journal of Applied Sciences, Engineering and Technology	Bakar, N.B.A. (2016)	Developing an accountability disclosure index for statutory bodies: A proposal	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
The British Accounting Review	Coy, D. & Dixon, K. (2004)	The public accountability index: Crafting a parametric disclosure index for annual reports	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Third Asian Pacific Interdisciplinary Research in Accounting Conference	Tooley, S. & Guthrie, J. (2001)	Performance accountability disclosures in annual reports: An application in the New Zealand compulsory school sector	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total			1	1	1	1	1	2	3	1	5	2	2	3	3	3	29

RESEARCH SETTING

Various research settings exist for AI discussion as depicted in Figures 3 and 4. A literature review revealed that in the early 2000s, this topic was most explored in the education field (e.g., Coy & Dixon 2004; Nelson et al. 2003; Tooley & Guthrie 2001). Research in educational settings continues to catch researchers' attention where 27.59% of the reviewed paper fall under this scope. Nevertheless, the trend changed in 2002 when this topic was explored in the context of government agencies (e.g., Ryan et al. 2002). Subsequently, this pattern increased in 2014 and eventually dominated the topic by 41.38%. The scope under government agencies includes central government (e.g., Hermosa del Vasto et al. 2019), local government (e.g., Keerasuntonpong et al. 2014; Setyaningrum 2017), and statutory body (e.g., Bakar 2016). The topic is discussed under the government agency scope due to their social responsibilities, which demand strengthening accountability. Furthermore, these agencies are obliged to report the flow of public funds to the stakeholders. Similar to government agencies, the importance of accountability is also emphasised in NPOs, specifically those that earn revenue in donations and contributions. Therefore, NPO is also one of the preferred topics among researchers (e.g., Dumont 2013; Mahamud et al. 2021; Tremblay-Boire & Prakash 2015). The trend analysis disclosed that the study context has gradually evolved, which addressed the issue within the private sector (e.g., Kurt et al. 2013).

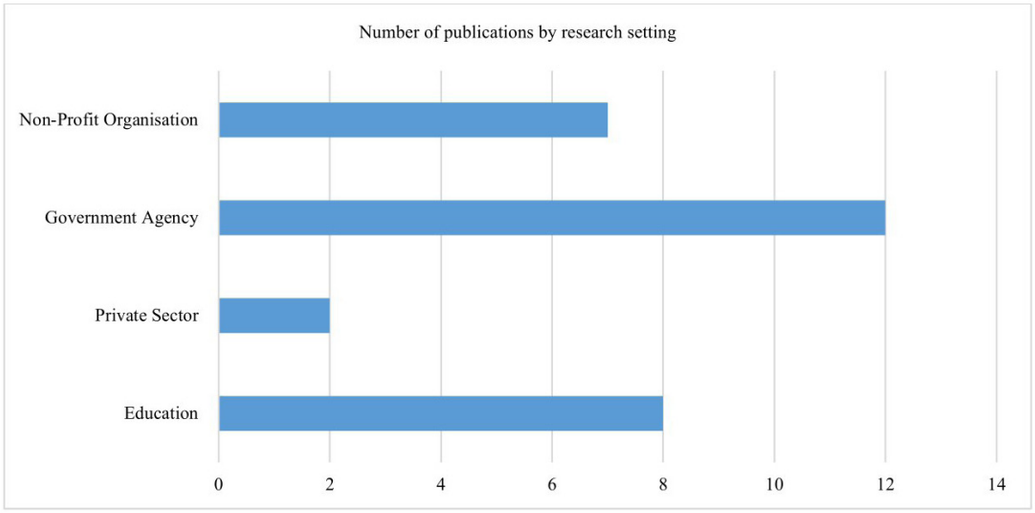

FIGURE 3. Articles by research setting

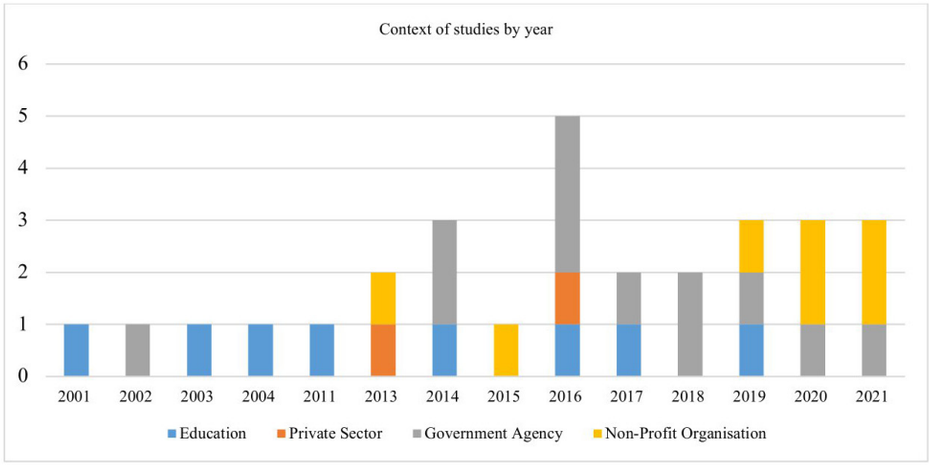

FIGURE 4. Articles by years and the context of studies

Methodology

Figure 5 depicts the methodological approach used in the studies of the papers reviewed. A total of 19 (65.52%) articles reviewed adopted the quantitative method, 1 (3.45%) applied the qualitative method, and the remaining 9 (31.03%) utilised the mixed method. Quantitative content analysis is the most frequent method used by researchers when analysing annual reports (e.g., Ismail & Bakar 2011; Tooley & Guthrie 2001). The main advantage of this technique is providing a structured method for quantifying qualitative or interpretative data in a concise, understandable, and easily repeatable format (Krippendorff 2018). Furthermore, this approach can manage a large amount of information, identify patterns within the information, and present broad results (Fass & Turner 2015). Thus, quantitative content analysis is an appropriate technique for measuring, specifically using AI to evaluate accountability level. Some researchers applied quantitative methods by distributing questionnaires. For instance, survey questionnaires have been used to obtain respondents' perceptions of the level of financial management and performance practices (e.g., Anuar et al. 2019) and construct measurement instruments to assess accountability (e.g., Kamaruddin & Auzair 2020).

This study revealed the mixed method approach as the second-highest methodological method used by researchers. Typically, researchers combine quantitative content analysis with interviews (Gyampo 2016; Kurt et al. 2013; Nelson et al. 2003), while others combine survey questionnaires with interviews (Noaman et al. 2018; Paudel & Pahari 2020). Researchers usually conduct interview sessions to understand and gain in-depth insight into the research topic and explore the research subject opinions.

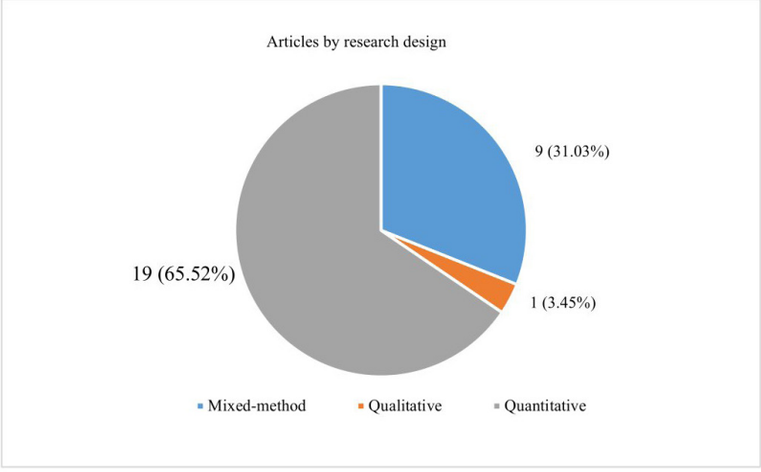

FIGURE 5. Methodological research methods articles

Thematic Analysis

ATLAS.ti facilitates this thematic review study by simplifying the process of implementing thematic analysis. The similarities and differences in qualitative data across previous studies were coded to establish themes consistently using the thematic analysis technique introduced by Braun and Clarke (2006). Several rounds of re-coding and code merging in ATLAS.ti have outlined three main themes: index development, index elements, and evaluation.

Table 3 presents a list of publications according to thematic categories. It was found that more than half of the studies (68.97%) included the formation of the index, either developed by researchers or adapted from previous literature. Thirteen of those studies extended their research by including an evaluation process using an index to examine the level of organisational performance or assess the level of information disclosure on a report or organisational website. Furthermore, 31.03% of the articles adopted the existing index to evaluate the aspects determined by the researcher.

TABLE 3. Thematic categories of publications

No.	Documents	Index development	Index elements	Evaluation
1.	(Tooley & Guthrie 2001)	/	/	/
2.	(Ryan et al. 2002	/	/	/
3.	(Nelson et al. 2003)			/
4.	(Coy & Dixon 2004)	/	/	/
5.	(Ismail & Bakar 2011	/	/	/
6.	(Dumont 2013)	/	/	/
7.	(Kurt et al. 2013)	/	/	/
8.	(Bani et al. 2014)	/	/	
9.	(Keerasuntonpong et al. 2014)			/
10.	(Tan 2014)	/	/	/
11.	(Tremblay-Boire & Prakash 2015)	/	/	/
12.	(Guo et al. 2016)			/
13.	(Gyampo 2016)			/
14.	(Nistor et al. 2016)	/	/	/
15.	(Bakar 2016)	/	/	/
16.	(Trisaptya et al. 2016)			/
17.	(Ntim et al. 2017)	/	/	/
18.	(Setyaningrum 2017)	/	/	
19.	(Masruki et al. 2018)	/	/	
20.	(Noaman et al. 2018)	/	/	
21.	(Aly et al. 2019)			/
22.	(Anuar et al. 2019)			/
23.	(Hermosa del Vasto et al. 2019)	/	/	/
24.	(Connolly & Kelly 2020)			/
25.	(Kamaruddin & Auzair 2020)	/	/	
26.	(Paudel & Pahari 2020)			/
27.	(Abang Ahmad et al. 2021)	/	/	/
28.	(Mahamud et al. 2021)	/	/	
29.	(Rini et al. 2021)	/	/	

THEME 1: INDEX DEVELOPMENT

Accountability claims by stakeholders have attracted several past researchers to develop AI as an instrument to evaluate the accountability level of responsible entities, especially for performance evaluation and information disclosure. For example, several researchers developed the AI (e.g., Bakar 2016; Coy & Dixon 2004), while some adapted it by modifying an existing index (e.g., Mahamud et al. 2021; Ryan et al. 2002; Tooley & Guthrie 2001). Presently, no specific index development process exists for universal use. Each researcher has a distinctive strategy for forming an index. Coy and Dixon (2004) introduced six steps in developing accountability indices to measure annual reports: (i) identifying the reporting goals for the sector of interest, (ii) studying contemporary reporting within the sector of interest, (iii) establishing the goals of the index, (iv) identifying relevant disclosure items and report qualitative characteristics, (v) securing the relevant stakeholder validation for the index items, and (vi) developing and testing the index. Meanwhile, Bakar (2016) employed the six following processes: (i) reviewing the disclosure requirements based on existing circulars or guidelines, (ii) modifications of disclosure items based on other statutory requirements, (iii) additional modifications to the disclosure items based on input from prior studies, (iv) add items taken into consideration after reviewing annual reports, (v) modifications to delete inappropriate items to the research setting, and (vi) index validation by experienced researchers and modified as recommended.

In terms of information disclosure by service-oriented entities, the public accountability paradigm was found to be one of the most popular perspectives used to provide various stakeholders with a broad range of information required by various stakeholders (e.g., Bakar 2016; Coy & Dixon 2004). Essentially, justification is needed for all activities and decisions taken as a basis of accountability relationships with stakeholders. Therefore, some researchers solicit stakeholders' suggestions and viewpoints while creating an index (e.g., Coy & Dixon 2004; Masruki et al. 2018) to ensure that the constructed index is comprehensive and follows the stakeholders' needs.

This study also revealed the frequent sources used to suggest items for inclusion in the index, which were annual reports (e.g., Bakar 2016; Coy & Dixon 2004), performance reports (Setyaningrum 2017), standards and guidelines (Bakar 2016; Hermosa del Vasto et al. 2019; Masruki et al. 2018; Noaman et al. 2018; Tremblay-Boire & Prakash 2015). For example, Setyaningrum (2017) examined 2011 to 2014 local government performance report to identify several indicators that matched the accountability criteria to develop an AI that comprehensively evaluates local government accountability. Hermosa del Vasto et al. (2019) and Tremblay-Boire and Prakash (2015) relied on the Global Reporting Initiatives (GRI) items in developing AI indicators. This clearly shows that reference to past literary sources is an approach to determine items with the potential to be disclosed for index formation. Therefore, past researchers' approach to developing the index was similar to the measures outlined by Coy and Dixon (2004) and Bakar (2016).

Given that various types of AI have different measurement purposes, researchers need to determine the index objective at the initial stage of index construction. Coy and Dixon (2004) emphasised that this step ensures that the index can measure the desired accountability level. Similarly, finalising the list of items used to create the AI is also essential in designing a comprehensive tool to measure the accountability level. For instance, Coy and Dixon (2004) applied the Delphi technique to elicit expert stakeholder opinions on the significance of information in university annual reports, including categorising the index. Dumont (2013) and Kamaruddin and Auzair (2020) used Exploratory Factor Analysis (EFA) to identify the dimensions on the measurement scale, thus ensuring accurate item selection in line with the research objective. Floyd and Widaman (1995) explained EFA as a precise analysis for enhancing and fine-tuning instruments. Therefore, some academics prefer using EFA to develop the suggested accountability index.

Another vital element in developing an index is determining the weighting of items due to different information items with varying levels of importance. Coy and Dixon (2004) highlighted that the unweighted index would encounter subjectivity issues as unimportant data was assigned the same weight as important data. Conversely, Bakar (2016) stated that a weighted index is subject to scoring bias considering that weights are arbitrarily assigned to each disclosure item. Figure 6 illustrates the network view on the index development theme.

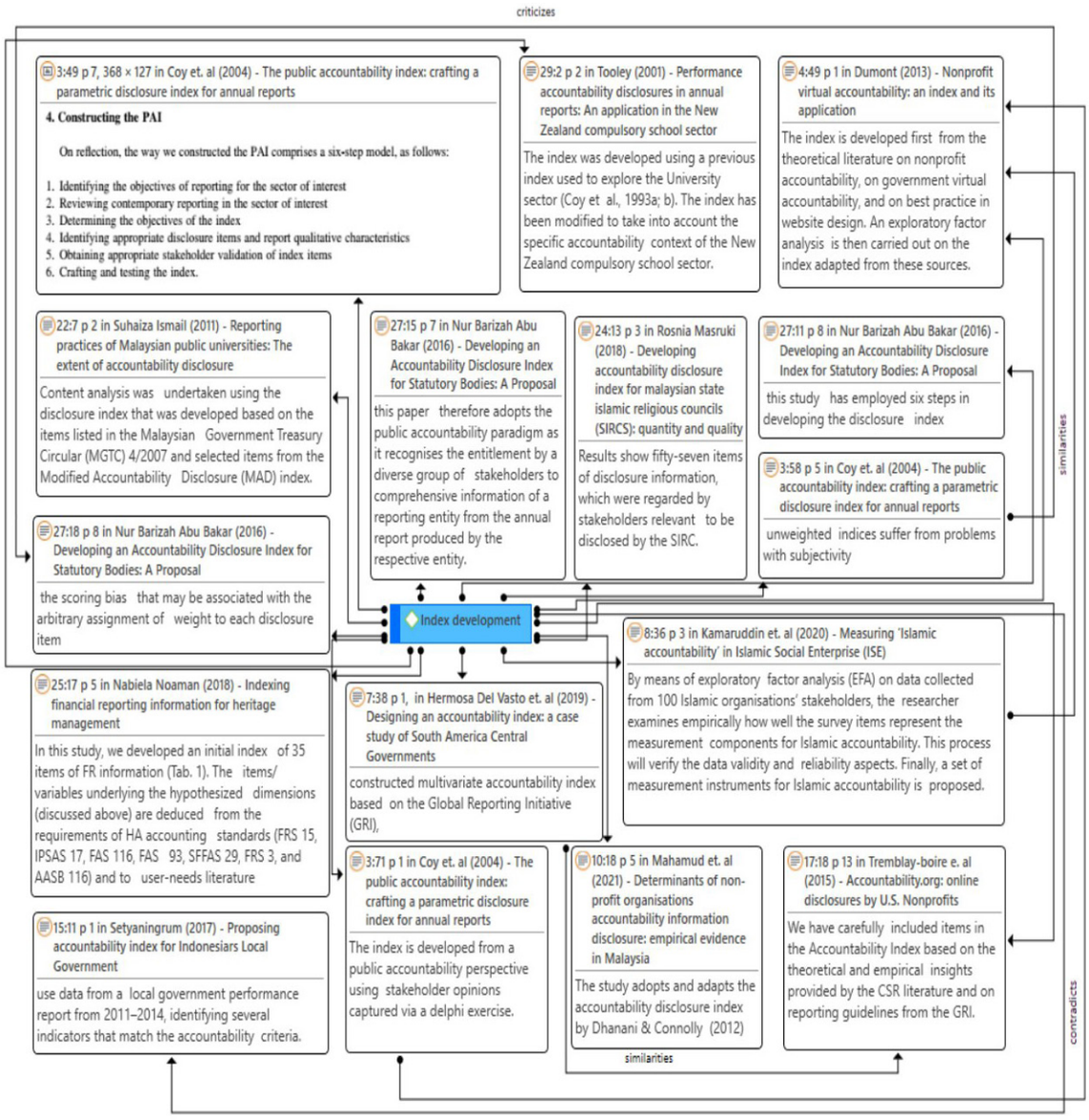

FIGURE 6. Network on the index development theme

The analysis of qualitative data from past studies regarding index development has highlighted important points that need to be emphasised in developing an index. It covers the approach to identifying items that should be taken into account in the index, the process of finalising and validating the list of items and determining the weightage for the items. This finding can be used as a guide by future researchers or practitioners in producing a quality index to measure the level of accountability in the context to be examined.

THEME 2: INDEX ELEMENTS

Researchers have developed various types of indices, thus comprehending the factors that influence the selection of index formation elements is crucial. The findings highlighted two dimensions that affect the AI elements setting. Firstly, the formation of elements is specifically based on establishing AI to achieve particular study objectives. For instance, the eight elements of PAI crafted by Coy and Dixon (2004) focused on the measurement of accountability through reporting, while Kamaruddin and Auzair (2020) outlined accountability based on Islamic principles and values. Additionally, the index developed to measure organisational performance differed from those intended to gauge the degree of information disclosure as highlighted in Bakar (2016) and Anuar et al. (2019). Bakar (2016) introduced the Accountability Disclosure Index (ADI) to measure the information disclosure level through five elements: (i) overview, (ii) governance, (iii) financial, (iv) performance, and (v) subcategories of human resource, socio-environmental, and main assets. Meanwhile, Anuar et al. (2019) examined financial management practices and performance in zakat institutions by applying the Financial Management Accountability Index (FMAI), which emphasises six elements: (i) organisational management, (ii) budget, (iii) receipts, (iv) expenditures, (v) assets, and (vi) reporting. The FMAI functions as a compliance testing tool in assisting organisations in identifying weaknesses in financial management practices for improvement. This condition indirectly curbs organisational mismanagement and misconduct.

Secondly, the AI elements differed across diverse forms of organisations. Specifically, Dumont (2013) introduced the Non-Profit Virtual Accountability Index (NPVAI) for non-profit organisations to outline their online accountability strategically and for researchers to analyse non-profit websites empirically. Conversely, the Corporate Accountability Index (CAI) by Kurt et al. (2013) lists investor relations, corporate management, social responsibility projects, an informing policy, and internal control systems as additional elements in measuring the accountability level of the profit-driven type of organisation. Nistor et al. (2016) established the Local Government Accountability Index (LGA) to evaluate the quality of Local Government online reporting for greater accountability to enhance digital transparency. Meanwhile, Rini et al. (2021) introduced compliance with Sharia law to measure the accountability dimension of the financial statements of zakat institutions. Financing, performance, public information, engagement, and governance were also outlined in Rini et al. (2021).

This study also identified two elements (performance and financial aspects) that are consistently being measured to determine the level of accountability of organisational information disclosure and management dimension, which involve performance and financial aspects (e.g., Bakar 2016; Ismail & Bakar 2011; Masruki et al. 2018; Noaman et al. 2018; Ryan et al. 2002). Stakeholders commonly focus on these two components as essential factors. Nonetheless, recent studies evaluated disclosure regarding environmental aspects (Hermosa del Vasto et al. 2019; Tremblay-Boire & Prakash 2015). Figure 7 displays the network view for the index elements theme.

Knowing the elements contained in the accountability index can help practitioners and academics understand the strengths and weaknesses of an index before it is used or adapted to measure the level of accountability.

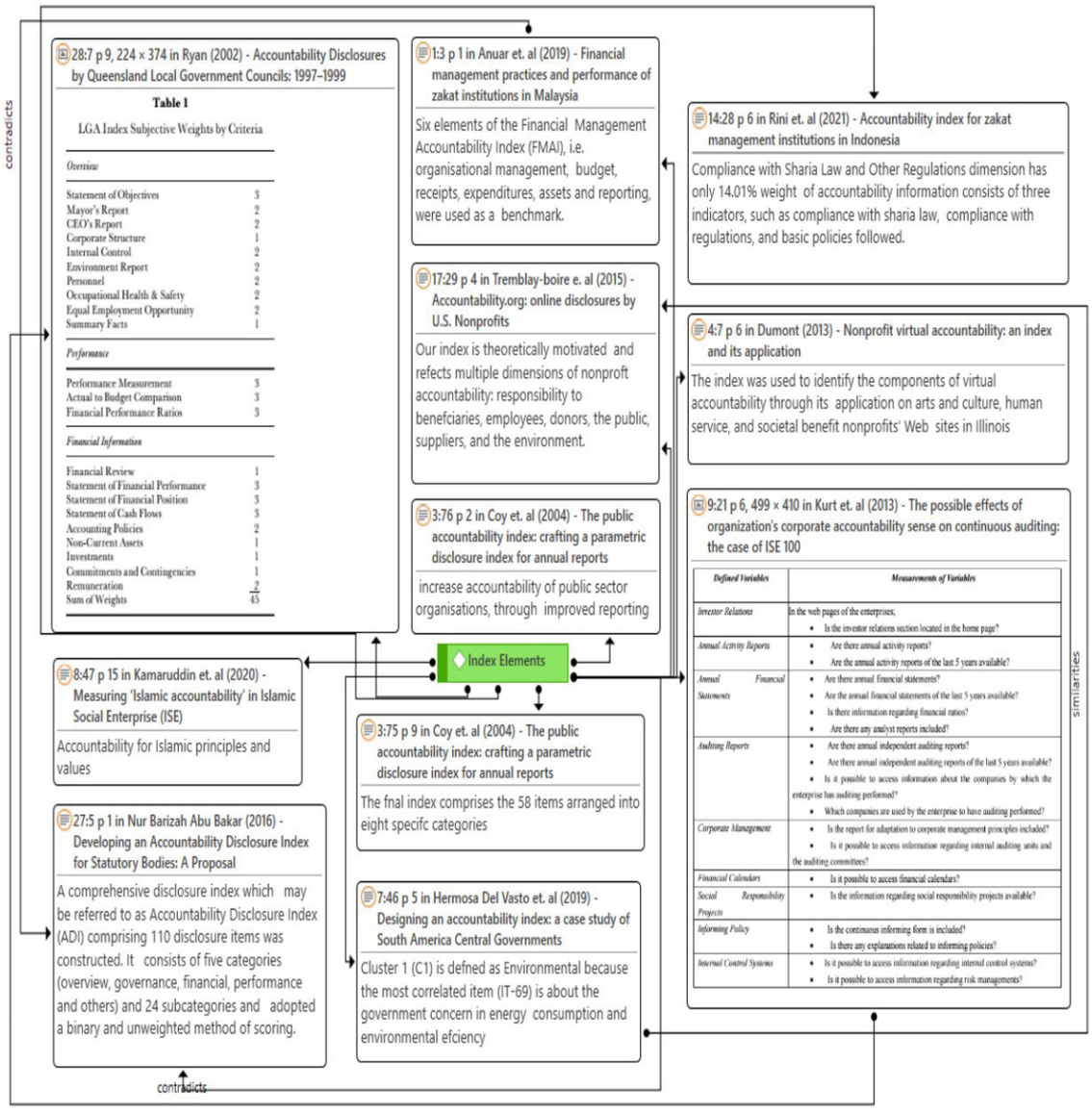

FIGURE 7. Network on the index elements theme

THEME 3: EVALUATION

The accountability discharge extends beyond performance accountability and encompasses the information-sharing aspect between the reporting entity and the information receiver. Two aspects of determining accountability through reporting are the disclosure quantity and quality. Some studies utilised AI to examine the degree of disclosure based on a series of items listed in AI (quantity) and the value of disclosure (quality) (e.g., Masruki et al. 2018; Nelson et al. 2003; Tooley & Guthrie 2001), while others simply determined the presence of information without evaluating the disclosure quality (e.g., Bakar 2016; Ismail & Bakar 2011).

Past researchers frequently analyse financial statements and annual reports to evaluate the level of accountability in organisational reporting (e.g., Coy & Dixon 2004; Guo et al. 2016; Ntim et al. 2017; Trisaptya et al. 2016). Nonetheless, Hermosa del Vasto et al. (2019) and Tremblay-Boire and Prakash (2015) shifted from the existing trends by assessing the level of accountability of information disclosure on websites. Meanwhile, Ismail and Bakar (2011) compared the degree of information disclosure via reporting and websites.

At the evaluation stage, researchers have developed their index to assess the level of organisation accountability from the research context. Nonetheless, some researchers adopt or adapt and tailor an existing AI to fulfil their needs to develop an appropriate index for the specific research setting. The PAI by Coy and Dixon (2004) is a type of disclosure index that measures the accountability level in the annual reports of a group of organisations, either private, public, or third parties. Evaluating the information disclosure level in annual reports keeps track of how the report is changing towards increasing organisational accountability over time. For example, Guo et al. (2016) extended Coy and Dixon's (2004) study by adopting PAI to evaluate how New Zealand Universities annual reports evolved over the latest period and revealed changes in these annual reports in terms of format, content, and length. Nevertheless, the overall disclosure of public accountability did not show a significant change compared to the previous study. Ntim et al. (2017) modified PAI and renamed it as Public Accountability and Transparency Index (PATI) to address how UK Higher Education Institutions voluntarily disclose information on annual reports and enhance accountability and transparency.

The researchers utilised various scoring methods for the evaluation. Coy and Dixon (2004), Guo et al. (2016) and Ntim et al. (2017) employed a polychotomous scoring scale where each item was evaluated using more than two possible scores. Guo et al. (2016) assessed each item using scores from 0 to 10 to rate how well the information was provided to the public. Subsequently, the score for each information category was multiplied by the assigned weight based on its significance in the eyes of the public perspective and divided by the benchmark set to calculate a comprehensive accountability score. A higher score indicates better accountability and that the public has access to a significant quantity and high-quality information and meets public demand. Comparatively, Abang Ahmad et al. (2021), Keerasuntonpong et al. (2014), Ismail and Bakar (2011) and Tremblay-Boire and Prakash (2015) applied dichotomous scores with two possible item scores. A score of "1" signifies available information, while a score of "0" is unavailable. Coy and Dixon (2004) proposed that a polychotomous scoring scale is more subjective than a dichotomous scoring scale due to its intuitive applicability and capacity to construct interval or ratio measurements, which allows for the application of parametric tests with greater statistical power. By understanding the strengths and weaknesses of different scoring methods, researchers can choose the method that is most appropriate for the specific accountability index they are using and ensure that the results of their research are reliable and valid. Figure 8 illustrates the network view on the evaluation theme.

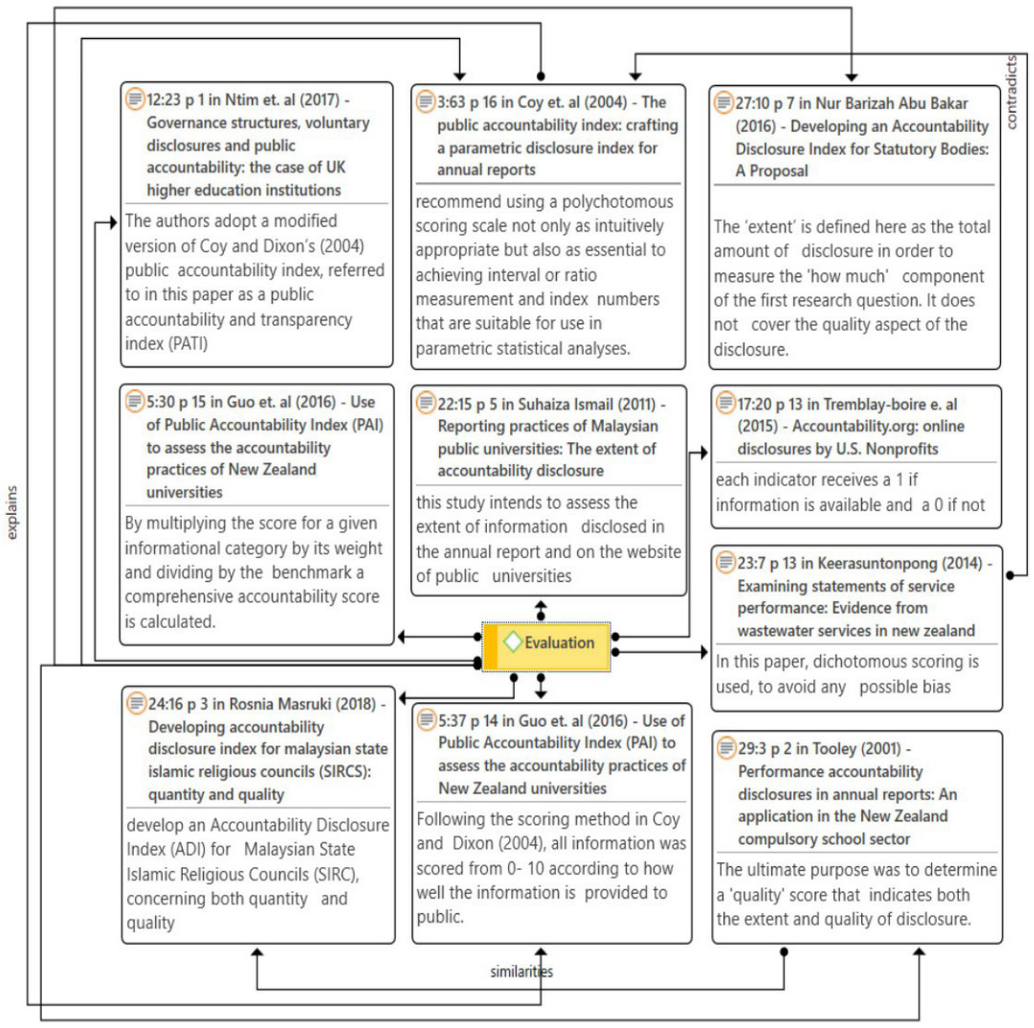

FIGURE 8. Network on the evaluation theme

This study discovered no specific process or technique in crafting AI. The diversity of processes and techniques applied by past researchers has its strengths in formulating the best index to measure the degree of organisational accountability. The diversity of the researcher's strategies is also highlighted in the evaluation process based on the method of setting scales for indicators. Additionally, no researchers have created an index using the design and development research (DDR) procedure, hence allowing future researchers to use this technique. According to Richey, R. C., and Klein (2007), the DDR type of research is a systematic study of design, development, and assessment processes by establishing an empirical basis for creating tools to manage critical issues for organisational improvement. Therefore, future researchers may appropriately use the DDR approach to craft AI.

Based on current stakeholders' insistence, accountability needs to be emphasised by the public and private sectors. This study outlined that the AI elements used to assess the level of accountability in service-oriented entities differ from the private sector as profit-based entities. Due to the current interest in studies involving the public sector, future researchers should broaden this study in the context of the private sector. This is because several different elements need to be examined to measure the level of accountability of a profit-based organisation, such as the elements introduced by Kurt et al. (2013) for CAI. The implementation of AI-related studies may also be suitable to measure the level of accountability for projects specifically, such as assessing the implementation of public-private partnership projects in terms of performance and disclosure of project information to stakeholders. Given that limited studies have examined the subject qualitatively, future researchers should fill this methodological gap by enriching knowledge in understanding the role of AI in enhancing organisation accountability and gaining insight into why each item in the index developed by previous studies is considered important to measure the level of accountability to be adapted in the study context.

This investigation, which examined AI-related articles, is subject to several limitations. First, the search process using certain keywords has limited this thematic study to analysing the function of AI in evaluating reporting transparency and organisational performance. Diversifying the search keywords to include "index and governance" and "index and compliance" might widen the dimensions of the AI discussion by also evaluating the level of accountability from the perspective of governance and compliance in the studied context. Second, the collected literature only utilised three search engines: Scopus, WoS, and Mendeley Web. The search process for more databases might result in some more studies being added to the sample. Hence, future studies can be done using different database systems and additional keywords.

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