
A Systematic Review of Agile-Adaptive Balanced Scorecard and Sustainable Performance: Bibliometric, and Future Direction

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Abstract-- While sustainability initiatives have gained recognition and significance in modern organizations, they often encounter obstacles within firms, especially SMEs. Consequently, the adoption of integrated tools like AABSC has become crucial, replacing traditional BSC tools, to empower managers to make informed decisions amid sudden economic fluctuations. However, the adoption of AABSC remains limited in the literature review and is still in the process of dissemination and adoption by scholars and researchers. Therefore, this study aims to analyze the literature that has adopted AABSC in developing countries, particularly to focus on SMEs. The research methodology involved a systematic review of the ScienceDirect, IEEE, Scopus, and Web of Science databases from 2010 to 2021, resulting in the gathering of 1,841 papers. These articles were then filtered based on inclusion and exclusion criteria defined in the systematic review protocol. From the findings, a total of 39 articles were selected and divided into four distinct categories. The first category encompasses MAS, accounting for 20.50%, followed by AABSC at 10.26%. The third category pertains to sustainable performance, representing 30.77%, while the final category consists of Hybrid Studies, accounting for 38.46%. Nevertheless, the systematic review also highlights the necessity for more rigorous evaluations regarding the adoption of AABSC. This research has implications for both the body of knowledge and practice, as it sheds light on the outcomes and potential benefits of implementing AABSC in developing country firms, particularly SMEs.

Keywords: “Agile-Adaptive Balanced Scorecard”, “Management Accounting Systems”, “Sustainable Performance”, “Systematic Review”, “Bibliometric Analysis”.

1. Introduction

The turbulent-oriented and super-dynamic economic situation presents exceptional difficulties to top executives and strategic planners in nations that confront it. Many performance measurement models have been used throughout the years to aid in planning, executing, and evaluating business decisions (Lebdaoui et al., 2020). Beyond this, adopting Balanced Scorecards with key performance indicators and activities that complement the strategy map only provides minimal value to the business (Wiraeus & Creelman, 2019). Factors that assist decision-makers in attaining sustainable outcomes encompass elements such as affordability, active engagement of stakeholders, flexibility in the face of environmental shifts, local technical expertise, and the utilization of information-gathering and communication technologies. (Tsai et al.,2019).

Stakeholder engagement and innovation capacity depend on financial investment, stakeholder involvement, and innovation capability. Sustainability has acquired significant momentum as a component of today's competitive corporate environment to incorporate social and environmental issues in their business operations and engage with stakeholders (Asiaei & Bontis, 2019). Any new technique that focuses on only one component of a management accounting system typically doesn't automatically help the system be implemented effectively. Unless it specifies and supports external factors and organizational traits, this can affect the adoption of a management accounting system, which will then have a beneficial impact on sustainability performance. The connections between context, content, and process have been examined from the perspective of the Balanced Scorecard (Firk et al., 2020), but not from the perspective of the agile and adaptive Balanced Scorecard (Asiaei & Bontis, 2019).

However, empirical studies that emphasize the influence of management accounting systems and sustainability performance are still few within the context of the company's industry, which provides immense potential for future research (Guix, 2019). The economic, social, and environmental dimensions, the leading measures of sustainable performance, have become the organizations' main listed objectives. As companies seek to obtain market share in the global economy, the economic, social, and environmental aspects, the core sustainable performance indicators, have become the organization's main priorities. Organizations are made up of interconnected processes, and the evolution of the organization's improvement must rely on these processes (Dwivedi et al., 2021). The Balanced Scorecard process allows organizations to make these assessments. Unfortunately, not all Balanced Scorecard programs improve organizations' sustainable performances. Many organizations have failed to improve their performances by adopting the traditional Balanced Scorecard tool (Al-Abrow et al.,2019). To implement the company's strategy in managing the Balanced Scorecard, the responsible staff for the main number corresponding to each deviation in the plan must be

consulted to ensure long-term acceptance. Thus, this constitutes one of the most significant downsides of the Balanced Scorecard: its lack of distinction between the people who cause the plan. A Balanced Scorecard is often viewed only as a few rules and methods and not an integrated and adaptive approach (Sainaghi et al., 2019; Mohammed et al., 2022). Therefore, this systematic review study suggested to use Agile-Adaptive Balanced Scorecard (AABSC), which is a dynamic tool that can respond to the continuous changes in the business environment as well as unstable economic conditions. Consequently, application as an integrated tool for the management accounting system (MAS) increases the ability of organizations to improve their competitive advantage that leads to achieving sustainable performance (Mohammed et al., 2022).

The objective of the paper is to conduct a systematic review study on the integration of the Agile-Adaptive Balanced Scorecard (AABSC) as an integrated tool for the management accounting system (MAS) in order to improve sustainable performance. The paper aims to explore the limitations of traditional Balanced Scorecard approaches and propose the use of the AABSC as a dynamic tool that can adapt to continuous changes in the business environment and unstable economic conditions. The study seeks to provide insights into the relationship between the MAS, AABSC, and sustainable performance by analysing relevant literature from 2010 to 2021. The paper also aims to present the methodology, findings, advantages, and difficulties related to the integration of the AABSC in the MAS.

Systematic reviews have a better structure than traditional methods because of their methodology and identification criteria for finding relevant papers. Therefore, a systematic review methodology was developed to grasp the research topic better. In other words, these databases offer the most rigorous research insight by encompassing both scientific and technical fields. In addition, the systematic review technique significantly affects many study fields and scientific disciplines.

The paper is structured as follows. The integrated tools of the MAS, such as the Agile-Adaptive Balanced Scorecard, were addressed in Section 1. Section 2 outlines the study methodology, scope, literature sources, and screening processes. A taxonomy based on literary study complements the literature landscape. Section 3 contains the findings and statistical information of the final study's collection of articles. The advantages and difficulties addressed in Section 4 include those derived from articles on management accounting system (MAS), agile-adaptive balanced scorecard (AABSC) and sustainable performance from 2010 up to 2021. In Section 5, the conclusion of this review is presented.

2. Methods

This study utilizes certain databases due to their detailed design, including MAS, AABSC, and Sustainable performance. The IEEE focuses on computer science, electric, and electronics engineering publications. The secondary database (WoS) contains all social science, technology, and scientific articles. The third database (Scopus) includes all scientific, social, artistic, and technological cross-disciplinary studies. The fourth database (SD) includes credible scientific, engineering, and technological resources. In other words, these databases offer the most rigorous research insight by encompassing both scientific and technical fields.

2.1 Search Strategy

IEEE, WoS, Scopus, and SD for publication from 2010 to 2021 were systematically studied. They were selected because of their comprehensiveness. All the instruments in the management accounting system (MAS) and their impact on small and medium-sized businesses (SMEs) over the past decade are being studied in depth. This paper developed and implemented a logical research strategy using different keywords related to methods of using the MAS the trend of sustainable performance (e.g., Managerial Accounting System (MAS), Agile and Adaptive Balanced Scorecard (AABSC), and Balanced Scorecard (BSC), and a keyword that considered all these terms developed under the concept of management accounting system and sustainable performance. The criteria of selected papers involve two main points. First, the article has been published in an English-language journal or as a conference paper. The focus on developing the management accounting system data and tools in one or both of the following aspects, (i.e., Agile, and adaptive balanced scorecard and balanced scorecard). Second, the articles should have applied one or more key concepts of management accounting systems. According to eligibility criteria, it is important to highlight the rationale behind the selection of articles for the study. The focus was specifically on articles that align with the research objective of exploring the integration of the Agile-Adaptive Balanced Scorecard (AABSC) as a tool within the management accounting system (MAS) to improve sustainable performance. Therefore, articles that were unrelated to the development or achievement of sustainable performance were excluded to ensure relevance and coherence with the research topic.

Additionally, studies that examined the use of the balanced scorecard in achieving supply chain goals but did not address the concepts of sustainability or performance were also excluded. This decision was made to maintain a clear focus on the integration of the AABSC as a means to enhance sustainable performance within the MAS framework. It is worth noting that books were not included in this study. The decision to exclude books was made to ensure the inclusion of rigorous and up-to-date research insights from scientific and technical fields, as systematic reviews typically emphasize the use of scholarly articles. By applying these eligibility criteria, the study aimed to enhance the validity and reliability of the findings and maintain a coherent and focused analysis on the integration of the AABSC and sustainable performance within the MAS. the articles were conducted on the management accounting system that has nothing to do with developing or achieving sustainable

performance, as well as excluding studies that were conducted on the balanced scorecard in achieving supply chains that do not address the concept of sustainability or performance. Books in this study were excluded.

2.2 Study Selection

Source searching of literature is done using a query in Figure 1, where three refining procedures are implemented. Only articles published during the most recent ten years are used in the initial refinement (2010–2021). Secondly, the articles were filtered based on their titles and abstracts (i.e., agile, adaptive balanced scorecard, and sustainable performance). The third refinement reviewed and excluded articles that do not satisfy the qualifying requirements, which have been previously discussed and research domain-based on the balanced scorecard.

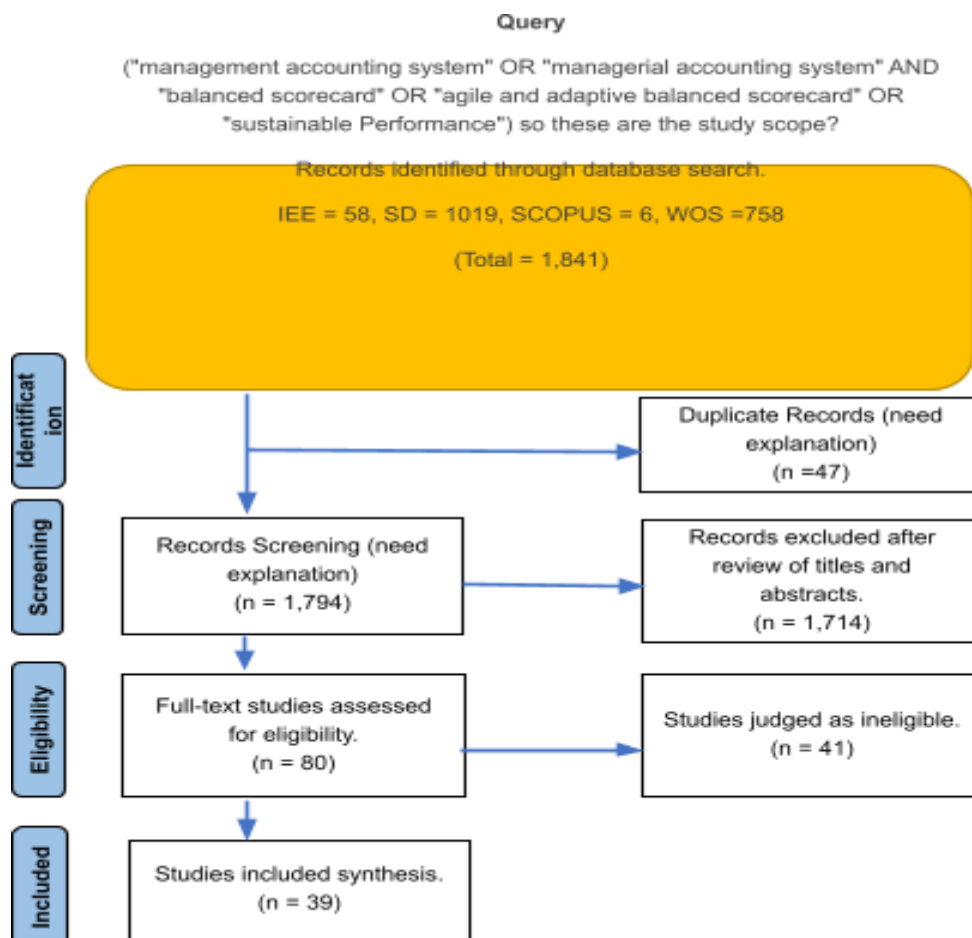


Figure 1. Systematic Review Protocol

2.3 Distribution Results

The papers that satisfied our criteria (MAS, AABSC, BSC, and Sustainability) are shown in Figure 1. The search yielded 1841 articles, including 758 from WoS, 1019 from Science Direct, 6 from Scopus, and 58 from IEEEXplore. Insert a table to demonstrate how all four requirements were fulfilled. The collected papers of the past ten years (2010–2021) About 474 duplicate articles which are published in at least four databases, for 1794 papers. After the titles and abstracts were evaluated, 1487 articles were rejected, because it was not relevant and comprehensive of the elements of this study, thereby resulting in 80 papers. 41 papers were also excluded because it was written in languages other than English. 39 articles were utilized to evaluate the findings of this research, all of which were refined via full-text reading.

3. Literature Review Analysis (Taxonomy)

As shown in Figure .2, the 39 articles were classified into four major categories: (Section 3.1) management accounting system "MAS" (n=8), (Section 3.2) Agile and Adaptive Balanced Scorecard "AABSC" (n=4), (Section 3.3) Sustainable performance (n=12), and (Section 3.4) hybrid study's categories (n=15). These major categories were linked to their corresponding subcategories while taking their contribution nature into account as seen in Figure 2.

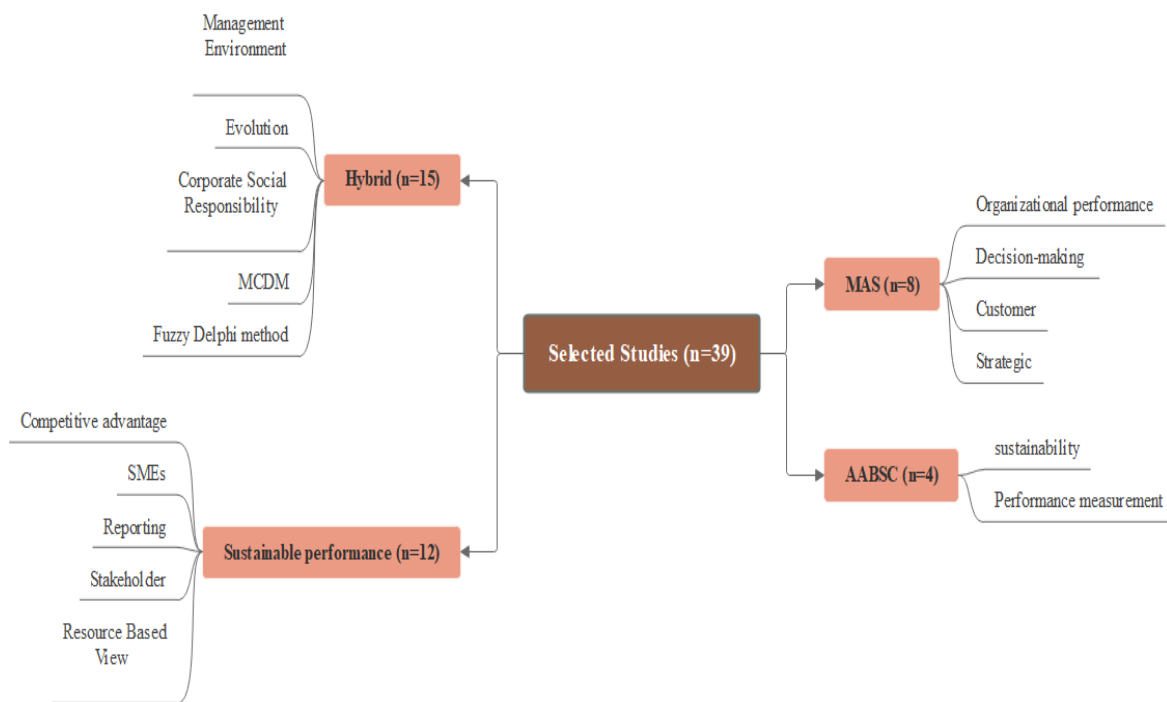


Figure 2. Taxonomy of Selected Studies

3.1 Management Accounting System (MAS)

This category discussed papers that related to the Management Accounting System (MAS) as well as the common topics that it included. The sections contain a total of (n = 8). The review included 8 articles related to the MAS. While the number of articles may be relatively small, depending on the scope of the research and the available literature, it is possible that a comprehensive analysis and synthesis of the existing literature on the MAS has been achieved. However, without further details on the specific research objectives and the depth of analysis conducted within this category, it is challenging to determine the exact level of saturation. The subcategory under MAS includes the four main topics: (1) Organizational performance, (2) Decision-making, (3) Customer, and (4) Strategic.

The First Set of studies discussing MAS with Organizational performance included (n=2) studies. The first (Atmoko et al., 2017) research used a MAS method for choosing decentralization, task uncertainty, and environmental uncertainty on organizational performance. Odar et al. (2012) sought to investigate organizational performance usage among Slovene large, medium, and small businesses. The findings indicated that the MAS department provides critical information for decision-makers. MAS may thus be used to facilitate organizational performance from a transition economy perspective.

The second set of studies discussing MAS with decision-making included (n=2) studies. The first work by (Nespeca & Chiucchi, 2018) authors, discussed how the implementation of the Business Intelligence (BI) system affects MAS techniques and Management Accountants' role in decision-making. The study results confirmed the empirical data on the impact that BI systems played in improving the strategic management process via the use of the MAS. The decision-making research by (Strumickas & Valanien, 2010) highlighted the importance of MAS for organizational development and demonstrated the value of the decision-making process via continuous monitoring of an organization. According to the research results, the majority of academic papers connected to MA are focused on distinct MAS tools that are required for correct decision-making in the organization.

The third set of studies discussing MAS with Customers included (n=2) studies. Where, the first study discussed (Chen *et al.*, 2016) studies assessed the implications of performance and customer relationship issues for Taiwan's SMEs under budget limitations., as well as upgrading product qualities throughout customers. As a result, the study's final finding, using the MAS, is that the quality of customer relationships mediates the link between budgetary slack and organizational performance of firms. A different study by Holm et al. (2016) examined the use of customer accounting with MAS management accounting systems for resource allocation as a source of long-term competitive advantage and higher financial returns. Furthermore, earlier research shown how MAS improved organizational performance in the years after its introduction in terms of customer accounting.

The fourth set of studies discussing strategic MAS study include (N=2)._The first was undertaken by (Cadez & Guilding, 2012). In this research, several paradigmatic configurations of strategy and strategic management accounting were examined to investigate how management accounting might improve the performance process. Based on this, the results show that organizations must take a configurational approach to strategic decisions, MAS, and performance. A review section (Li et al., 2012) describes three alternative accounting methods for implementing lean manufacturing, which is: traditional management accounting (TMA), Activity-Based Costing (ABC), and Value Stream Costing (VSC). Hence, their findings showed that VSC seems to be a connecting bridge between shop level and management level perspectives of lean.

In a nutshell, as you can see in Table 1, the preceding essay looked at the four primary aspects of MAS: namely, Scoop, TimeLine, Aggregation, and Integration.

Table 1: Management Accounting System Studies

No.	Literature	Scoop	TimeLine	Aggregation	Integration
1	Atmoko et al., 2017	√	√	√	√
2	Odar et al., 2012	X	X	X	X
3	Nespeca & Chiucchi, 2018	X	√	X	X
4	Strumickas & Valančienė, 2010	√	X	X	X

5	Chen et al., 2016	X	X	X	X
6	Holm et al., 2016	X	X	X	√
7	Cadez & Guilding, 2012	X	X	X	X
8	Li et al., 2012	√	X	X	√
Frequency		3	2	1	3
Mean		0.375	0.25	0.125	0.375

The above table also presents the mean value for the three variables which gained (37.5%, 25%, 12.5%, and 37.5%), the mean value can be computed by Equation (1) below:

$$mean = \frac{total\ frequency}{number\ of\ ref} \times 100$$

In the given table, the mean score value represents the average score assigned to each literature review support across the sub-constructs (Scoop, Timeline, Aggregation, Integration). The higher the mean score value, the greater the importance of the literature review support in contributing to the formation of the sub-constructs.

Looking at the table, the literature review support with the highest mean score value is Support 1 (Atmoko et al., 2017) with a mean score of 0.375. This indicates that Support 1 has been considered important across the sub-constructs. Similarly, Support 8 (Li et al., 2012) also has a mean score of 0.375, highlighting its significance.

3.2 Agile and Adaptive Balanced Scorecard (AABSC)

This section will discuss papers related to topics related to the Balanced Scorecard. The sections contain a total of (n = 4). The review included 4 articles focusing on the AABSC. Given the smaller number of articles, it is possible that the literature review may not be fully saturated in this category. However, the extent of saturation depends on the research objectives and the available literature on the topic. If the review provided a comprehensive analysis and synthesis of the existing literature on the AABSC, considering its contribution nature and relevant subcategories, it can be considered sufficiently saturated. This subcategory contains included two main topics, which are (1) Sustainable Supply Chain, and (2) Performance Measurement.

The First Set of studies discussing BSC with sustainability included (n=2) studies. In the first work according to (Chandra & Kumar, 2021). A new framework is given which shows how India's Universal Immunization Program may use key performance indicators (KPIs) like sustainability and Mission Indra Dhanush for sustainable development. Therefore, the findings of the current research will be helpful to those who are involved in developing sustainable immunization programs.

Haghighi et al. (2016) reported on a new hybrid BSC framework that can handle both qualitative and quantitative performance indicators in sustainability while including desired

and undesired indicators. Consequently, each level of the supplier should look at their sustainability scores while ranking their options.

The Second Set of studies discussing BSC with Performance measurement included (n=2) studies. In the study by Ivanov et al. (2014), performance measurement models essential for innovation process assessment were addressed.: Balanced Scorecard, Malcolm Baldrige, Performance Prism and European Foundation for Quality Management.

As a result, the study results will highlight the innovative components of each model in order to evaluate the performance of the innovation processes. Another BSC issue discussed by (Vieira et al., 2017) was the potential for performance measurement in a wind farm business. The research shows how the framework enables in-depth, comprehensive, and critical assessments of current Performance measuring methods. As a result, the study outline suggests a kind of SBSC to help a business simplify its management decision-making and ease the process of performance assessment. Table 2 provides a summary of the above-mentioned publications, which were categorized according to the four viewpoints of the AABSC. It demonstrates how the articles relate to the four focuses of AABSC: financial perspective, customers’ perspective, learning and growth perspective, and internal business processes perspective.

Table 2: Agile-Adaptive Balanced Scorecard Studies

References	Financial Perspective	Customers Perspective	Learning & Growth Perspective	Internal Business Process Perspective
Chandra & Kumar, 2021	X	X	√	√
Haghighi et al., 2016	√	√	√	√
Ivanov et al., 2014	X	X	√	√
Vieira et al., 2017	X	X	√	√
Guix & Font, 2020	√	√	√	√
Aly et al., 2017	√	X	√	√
Bhattacharya et al., 2014	X	X	X	√
Chen et al., 2020	√	X	X	X
Frequency	4	2	6	7
Mean	0.5	0.25	0.75	0.875

The above table also presents the mean value for the three variables which gained (50%, 25%, 75%, and 87.5%), the mean value can be computed by Equation (1) below:

$$mean = \frac{total\ frequency}{number\ of\ ref} \times 100$$

Looking at the table, the reference with the highest mean score value is Guix & Font, 2020, with a mean score of 0.875. This indicates that this reference is highly relevant to the Internal Business Process Perspective. Similarly, Ivanov et al., 2014, and Vieira et al., 2017, both have

a mean score of 0.75, suggesting their significant relevance to the Learning & Growth Perspective.

additionally, Bhattacharya et al., 2014, have the lowest mean score value of 0.25, indicating relatively lower relevance to any of the perspectives.

3.3 Sustainable Performance

This category discussed papers that related to sustainable performance as well the common topics that it included. The sections contain a total of (n = 12). The review encompassed 12 articles related to sustainable performance. The number of articles suggests a reasonable coverage of the literature in this category. However, the saturation level can be better evaluated by considering the breadth and depth of the analysis conducted within this category. If the review explored various dimensions, methodologies, and perspectives of sustainable performance, addressing the contribution nature of the articles and relevant subcategories, it can be considered relatively saturated. This subcategory contains included five main topics, which are (1) Competitive Advantage, (2) Reporting, (3) Stakeholder (4) Resource-Based View (RBV), and (5) Small and Medium-Sized Enterprises (SMEs).

The First Set of studies discussing sustainable performance with competitive advantage included (n=3) studies. In the first and second studies by (Sousa et al., 2020; Bourlakis et al., 2014), the authors identify the factors that influence the competitive advantage, as well the differences in the competitive advantage to achieve the sustainable performance of SMEs and large organizations. In a study by (Nguyen, 2019), Identifying factors of effective Kaizen implementation, and their effects on competitive advantage, was the author's goal. Additionally, the initial letters of the identified factors are assembled as “STEAM-ME”, a new Kaizen implementation and sustainable SME performance in Vietnam.

The Second Set of studies discussing sustainable performance with reporting included (n=2) studies. In two separate studies, published by (Maas et al., 2016; Di Vaio et al., 2020), the authors addressed management accounting and control as well as reporting toward sustainable performance. The authors stressed the importance of implementing creative, targeted, and strategic approaches to integrate these various departments, management, and rationales with adequate organizational architectures and educational training and management programs.

The third set of studies discussing sustainable performance with stakeholders included (n=2) studies. The different studies by (Mani et al., 2020; Ben et al., 2020), discussed an empirical model for sustainable performance grounded in stakeholder for SMEs in the emerging economy setting. this example shows that sustained performance may be achieved by concentrating on improving stakeholders' and supporters' advantages. This leads to a sustained performance, as authors in both studies argue.

The Fourth set of studies discussing sustainable performance with Resource-Based View (RBV) included (n=2) studies. First research found a link between sustainable performance and internal lean practices ILP, built on a theoretical model rooted in the resource-based view (RBV). This means that ILP has an interrelationship with both operational and environmental performance. Other researchers (Iqbal & Ahmad, 2021) examined the impact of organizational learning on sustainable leadership and performance, as well as methods to incorporate sustainable leadership into sustainable performance. The results of this research showed that sustainable leadership positively affects organizational learning, and organizational learning partly mediates the connection between sustainable leadership and sustainable performance.

The Fifth set of studies discussing sustainable performance within Small and Medium-sized Enterprises (SMEs) included (n=3) studies. The first research (Iqbal et al.,2020) looked at the role of psychological safety in mediating the connection between sustainable leadership and sustainable performance in SMEs from Malaysia, Indonesia, and Bandar Seri Begawan. As a result, this paper will contribute to the psychology of honeybee leadership inside SMEs by broadening our knowledge of sustainable performance toward sustainable leaders, its underlying mechanism, and conditional impact. Two other studies (Steinhöfel et al.,2019; Abbas et al., 2019) investigated how SMEs address sustainable performance issues through the implementation of sustainability reporting. Furthermore, dynamic capacities influence the connection between entrepreneurial business networks and sustainable performance, as well as to ensure comparability of this sustainability performance across different SME. In summary, the papers evaluated in this study were categorized according to the three aspects of long-term performance, as shown in Table 3. Table 3 shows how the articles connect to the three areas of sustainable performance: environmental performance, economic performance, and social performance.

Table 3: Sustainable Performance Studies

Reference	Environmental	Economic	Social
Sousa et al., 2020	√	X	√
Bourlakis et al., 2014	√	√	X
Nguyen, 2019	√	√	√
Iqbal et al.,2020	√	X	X
Steinhöfel et al., 2019	X	√	X
Abbas et al., 2019	X	√	X
Maas et al., 2016	√	X	X
Di Vaio et al., 2020	√	X	√
Mani et al., 2020	X	X	√
Ben et al., 2020	√	X	X
Chavez et al., 2020	X	X	√
Iqbal & Ahmad, 2021	√	X	X

Frequency	8	4	5
Mean	0.667	0.333	0.417

The above table also presents the mean value for the three variables which gained (66.7%, 33.3%, and 41.7.5%), the mean value can be computed by Equation (1) below:

$$mean = \frac{total\ frequency}{number\ of\ ref} \times 100$$

Looking at the table, the reference with the highest mean score value is Sousa et al., 2020, with a mean score of 0.667. This indicates that this reference is highly relevant to the Environmental dimension. Similarly, Bourlakis et al., 2014, has a mean score of 0.333, suggesting its significant relevance to the Economic dimension.

Besides, Chavez et al., 2020, has the highest mean score value of 0.417, indicating relatively lower relevance to the social dimension.

3.4 Hybrid Category

This part will go through the hybrid studies that pertain to the management accounting system, balanced scorecard, and sustainable performance, as well as the common characteristics that were covered. The sections contain a total of (n = 15). The review included 15 articles categorized as hybrid studies. The higher number of articles implies a greater likelihood of achieving saturation in this category. However, similar to the other categories, the level of saturation depends on the extent to which the review analyzed and synthesized the literature, considering the contribution nature of the articles and their corresponding subcategories. This subcategory contains included six main topics, which are (1) Environment Managerial, (2) Evolution, (3) MCDM, (4) Analytic network process (ANP), (5) Fuzzy Delphi method (FDM), and (6) Corporate social responsibility (CSR).

The First Set of hybrid studies discussed the environment managerial, included (n=3) studies. The first study by the authors (Guix & Font, 2020), integrated the Balanced Scorecard with sustainable performance as a good system of environment managerial with the inclusiveness, materiality, to assist an organization in meeting the expectations of its stakeholders. Because of the findings, the businesses were able to enhance their environment by focusing on quality, openness, and consistency. Authors proposed the Balanced Scorecard into the management environment in the second and third study (Houck et al., 2012; Perera et al., 2016), to counter short-term performance demands by providing recognition and weight to long-term requirements. Additionally, it aids in the measurement and mitigation of negative environmental effects, as well as increasing ecological sustainability at businesses.

The Second Set of hybrid studies discussed the Performance Evolution, included (n=3) studies. The first paper (Oliveira *et al.*, 2019) examined whether the method known as the Balanced Scorecard (BSC) is a bureaucratic order impartial mechanism for performance assessment. This research has shown that one method to measure the performance of

bureaucracy in a company is to examine its MAS. Aly et al., (2017) and Chen et al., (2020) established a technique for assessing corporate board performance based on the balanced scorecard. The study concludes that the BSC model develops a sustainable business performance evaluation index system for dealing with companies' performance assessment challenges. Thus, the study's findings demonstrated Firms have unique variations in their total sustainable performance, and this performance relies on management in addition to environmental conditions.

The third set of hybrid studies discussing Corporate social responsibility (CSR) included (n=3) studies. In a study of Journeault (2016), the authors utilised the Sustainability Balanced Scorecard (SBSC) framework to evaluate how CSR affects company performance to help accomplish the objectives. This research shows that CSR has a substantial impact on BSC dimensions with variation, and all the stakeholders agree to the direct link between those dimensions. The authors stated in the research Nikolaou *et al.* (2013) that CSR and management accounts and control systems may play a part in turning socially responsible initiatives into sustainable performance. The goal of this study is to use a new model to help close the gap between CSR and business performance. In the third hybrid research (Nigri & Del Baldo, 2018), an examination is done on SMEs that are Benefit Corporations and their beneficial impact assessment indicators, to see whether they are integrated into the overall sustainable performance. A tendency was shown in this research, but the activities were still distinct from the daily business, and this was due to a communication problem.

The fourth set of hybrid studies discussing the Fuzzy Delphi method (FDM) included (n=2) studies. Radu (2012) and in the implementation of efficient strategy that combines economic, social, and environmental elements as an integrated sustainable performance system, Tsai et al. (2020) used a Balanced Scorecard based on the fuzzy Delphi (FDM) method, and a new challenge for organizational transformation. The findings highlighted theoretical ideas while stressing empirical outcomes. This means those businesses using FDM for Sustainable Economic Development strategies saw sustainable economic growth. Results indicate that financial investment, stakeholder engagement, and innovative ability are all linked in this case.

The fifth set of hybrid studies discussing MCDM included (n=4) studies. Lu et al. (2018) and Rabbani et al. (2014) investigations used a strong and effective technique to determine organizational or business sustainability. Therefore, in this research, we used a modified VIKOR method to prevent the "stop-gap pieces" in the company. Authors in the third and fourth hybrid research presented a sustainability balanced scorecard (SBSC) framework utilizing the analytic network process (ANP) to evaluate sustainable performance, as well as to make choices about the overall organizational objectives. Accordingly, our results demonstrate ANP-based SBSC supports managers in determining whether a firm's sustainable performance satisfies industry and environmental requirements, and human resources are effective.

4. Findings and Discussion

For greater clarity of presentation, the discussion was divided into four sections. In the first, mapping analysis was adopted for the databases that he specified. The second section focused on the motivation of the articles, which are selected from the database. The third section explains the challenges of the articles, which are selected in this study. Finally, the fourth section discussed the recommendation of the selected articles.

4.1 Bibliometric Analysis and Mapping

This section described the literature review based on bibliometric analysis to determine the literature gap and provide a new research direction to forthcoming studies. Moreover, annual and country production, word cloud, and collaboration were investigated in the following sections.

4.1.1 Annual scientific production

The bibliometric analysis in figure 3 shows the annual scientific production of articles that use management accounting systems (MASs) towards sustainable performance, as a period ranging from (1970-2030) has been defined to know the extent of this production's development over the years.

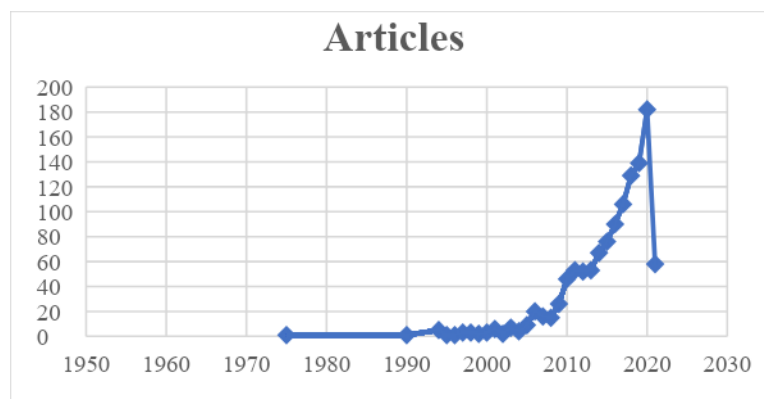


Figure 3. Annual Scientific Production Based On Bibliometric Analysis (By Scopus Database)

Figure 3 shows that researchers or research papers at the beginning of the time specified for this study to show the annual scientific production is very weak, but starting to focus on these aspects gradually until reached to highest top in the papers that were published in the year 2021, the focus is continuing, where the wave of the figure above indicates an upward trend, and this is evidence of the continuous interest in MAS to achieve sustainable performance.

4.1.2 Country scientific production

The bibliometric analysis figure 4 shows the classification of Country scientific production. There are many countries in the scientific production of papers that focus on MAS to achieve sustainability goals, including (China, India, Brazil, Iraq, Egypt, Oman ... etc.).

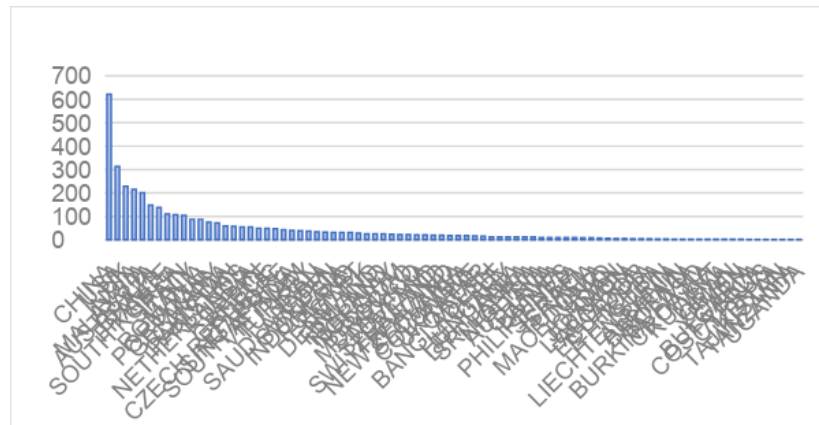


Figure 4. Country Scientific Production Based On Bibliometric Analysis (By Scopus Database)

Figure 4 shows that China leads in scientific productivity with the highest rate, reaching (621) studies during the last 10 years, followed by USA B (313) and the UK by (228), India B (215), and Malaysia B (200) studies. While this arrangement is mediated by each of the following countries (Iraq, Serbia, Jordan, and Sri Lanka) with a production rate of (8), while the countries that are inferior in order are (Cuba, Ethiopia, Albania, Kuwait, Libya, Costa Rica, Belgium) with a productivity rate that has reached to (3) studies.

4.1.3 Word cloud

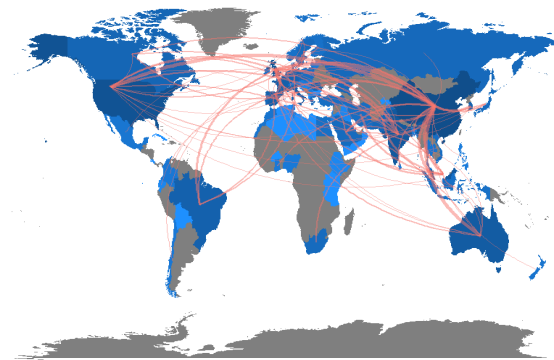
Figure 5 depicts a graphic representation of text data. The larger the size of a word, the more times than word occurs in the corpus. According to the results of the word cloud analysis in figure (5), among sustainable performance-related MAS words, 'impact' is the most often used term by the researchers.

(By Scopus Database)

Performance, management, and influence are often used keywords in MAS investigations. The model, framework, design, innovation, systems, strategy, and green, however, are additional components of interesting phrases. This demonstrates that scientists are working hard to integrate these domains with MAS investigations. The percentage contribution of each of the aforementioned frequent keywords to MAS research toward the authors' achievement of sustained performance is shown in Figure 6.

4.1.5 Collaboration world map

The bibliometric analysis Figure 7 shows a world map highlighting the countries that have collaborated between them in publishing more studies on MAS, AABSC, and sustainable performance in the period related to selected years using the Web of Science database.



**Figure 7. Collaboration WorldMap Based on Bibliometric Analysis
(By Scopus Database)**

China produced the most publications, as shown by the map's darker color, followed by many countries that have cooperated among them, including India, Brazil, Spain, Egypt, Iraq, Qatar, Cuba, Costa Rica, Oman, Tajikistan etc.

4.2 Recommendation

We briefly provide recommendations from the literature to mitigate the challenges faced by various fields in MAS, AABSC, and Sustainable performance as shown in Figure 9. The recommendations are categorized according to their nature.

4.2.1 MAS recommendation

This section contains critical recommendations for MAS users, demonstrating that three MAS dimensions (broad scope, timeliness, and integration) fall short of mediating the effect of task uncertainty on organizational performance, whereas the clustering dimension can mediate the negative effect of task uncertainty on organizational performance because company managers do not require comprehensive information (Atmoko et al., 2017). The suggestions of the MAS indicate that the findings may not accurately represent the usage of financial ratios in the community (Odar et al., 2012; Oliveira et al., 2019). Furthermore, MAS's greatest advice to SMEs is to manage all financial operations, including the budgeting process, allocation of resources, corporate governance and auditing, and data analysis (Chen et al., 2016). As a result, the results of SMEs research on the much-studied MAS tools, such as the usage of BSC, must be supported and extended (Holm et al., 2016). MAS studies provide many intriguing findings; nevertheless, the application of MAS modeling allows for the prediction of the behavior of various variables and offers insight and direction for future studies on stochastic demand (Li et al., 2012).

4.2.2 AABSC recommendation

This methodology incorporates an integrated framework that is built on BSC principles. Therefore, SMEs will be able to observe how successful the strategy, procedures, leadership, organizational culture, and competencies linked to the innovation process are (Haghighi et al., 2016; Ivanov et al., 2014). Companies that engage in the mining and oil industry sector, according to the BSC, have followed a more comprehensive sustainability plan, since these firms make a greater contribution to sustainable development objectives (Nikolaou et al., 2013; Vieira et al., 2017). Reporting a BSC framework that focuses on the connections between leading and lagging performance indicators incorporates the effect of environmental performance into the company's strategic plan. These variables, then, include both reactive and proactive aspects (Bhattacharya et al., 2014). Finally, several writers asserted that the BSC had just four dimensions. Based on the characteristics of businesses, they suggested adding human resources, people, natural resources, lifestyle, supply chain, innovation processes, and society to the BSC model (Chen *et al.*, 2020; Chandra & Kumar, 2021).

4.2.3 Sustainable performance recommendation

On the one hand, for long-term success, SMEs manufacturers in Asia must invest in green organizational innovation and open innovation, as well as develop managers' creative skills. Furthermore, these SMEs should invest in collective capacity by enhancing organizational learning, market orientation, collective competence, and entrepreneurial orientation (Sousa et al., 2020; Nguyen, 2019; Di Vaio et al., 2020). Practically, the recommendations for sustainable performance are aimed at policymakers based on current empirical evidence. Organizational management must develop strategies to promote sustainable leadership to drive a psychologically safe environment, which results in optimal sustainable performance

(Iqbal et al.,2020; Mani et al., 2020). A systematic and simple-to-implement strategy to achieve realistic and meaningful long-term performance has yet to be established for SMEs. By design, such a method should enable benchmarking performance and assessing possibilities for improvement beyond incremental adjustments or risk and effect reduction (Steinhöfel et al., 2019; Abbas et al., 2019). Finally, the authors suggested that organizational learning might help to buffer the connection between sustainable leadership and sustainable performance. As a result, the indirect connection between sustainable leadership and sustainable performance offers practitioners empirical data to improve sustainable performance via organizational learning (Iqbal & Ahmad, 2021; Ben et al., 2020).

5. New Research Direction

According to the results of taxonomy mapping as mentioned in section three of this paper, most of the studies attempted to suggest developing a method for dealing with sustainable performance, and likewise, many studies developed different systems. Despite that, there is a great lack of literature in this area, and the following table illustrates the literature survey. Table 5 Literature Survey of various studies in the Agile and Adaptive Balanced Scorecard (AABSC) with Sustainable Performance and Management Accounting System (MAS). Where, the table shows three studies related to this paper whence Management accounting system, Agile and adaptive balanced scorecard, and Sustainable Performance.

Table 6: New Research Direction

Author & year	Brief Description	Used Criteria	Sector
Nigri & Del Baldo, 2018	This research analyses how management accounting system the mediating effect of the use of management accounting systems (MAS) and their impact on firm's sustainable performance.	Quantitative	Italian SMEs
Aly et al., 2017	The purpose of this paper is to develop a method for evaluating the sustainable performance of corporate boards using the balanced scorecard approach.	Questionnaire and Personal interviews	Egyptian manufacturing companies.
Oliveira et al., 2019	In this paper, we analyze whether a technique used in Management Accounting Systems (MAS), known as the Balanced Scorecard (BSC), represents a bureaucratic order.	Discussion paper	Review

Where, (Nigri & Del Baldo, 2018) relied on choosing a management accounting system (MAS) to exam its effect on achieving sustainable performance in Italian SMEs by using the quantitative approach. This means that effective management accounting procedures lead to

the same results, and aggregation is a key player in extracting valuable information from data and sharing it with stakeholders. (Aly et al., 2017) established a technique for assessing the sustainability of corporate boards using the balanced scorecard methodology, which included questionnaires and interviews from Egyptian manufacturing firms for collecting data. From this, we can conclude that businesses need to have an effective instrument to assess board performance, and the suggested approach is an effective tool for the evaluation. The findings also show that different metrics play different roles in the three samples. Additionally, Oliveira et al. (2019) analyzed whether a method used in Management Accounting Systems (MAS), known as the Balanced Scorecard (BSC), reflects a bureaucratic order, where prior research is referenced. Thus, the conclusions of this study may be utilized in future empirical research on the subject, as well as the results of this article, which asserted a connection between bureaucratic ideas and the BSC.

6. Conclusion

A systematic literature review is included in this article. The research design described the study's setting. The management accounting system (MAS) and its methods, for example, agile and adaptive balanced scorecard (AABSC), are utilized in this research to identify the key difficulties and gaps in implementing this MAS toward sustainable performance. To complete our research, we examined several other papers to see if there were any gaps or possibilities related to MAS. The research offered clarity on the utilization of conventional instruments of the MAS to help achieve sustainable performance in small and medium businesses (SMEs). Studies prove it in the period (2010 - 2021). The reliance of management accounting systems on traditional tools, for example, the Balanced Scorecard, is not sufficient to achieve the goals of sustainability because these companies suffer from disturbances in the business environment as well as the continuous change in economies, especially in developing countries as well as countries suffering from wars and economic attacks ongoing. Accordingly, this study recommends using tools integrated with management accounting systems, for example, the AABSC, towards achieving sustainable performance in SMEs, especially in developing countries, because it is characterized by dynamism and effectiveness in response to the continuous environmental and economic changes. We think this study is a helpful guide for academics and practitioners in giving direction and important information for future research. This research may also address the uncertainty of management accounting practices and the sustainable performance of businesses.

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