Mílton André Assunção da Rosa

A Systematic Literature Review of Organizational Performance Research using Structural Equation Modeling

UNIVERSIDADE DO ALGARVE

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Mestrado em Contabilidade

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Declaro ser o(a) autor(a) deste trabalho, que é original e inédito. Autores e trabalhos consultados estão devidamente citados no texto e constam da listagem de referências incluída.

Mílton André Assunção da Rosa

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(assinatura)

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"If you get tired, learn to rest, not to quit."

- Unknown

ABSTRACT

The objectives of this thesis consist of discussing the relevant topics on organizational performance (OP) and identify avenues of research that can be explored in the future. A systematic literature review (SLR) was performed to focus on papers addressing OP and using structural equation modeling (SEM) as main methodology. The final sample consists of 50 papers published between 2002 to 2022 in journals listed in the "Academic Journal Guide" 2021 (ABS list) within the field of "Account".

The results indicate that OP can be measured using constructs with different types of measurements, with some authors focusing on a particular type of OP, like financial performance (FP) or non-financial performance (NFP). OP can be influenced by eight groups of determinants, corporate social responsibility (CSR), sustainability, strategy, information systems (IS), management control systems, innovation, intellectual capital, and other particular determinants.

This paper contributes to the literature and study of OP based on SEM, as well as adding valuable information for academics, managers, and stakeholders. The determinants that can influence OP and the type of OP they impact, when considered alongside the company's mission and specific objectives, contribute to a better understanding of performance measurement, aiding in effective business evaluation and timely decision-making.

Keywords: Organizational Performance, Performance Measurement, Structural Equation Modeling, Systematic Literature Review, Financial Performance, Non-Financial Performance

RESUMO

Os objetivos desta dissertação consistem em discutir os tópicos relevantes sobre performance organizacional (PO) e identificar áreas de pesquisa que podem ser exploradas no futuro. Este estudo desenvolve uma revisão sistemática da literatura (RSL) para identificar estudos relacionados com PO que utilizam modelos de equações estruturais (SEM) como metodologia principal. A amostra final é composta por 50 artigos publicados no período de 2002 a 2022 em revistas científicas pertencentes ao "*Academic Journal Guide*" 2021 (ABS list) na área de "Contabilidade".

Os resultados indicam que a PO pode ser medida com construtos que utilizam diferentes tipos de medidas, sendo que alguns autores se concentram num tipo específico de PO, como performance financeira (PF) ou performance não financeira (PNF). A PO pode ser influenciada por oito grupos de determinantes: responsabilidade social corporativa (RSC), sustentabilidade, estratégia, sistemas de informação (SI), sistemas de controle de gestão, inovação, capital intelectual e outros determinantes específicos.

Este estudo contribui para a literatura e desenvolvimento da investigação em PO baseada na SEM, além de fornecer informações valiosas para académicos, gestores e *stakeholders*. Os determinantes que podem influenciar o PO e o tipo de performance que eles afetam, quando considerados em conjunto com a missão e os objetivos específicos da empresa, contribuem para uma compreensão mais profunda da medição de PO, auxiliando na avaliação eficaz do negócio e na tomada de decisões oportunas.

Palavras-chave: Performance Organizacional, Medição de Performance, Modelagem de Equações Estruturais, Revisão Sistemática da Literatura, Performance Financeira, Performance Não Financeira

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ABBREVIATIONS LIST

ABS	Academic Journal Guide
BSC	Balance Scorecard
CB-SEM	Covariance-Based Structural Equation Modeling
CEFAGE	Center of Studies and Advanced Training in Management and Economics
CinTurs	Research Centre for Tourism, Sustainability and Well-being
CSR	Corporate Social Responsibility
EP	Environmental Performance
EVA	Economic Value Added
FP	Financial Performance
IS	Information Systems
MA	Management Accounting
MAR	Management Accounting Research
MSc	Master of Science degree
NFP	Non-Financial Performance
OP	Organizational Performance
PhD	Doctorate of Philosophy degree
PLS-SEM	Partial Least Square Structural Equation Modeling
ROA	Return on Assets
ROE	Return on Equities
ROEC	Return on Capital Employed
ROI	Return on Investment

ROS	Return on Sales
SEM	Structural Equation Modeling
SLR	Systematic Literature review
TBL	Triple Bottom Line
WoS	Web of Science

Chapter 1 INTRODUCTION

Organizational performance (OP) is one of the fields in management accounting (MA) (Hesford et al., 2006). The development of OP is based on different approaches and theories (Dess and Robinson, 1984), like contingency theory (Burkert et al., 2014; Cheffi et al., 2021), information economics theory and goal setting theory (Malmi and Granlund, 2009) as it is an open concept, not structured and difficult to define (Richard et al., 2009). There are different types of indicators that can be used to measure performance, like financial and non-financial indicators (Kanzari et al., 2022; Kopecká, 2018). The measurement of performance is crucial to control and evaluate the progress of an organization in time (Kanzari et al., 2022).

This study systematically reviews the academic literature that investigates the OP using structural equation modeling (SEM) as its main methodology. The objectives of this thesis consist of discussing the relevant topics on this domain and identify avenues of research that can be explored in the future. SEM is a multivariate quantitative technique that tests the relationship between variables and became acknowledged for its flexibility. One important characteristic of SEM is that it can use unobservable variables measured indirectly, while allowing for quantification of measurement error in observable variables (Hair et al., 2017; Nitzl and Chin, 2017). This technique is applied in different fields of knowledge (Dash and Paul, 2021), providing a way to test theoretical models (Hoyle, 1995; Thakkar, 2020). The use of a systematic literature review (SLR) as methodology allows the researcher to find answers to questions that cannot be solved with a simple literature review (Page et al., 2021) and helps to find robust conclusions by collecting knowledge from a sum of studies (Tranfield et al., 2003). The SLR is composed by five different stages: planning, locating studies, studies selection, analysis and synthesis, and discussion of the results (Tranfield et al., 2003).

The final sample of the SLR comprises 50 accounting papers that have been published in journals listed in the ABS ranking and specifically focus on the examination of OP through SEM. The analysis of these studies reveals that OP can be subjective. Some papers focus on studying it as an open concept, measured by different financial and non-financial indicators, with some discussion about the types of indicators used. Some of the determinants whose influence on OP was explored are corporate social responsibility (CSR), sustainability, strategy, information systems, management control systems,

intellectual capital, innovation, and other relevant topics. The gaps in the literature found were focused on the methodology used, the type of sample, indicators of performance, the applied variables to evaluate the topics mentioned, and to expand their work with attention to new variables.

This work is divided into five chapters. Following this introduction, the second chapter describes the theoretical framework. Chapter three presents the methodology used in this study. Chapter four focus on the results of the study by discussing the main findings. Finally, chapter five is dedicated to the conclusions of this study.

Chapter 2 THEORETICAL FRAMEWORK

2.1. Management accounting research

MA is a comprehensive process that entails the systematic identification, measurement, aggregation, analysis, preparation, interpretation, and dissemination of financial information specifically tailored for managerial utilization. This information serves the purpose of facilitating effective planning, evaluation, and control of various activities within an organization. (Kaplan, 1984), in a relevant time to assist in making short and long-term decisions (Pérez-Méndez & Machado-Cabezas, 2015).

The theoretical basis of the areas of management accounting research (MAR), usually results of others field of knowledge (Nitzl, 2016). Researchers in this field are faced with testing models with some psychological background, focusing on a specific judgement or decision-making, based on models that can measure behavioral intentions, attitudes, or subjective norms. Complementarily, many researchers, in management accounting, deal with a reduced number of data (Šiška, 2017) restricting the number of theoretical models that can be used (Nitzl, 2016).

Table 2.1 presents the main topics in MAR according to Hesford et al. (2006). As can be seen, MAR is divided into three main topics: cost, control and others. For each topic, table 2.1 provides subtopics and keywords, which facilitates the identification of relevant keywords for those who want to develop a SLR. Moreover, organizational performance, business performance, corporate performance, or firm performance, alongside with budgeting, organizational control, and others, is one of the topic areas of management accounting research (Hesford et al., 2006).

After some initial research and discussion, it was decided to focus on performance measurement and evaluation as it constitutes an important research topic, not just in accounting and management research field but in different fields of knowledge, and it has implications for academics and stakeholders.

Table 2.1 Topics of Management Accounting Research

Topic	Subtopic	Keywords
Cost	Cost Allocation	cost allocation; joint costs; activity-based costing; capacity cost
	Other cost accounting topics	cost variances; cost information; decision making on cost management; decision making on management accounting
	Cost practices	cost practices; cost systems; cost accounting systems
Control	Budgeting	Budgeting; budget; budget target; budget participation
	Capital budgeting	capital budget; sunk costs; resource allocation; investment decisions
	Performance measurement and evaluation	performance measurement; evaluation measurement; incentive system; organization behavior; organization performance
	Organizational control	control systems; organizational control
	International control	international control; management control systems; cultural differences in organizations
Other	Accounting information system	computer accounting; accounting information system
	Benchmarking	-
	Total quality management	quality management; quality accounting
	Just-in-time	just in time; just-in-time
	Strategic management	organization strategy; strategic management
	Transfer pricing	-

Note: Adapted from Hesford et al., 2006

2.2 Organizational Performance

OP is well studied by academics in the management area, being an open concept, barely defined and structured (Richard et al., 2009). Some researchers define OP in three distinctive approaches, the goal approach, a method of measuring performance based on stated or implicit goals, the systems resource approach, framework for assessing OP in terms of the internal and external components that are essential to the existence of the organization, and the constituency approach, views organizations as entities existing to serve numerous internal and external constituencies, with OP assessment centered on fulfilling their diverse needs. These frameworks collectively contribute to a shedding light on various facets of organizational performance and evaluation (Dess & Robinson, 1984).

OP can be mixed up with organizational effectiveness (Richard et al., 2009). The first one reflects the outcomes of the firm activity, and can be focused on a specific area, financial performance (FP), product market performance and shareholder return. The second is a broader term, including OP with the outcomes of internal performance, associated with

the efficiency or effectiveness of the operations (Richard et al., 2009) and organizational theory (Venkatraman & Ramanujam, 1986).

Performance measurement is essential to control and evaluate the progress of an organization through time (Kanzari et al., 2022) and exact action of managers and business (Richard et al., 2009). The measurement can be objective or subjective (Kanzari et al., 2022; Kopecká, 2018; Richard et al., 2009) focusing on financial or non-financial indicators, giving the stakeholders important information, helping then in decision making (Kanzari et al., 2022; Kopecká, 2018).

The FP indicators can be organized in in two groups: accounting and market based (Binh Dao & Tra Nguyen, 2020; Kanzari et al., 2022; Yu & Madison, 2021). The first one reflects the more traditional and well-known indicators, like return on equity (ROE), return on assets (ROA), return on investment (ROI) or return on capital employed (ROEC) (Binh Dao & Tra Nguyen, 2020; Kanzari et al., 2022) with a focus on the short-term (Yu & Madison, 2021). The market-based indicators are more long term oriented (Yu & Madison, 2021) and use indicators like price-earnings ratio, price per share, share price appreciation (Kanzari et al., 2022), market to book value or Tobin's q (Binh Dao & Tra Nguyen, 2020). Some studies take in account other indicators for measuring FP, like cost or revenue advantage or disadvantages due to change in strategy, classifying them as organizational measures (Kanzari et al., 2022). A few authors stopped using a variety of accounting-based indicators to focus only on one, the Economic Value Added (EVA) created by Stern Stewart, as the true economic indicator (Kopecká, 2018).

Some authors criticized the restricted use of financial indicators to measure OP, saying that it only represents the outcome of the past (Baines & Langfield-Smith, 2003; Kaplan & Norton, 1992). In fact, accounting indicators are susceptible to exploitation, deception, and lack of standards (Keats, 1988). With the creation of the Balance Scorecard (BSC) by Kaplan and Norton in 1992, researchers start using a more balanced set of measures (Deb et al., 2022; Venkatraman & Ramanujam, 1986) including financial and non-financial indicators (Deb et al., 2022).

Besides financial and non-financial indicators, there are other types of performance such as economic, social, environmental. Economic performance measures the efficiency of using the resources available to produce outputs (Rao & Vinod, 2023), using information

based on operation and market (Keats, 1988). Environmental performance (EP) analyzes the relation between the process of a firm and the environment, like the impact of the resources used and all process of the firm in the environment (Shokravi, 2013). The term social performance refers to a group of activities focused on the outcomes and impacts, to the society, stakeholders and to the business (Wood, 2010).

In recent years, there have been an increase of research in sustainability, leading organizations, and managers to be more aware of this issue, and to make decisions with a sustainable view (Govindan et al., 2013). Corporate sustainability promotes the adoption of strategies with the purpose of meeting the needs of businesses and stakeholders without compromising the need of the future generations, and natural resources (Artiach et al., 2010; Labuschagne et al., 2005). For that reason, business performance measures were created to evaluate sustainability issues focused on environmental, social and economic performance (Artiach et al., 2010; Govindan et al., 2013; Labuschagne et al., 2005), which are known as triple bottom line (TBL) performance (Govindan et al., 2013; Nuhu et al., 2021). Some studies have started to also include environmental and social indicators with the BSC and enhancing this approach using a "sustainability BSC" (Sands et al., 2016).

2.3. Structural Equation Modeling

The SEM methodology is a multivariate quantitative technique used to define the relationship between observed variables, providing a way to test a theoretical model (Hoyle, 1995; Thakkar, 2020). Developed between the years of 1973 and 1994, joining on the list of other causality models, such as linear regression models and path models (Thakkar, 2020). When using this technique, the researcher can be faced with one of two results: i) the test withstands the theoretical model or ii) the test does not support the theoretical mode, being necessary to conceive a different theoretical model or adjusting the one in use (Thakkar, 2020). It is a technique that uses a large set of data, utilizing a minimum of 200 observations, bearing in mind that, the size of the sample depends on the type of distribution, model complexity and the method for estimation (Dash & Paul, 2021). This method became a trendy technique because of its flexibility, being used by different researchers in different fields of knowledge (Dash & Paul, 2021).

SEM represent a second-generation technique that was created to overcome the limitations of the first-generation techniques (Hair, et al., 2017) such as cluster analysis, multidimensional scaling, multiple regression, and others. SEM technique can use unobservable variables measured indirectly, while allowing for quantification of measurement error in observable variables (Hair et al., 2017; Nitzl & Chin, 2017). There are two main types of SEM, covariance-based SEM (CB-SEM) and partial least square SEM (PLS-SEM) (Nitzl & Chin, 2017).

2.3.1. Covariance-based

CB-SEM is used, primarily, to estimate the covariance matrix for a sample data set when the proposed theory has to be confirmed or rejected (Dash & Paul, 2021; Hair et al., 2017).

It is a better statistical method than the traditional ones when testing at the same time the relationship between variables (Elzahaby, 2021), allowing the estimation of numerous and interrelated dependence relationships and the representation of latent variables (Janssen et al., 2011). In this setting, dependent variable in a specific equation can become an independent variable in a subsequent (Elzahaby, 2021).

In addition, it can diminish the measurement errors while using numerous indicators by establishing that all individual indicators are measured by the same underlying construct by CFA (Elzahaby, 2021).

Under the CB-SEM approach, the study of casual relationships between variables allows the calculation of direct, indirect, and total effects between variables (Elzahaby, 2021).

2.3.2. Partial least square

PLS-SEM become more common in recent years (Dash & Paul, 2021; Reinartz et al., 2009) and works with prediction-based studies (Dash & Paul, 2021) that apply a variance-based approach, using nonparametric data, allowing the use of reflective or formative constructs (Sarstedt et al., 2014). In fact, the PLS-SEM is often preferred when formative constructs are used (Hair Jr, et al., 2014), with the main objective to maximize the

explained variance in the dependent variables and to check the quality of data on the model (Dash & Paul, 2021).

In general, researchers adopt PLS-SEM when: a) indicators distribution are unknown; b) the goal is to predict and theorize; c) the dimension of the sample is limited, and d) preventing inappropriate solutions due to the lack of identification and convergence issues (Hair et al., 2014; Nitzl, 2016; Reinartz et al., 2009).

2.4. Key Theories

Many theories (e.g., agency theory, information economics theory, structuration theory, actor-network theory, and goal setting theory) are used to provide solid framework to several MAR issues to support causes, effects and various interrelationship (Malmi & Granlund, 2009). Considering that OP is one subtopic of MA, this subsection discusses whether some theories impact on performance.

Contingency theory is one of the most common theories in MAR and is used to evaluate performance after an event. Under such approach, a firm is seen as an open system influenced by internal and external factors. It assumes that there is no general best structure of an organization and firms need to develop their own structure (Burkert et al., 2014; Cheffi et al., 2021), leading the OP conditioned to the organizational context and structure (Cadez & Guilding, 2008). This type of organic structure is more suitable for firms in a highly uncertain environment (Uyar & Kuzey, 2016a).

In 1990s decade some academics supported the idea that organizations could only practice two-way communication to resolve conflicts, with the objective of being the most effective and ethical possible. However, this was not always achievable. Some academics suggest that the problem solving within organizations requires discussions with their entire public, and this communication can be affected by external factors like economic, social, and political. This understanding led the current version of the contingency theory with a matrix of 87 factors (Pang et al., 2023).

Another well-known theory used in this domain is the stakeholder theory. In the past, was assumed that relations between general stakeholders and the organization are needed as they can increase the shareholders wealth in the long term, shareholders wealth

maximization (Goyal, 2022). This idea was refused by Freeman in 1984, who develops the stakeholder theory, highlighting that all the relationships between an organization and its environment are important to help executives to manage their organization in a more efficient way (Freeman, 1984). Stakeholder theory focus on the importance of awareness of both shareholders and stakeholders (Mohd Sofian & Muhamad, 2020; Oduro & Haylemariam, 2019). Every stakeholder impact, directly or indirectly, the actions and activities of an organization (Moufty et al., 2021; Oduro & Haylemariam, 2019), that can lead to a better FP when the engagement is positive (Deb et al., 2022).

The resource-based theory has origins from at least four sources: the traditional study of distinctive competencies, Ricardo's analysis of land rents, Penrose, and the study of the antitrust implications of economics (Barney & Clark, 2007). The first source suggests that a key element for a better performance were the general managers, high-quality general managers lead to superior performance. This theory was criticized for the subjectivity of what makes a high-quality manager and for not considering others important factors that can influence performance (Barney & Clark, 2007). Ricardo's analysis of land rents argues that when the supply is inelastic, a factor of production can generate surplus income beyond what is necessary to engage that factor in production ,but did not take into account a possibility of shift in the demand and technical development (Barney & Clark, 2007). Penrose suggests that organizations are administrative framework that connects and coordinate activities of various individuals and groups and are package of productive resources (Barney & Clark, 2007; Penrose, 2009). The last source was focused on the antitrust regulations and implications on the economy, saying that a superior performance in not necessarily related to anticompetitive activities, and that can be an outcome of high uncertainty with luck or anomalous insight by the management (Barney & Clark, 2007). Contemporary, resource-based theory claims that a business competitive performance is built on the use of its resources (Elzahaby, 2021; Fikri et al., 2022), tangible and intangible (Barney & Clark, 2007), allowing a competitive advantaged if have the access to unique resources (Maiga et al., 2013).

Chapter 3 METHODOLOGY

3.1. Systematic Literature Review

The aim of a SLR is to help establish a strong knowledge base by collecting knowledge from a sum of studies (Tranfield et al., 2003), allowing the researcher to find answers to questions that cannot be found with a simple literature review (Page et al., 2021). This methodology should be able to be duplicated, exclusive, algorithmic, and aggregated, being a source of scientific and transparent knowledge of a range of settings and empirical methods without any bias (Denyer and Tranfield, 2009).

In contrast with the SLR, the traditional literature review does not follow a pre-determined process and ignores the justification of the selected studies (Slavin, 1986). The SLR methodology is often used by researchers as it provides a synthesis based on current data, followed by a rigorous process that ensures quality conclusions and suggestions for future research (Rojon, et al., 2021).

3.2. Process of SLR

The SLR is composed by five different stages: planning, locating studies, studies selection, analysis, and synthesis, and discussing the results (Tranfield et al., 2003). In the first stage, it is important to identify the importance of the review that is about to be written, making a complementary proposal and creation of a guideline. Locating studies stage focus on gather research on the subject matter, using keywords and search strings on databases. In the third stage, it is defined which studies are relevant from the search done before, by applying exclusion and inclusion criteria. In this stage is important to establish a quality assessment protocol, with the objective to choose the best articles for the SLR (Rojon et al., 2021). The fourth stage has the purpose of analyzing, interpreting, summarizing and, if possible, connecting different literatures of the selected studies. In the end, in the final stage, a summarization of all the research that was done, the limitations found while doing it, and what is missing in the literature, proposing future research topics (Tranfield et al., 2003).

In this dissertation, the SLR will be grounded on Denyer and Tranfield (2009) method, represented in figure 1. The first three phases are contained in the current chapter, whereas the remaining phases are included in chapter 4 and 5 of this thesis.

Figure 3.1 SLR Stages

3.2.1. Planning the review

Planning the review is divided in three phases: definition of study, scoping study and a panel of consultants (Tranfield et al., 2003).

3.2.1.1. Definition of Study

Before starting the search for the SLR, it is necessary to define the study that is about to be initiated and why the subject is chosen. In this case the chosen subject is organization performance research conducted with the aid of structural equation modeling.

The master classes were important to understand in a more comprehensive way the use and importance of accounting in the decision-making process of stakeholders and its impact on organizational performance. The full understanding of organizational performance become an interesting topic that I decided to explore in the master thesis. After some initial readings on this topic, it became clear that there is no consensus about the best way to evaluate performance and that the research on latent variables is likely to provide important inputs on this issue.

3.2.1.2. Scoping Study

On this phase, it is necessary to understand the amount and importance of the literature, so the researcher can define the research topics and plan the investigation (Tranfield et

al., 2003). The previous chapter presented the scoping study by focusing on the most important issues related to organizational performance research and the SEM.

3.2.1.3. Panel of Consultants

Prior to the SLR it is necessary to gather a panel of advisors specialized in the areas of study, both in methodology and theory. In fact, this panel has the purpose of guiding and helping the researcher with their academic insight and expertise (Denyer & Tranfield, 2009; Tranfield et al., 2003). The panel in the thesis is constituted by:

- Professor Rubén Peixinho (supervisor) – Assistant Professor and Director of the Master Course in Accounting at Faculty of Economic, University of Algarve, and a member of the Center of Studies and Advanced Training in Management and Economics (CEFAGE). He has a Master of Science degree (MSc) in Corporate Finance from the University of Algarve, an MSc in Management Research from Cranfield University, and a Doctorate of Philosophy degree (PhD) in Management with a specialization in Accounting and Finance from the University of Edinburgh. His main research interests are in market-based accounting research, financial distress, security analysis, financial performance, and costing systems.

- Professor Carlos Cândido (co-supervisor) – Assistant Professor and Director of the Master Course in Management, Entrepreneurship and Innovation at Faculty of Economic, University of Algarve, and coordinator of the CEFAGE-UAlg and member of Research Centre for Tourism, Sustainability and Well-being (CinTurs). He has an Msc in Management and Strategy from Instituto Superior de Ciências do Trabalho e da Empresa - University Institute of Lisbon and a PhD in Strategic Management from Sheffield University. His main research interests are business strategy, quality management and ISO 9001.

3.2.2. Locating studies

This section discusses the process from the chosen databases to final sample of data based on selected keywords, search strings and exclusion and inclusion criteria.

3.2.2.1 Databases

This SLR uses two databases for collecting studies: the Web of Science (WoS) and Scopus. The WoS is an independent global database with the most trustworthy publications on a big range of subjects (Clarivate, n.d.) whereas Scopus is an interdisciplinary database with a big variety of publication (Elsevier, n.d.).

3.2.2.2 Keywords

Keywords and search strings related to SEM were selected based on the scoping study of this thesis. The scoping study also reveals that there are several terms related to performance (e.g., financial performance, non-financial performance, environmental performance, social performance). Therefore, this study uses "performance" as the only keyword to ensure that all the relevant studies are identified regardless the nature of the performance. Table 3.1 presents the keywords and search terms used.

To ensure the use of high-quality studies in the accounting domain, this thesis works exclusively with articles published in the 89 academic journals classified in the accounting field that are listed in the "Academic Journal Guide" (ABS) 2021.

Table 3.1 Keywords and search terms

Structural Equation Modeling	Organizational Performance
• PLS-SEM • Partial least square • CB-SEM • Covariance based • Structural equation modeling • SEM	• Performance

3.2.2.3 Search String

The search string combined the selected keywords for SEM and Organizational Performance topics. This search string was applied to the titles and abstract of papers. A summary of the search string is presented on table 3.2.

Table 3.2 Search string

Search String	Objective
(pls-sem OR “partial least square” OR cb-sem OR "covariance based" OR "structural equation modeling" OR sem) AND (“performance”)	Studies on corporate performance that utilize SEM methodology

3.2.3 Studies selection and evaluation

The guarantee of transparency and replicability of the SLR requires the definition of exclusion and inclusion criteria (Denyer & Tranfield, 2009), to narrow down the papers that do not address the purpose of this study.

3.2.3.1 Exclusion and Inclusion criteria

Exclusion and inclusion criteria aim to limit the number of articles to the ones that are related with the purpose of the study. The exclusion criteria defined in this thesis are:

1. Duplicate: The use of two different databases originates duplicate papers;
2. Papers that do not use structural equation modeling: The purpose of the study is to analyze the contribution of SEM in the Organizational Performance literature. Therefore, only papers that used the methodology are included;
3. Papers that do not focus on organizational performance: Considering the purpose of this thesis, only studies that analyze and measure organizational performance are selected;
4. Papers that do not focus on the private sector: Given the differences between private and public sector, only papers related to the private sector are selected to ensure the robustness of the results.

It is important to emphasize that these exclusion criteria are applied to all the papers classified in the accounting field that are published in journals that belong to the ABS ranking. Therefore, all the papers published outside this scope are automatically excluded from the initial search. Table 3.3 resumes this process and shows that of the initial 124 papers identified without duplications, 74 are removed for different reasons.

Table 3.3 Application of sample criteria

No. of studies after exclusion of duplicates	124[1]
No. of studies excluded with criteria 2	3
No. of studies excluded with criteria 3	55
No. of studies excluded with criteria 4	16
Final no. of sample to the SLR	50

After applying the exclusion criteria, the inclusion criteria were applied in the 50 papers. The inclusion criteria were defined as follows:

1. Contribution to the Research Field: The article makes a significant and evident contribution to the existing literature in the studied field;

2. Transparency of Models and Systems: The models and systems employed in the research are clearly articulated and built upon strong foundations;

3. Clarity in Variables, Parameters, and Theories: All variables, parameters, and theories are presented in a lucid and unambiguous manner.

4. Explicit Assumptions with Justification: The assumptions made in the studies are explicitly defined and accompanied by valid justifications.

Upon examination of the inclusion criteria, it was found that all the articles met the criteria, leaving the final sample with 50 accounting papers published in journals belonging to the ABS ranking that specifically address organizational performance using the SEM. The final sample will be subject to a rigorous analysis.

[1] The initial sample was extracted from both databases at 28/10/2022.

Chapter 4 RESULTS

This section focus on the analysis of the 50 papers that were selected based on the extraction and application of criteria previously mentioned.

4.1. Descriptive Analysis

Figure 4.1 presents the papers distribution over the years. As can be seen, SEM is becoming more common in corporate performance research, being 2016, 2021 and 2022 the years with the most papers.

Figure 4.1 No. of papers by year of publication

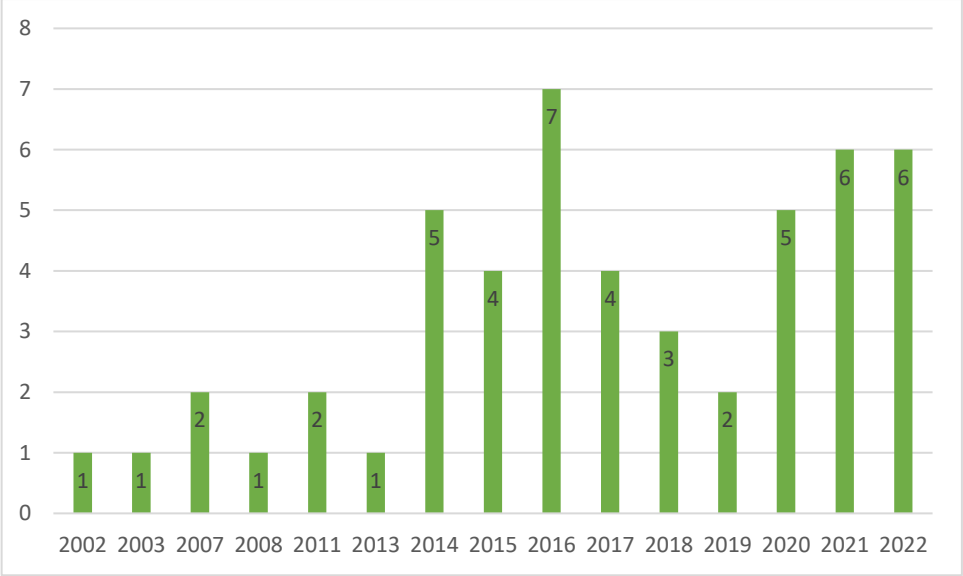


Table 4.1 provides the number of papers published in each accounting journal belonging to the ABS. The results show that the 50 studies are published in 29 different journals. The two most representative journals are the Journal of Accounting and Organizational Change and the Journal of Management Control. Table 4.1 also presents the ABS rating of each journal and reveals that most of the articles (33 or 67%) are published in journals rated 2, 5 articles (10%) are published in journals rated 3, and one articles (2%) is published in a journal rated 4*.

Table 4.1 List of Journals and ABS classification

Journals	No.	ABS 2021 list
Journal of Accounting and Organizational Change	5	2
Journal of Management Control	5	2
Journal of Islamic Accounting and Business Research	4	1
Sustainability Accounting, Management and Policy Journal	4	2
International Journal of Accounting Information Systems	3	2
Asian Review of Accounting	3	2
Accounting, organizations and society	2	4*
Advances in Management Accounting	2	2
International Journal of Accounting, Auditing and Performance Evaluation	2	2
Meditari Accountancy Research	1	1
Accounting forum	1	3
Accounting Research Journal	1	2
Advances in accounting	1	2
Advances in Environmental Accounting and Management	1	1
Asia-Pacific Journal of Accounting and Economics	1	2
Australasian accounting, business and finance journal	1	1
Australian accounting review	1	2
British accounting review	1	3
European Accounting Review	1	3
International journal of accounting and information management	1	2
International journal of disclosure and governance	1	2
International journal of managerial and financial accounting	1	2
Journal of Accounting in Emerging Economies	1	2
Journal of applied accounting research	1	2
Journal of International Accounting, Auditing and Taxation	1	3
Management Accounting Research	1	3
Managerial Auditing Journal	1	2
Revista de Contabilidad-Spanish Accounting Review	1	1
Revista Espanola de Financiacion y Contabilidad	1	1

Table 4.2. presents the percentage of papers that mention each theory. There is a wide range of theoretical framework, with a total of 31 different theories express in 37 studies. The most prevalent theory is the contingency theory, being mentioned 13 times in different papers, followed by resource-based theory with 7 and stakeholder theory mentioned 6 times. Importantly, several papers have their theoretical background grounded on more than one theory. The other 12 articles did not mention any theoretical framework.

Table 4.2 Theoretical frameworks cited

Theories	No.	Percentage (%)
contingency theory	13	21,31%
resource-based theory	8	13,11%
stakeholder theory	6	9,84%
agency theory	3	4,92%
institutional theory	2	3,28%
legitimacy theory	2	3,28%
organizational theory	2	3,28%
theory of constraints	2	3,28%
upper echelons theory	1	1,64%
activity-based cost theory	1	1,64%
echelon theory	1	1,64%
economic theory	1	1,64%
ethical investing theory	1	1,64%
goal theory	1	1,64%
good management theory	1	1,64%
grounded theory	1	1,64%
information process theory	1	1,64%
intellectual capital theory	1	1,64%
knowledge-based theory	1	1,64%
organizational control theory	1	1,64%
paradox theory	1	1,64%
positive accounting theory	1	1,64%
rational expectation theory	1	1,64%
resource dependence theory	1	1,64%
role theory	1	1,64%
signalling theory	1	1,64%
social–emotional wealth (SEW) theory	1	1,64%
theory of complementarities	1	1,64%
theory of cost accounting	1	1,64%
theory of knowledge-view of the firm	1	1,64%
transformational leadership theory	1	1,64%

The next subsection discusses the results of these 50 papers and is organized into three different performance groups: a) Performance indicators; b) Determinants of performance and c) Future research opportunities.

4.2. Discussion of the results

This subsection discusses the results of the 50 papers included in the sample. The discussion of the results is organized in three main topics. Firstly, it covers the

performance indicators that are more commonly used to measure organizational performance, financial performance and non-financial performance. Secondly, it discusses the most important determinants of performance that are identified in the literature. Finally, it presents the most important opportunities for future research that researchers may find interesting to explore over the next years.

4.2.1. Performance Indicators

4.2.1.1. Organizational Performance

Most of the papers address OP as a dependent latent variable that is used to capture different dimensions of performance in a single indicator. This OP is usually measured by a combination of several indicators that can be financially driven or non-financially driven. In this setting, different indicators are used and, depending on the specific objectives of the study, several quantitative and qualitative metrics are used. OP is thus usually analyzed as a construct that incorporates elements from one or two different constructs such as financial performance (FP) and non-financial performance (NFP). The most common indicators used to measure OP are product or service quality, customer satisfaction, ROI and profitability (e.g., Cadez & Guilding, 2008; Cheffi et al., 2021; Kalkhouran et al., 2017b; Rao et al., 2015). Importantly, operational performance is usually analyzed similarly to OP.

From the sample of 50 papers, there are 24 that focus on OP without mentioning the financial or non-financial nature of the indicators. Appendix 1 presents all these articles together with the number of citations, methodology used, indicators used to measure organizational performance and their main results. It is important to mention that some papers do not explicitly present their OP indicators (e.g., Kalkhouran et al., 2017a; Laallam et al., 2022; Tuanmat & Smith, 2011) whereas others have their focus more oriented to financial indicators (Schaefer & Guenther, 2016) and others more oriented to non-financial indicators (Rao et al., 2015). Most of the papers exploring OP combine both financial and non-financial indicators.

The specific indicators used for each dimension of performance are listed in the next subsections that specifically discuss papers that focus explicitly on each dimension. It is still possible to observe, by analyzing Appendix 1, that there are three articles that still do

not mention the indicators used (e.g., Kalkhouran et al., 2017a; Laallam et al., 2022; Tuanmat & Smith, 2011),

The sample papers investigate OP using different perspectives such as changes in management accounting information (e.g., Baines & Langfield-Smith, 2003), use of strategic MA (e.g., Cadez & Guilding, 2008), market orientation (e.g., Cadez & Guilding, 2008; Fikri et al., 2022) or CSR (e.g., Bhuiyan et al., 2020; Cheffi et al., 2021; Sánchez-Hernández et al., 2019). Similar perspectives, with different studies can result in complementary conclusions, for example, the research conducted by Bhuiyan et al. (e.g., 2020), Cheffi et al. (e.g., 2021) and Sánchez-Hernández et al. (e.g., 2019). This relation between different works will be discussed in chapter 4.2.2.

4.2.1.2. Financial Performance

There are 27 articles in the sample papers that explicitly focus on FP. Whereas the papers mention in the previous subchapter, the 27 papers have explicitly mention indicators of FP and have conclusion regarding it. These papers are resumed in appendix 2 using the same information as for those identified in the OP. There are several financial indicators used in the sample papers. The most common used indicators are ROI (e.g., Cadez & Guilding, 2008; Nuhu et al., 2021), and profitability (e.g., Ramachandran et al., 2018; Schaefer & Guenther, 2016), mention 8 times in different studies. In appendix 3 is a table with all financial indicators distinguished by four subtypes, economic, cash, market, and others, with the papers mention them. Indicators related to economic, cash and market performance are outlined below.

Economic performance indicators identified in the sample papers are ROI (e.g., Baines & Langfield-Smith, 2003; Cadez & Guilding, 2008; Nuhu et al., 2021), profitability (e.g., Laitinen, 2011, 2014; Oyewo et al., 2022), profit (e.g., Bhuiyan et al., 2020; Ismail, 2016; Jarrar & Smith, 2014), return on sales (e.g., Maiga et al., 2013; Scarpellini et al., 2020), cost control (e.g., Jarrar & Smith, 2014; Frare et al., 2022), ROA (e.g., Dasgupta & Singh, 2021; Ramachandran et al., 2018); changes in revenues (e.g., Antón et al., 2016), profit growth (e.g., Schaefer & Guenther, 2016), margin of sales (Cadez & Guilding, 2008), cost of goods sold, total supply chain cost (Caglio, 2018), cost reduction and saving (Cheffi et al., 2021), profit margin, sales revenue (Deb et al., 2022), manufacturing cost,

operation profit (Kalkhouran et al., 2017b), economic value added (Krishnan et al., 2014), profit per sales ratio (Laitinen et al., 2016), stability of business activities (Laitinen, 2011), EBIT to net sales ratio (Laitinen, 2014), profitability return on average assets (Moufty et al., 2021), return on capital employed (Oduro & Haylemariam, 2019), operational profit over revenue from ordinary activities, operation costs over ordinary income, resources generated by ordinary activities over revenue from ordinary activities, ROI of human capital (Pérez-Méndez & Machado-Cabezas, 2015), ROE (Ramachandran et al., 2018), pre-tax profits, profit margin on sales (Sánchez-Hernández et al., 2019), budget results (Sandalgaard & Nielsen, 2018), changes in expenses, comparative costs, profit before tax from operations, total cost to net (Sands et al., 2016), total costs (Vetchagool et al., 2020), capacity utilization, and labor productivity (Cheffi et al., 2021).

Cash performance indicators are usually related to liquidity and solvency. Different indicators include cash flows from operations (e.g., Frare et al., 2022; Jarrar & Smith, 2014), cash flows per average total assets (Dasgupta & Singh, 2021), sales development (Fikri et al., 2022), cash flow growth (Kalkhouran et al., 2017b), liquidity, solvency (Krishman et al., 2014), equity to total sales ratio, quick ratio (Laitinen, 2014), turnover of assets (Maiga et al., 2013), funding the percentage of customers deposits in total funding, liquidity percentage of net loans in total assets, operational percentage of non-interest income in total income (Moufty et al., 2021), sales return (Sandes et al., 2016), and sales (Nuhu et al., 2021; Vetchagool et al., 2020).

Market performance indicators identified in the sample papers are market share (e.g., Deb et al., 2022; Oyewo et al., 2022), market development (e.g., Frare et al., 2022; Jarrar & Smith, 2014), Tobin's Q (e.g., Oyewo et al., 2022; Sharif & Ming Lai, 2015), earnings per share (e.g., Bataineh et al., 2022), price to earnings, market -to-book value ratio (Elzahaby, 2021; Bataineh et al., 2022), market return (Dasgupta & Singh, 2021), market value added (Krishnan et al., 2014), Tobin's Q estimation (Sharif & Ming Lai, 2015), sales growth (e.g., Young et al., 2007; Reinking et al., 2020), and development of new products (Frare et al., 2022).

On top of these indicators, there are some financial indicators used to which they do not pertain with the three types mention before, such as per managed earnings (Elzahaby, 2021), growth (Laitinen, 2011), personal development (Frare et al., 2022), overall financial performance (e.g., Deb et al., 2022; Reinking et al., 2020), sales goal (Bhuiyan

et al., 2020), productivity (e.g., Caglio, 2018), profit growth (e.g., Antón et al., 2016; Laitinen et al., 2016), risk taking capacity, resources optimization, process optimization (Cheffi et al., 2021), process effectiveness (Vetchagool et al., 2020), and average total assets (Dasgupta & Singh, 2021). It is substantial to mention that some articles do not explicitly say each indicator they use (Abdel-Maksoud et al., 2021; Mohd Sofian & Muhamad, 2020) or simply say that they use indicators from BSC but do not mention which ones (Krishnan et al., 2014).

Several issues are analyzed to investigate their relationship with financial performance. Some of these issues are related to understand the impact of the ABC method (e.g., Cagwin & Bouwman, 2002; Maiga & Jacobs, 2007), the environmental capabilities (e.g., Scarpellini et al., 2020) information systems (e.g., IS) (e.g., Pérez-Méndez & Machado-Cabezas, 2015) or intellectual capital (e.g., Bataineh et al., 2022; Young et al., 2007).

4.2.1.3. Non-financial performance

Non-financial information has received great attention from academics and organizations in the past few years (e.g., Monteiro etal., 2022). The analysis of the sample suggests that NFP is usually related to social, environmental, and marketing performance. There are 10 articles in the sample papers that directly study non-financial performance. Importantly, from these 10 papers, 4 studies address the specific topic of environmental performance. The contents of these studies are summarized in appendix 4, utilizing the same information as that employed for those identified in the OP.

Appendix 5 is a table with all non-financial indicators categorize into four subtypes, marketing, social, environmental and other. Marketing indicators were divided into three groups, corporate indicator, products or service indicators, and customer indicators. Social into two groups community indicators and employee-related indicators. Environmental was divided into specific indicators and general indicators. It is important to mention that the studies in the sample only mention the three big groups, the others division were based on comparation and analyses of the nature of the indicator.

Marketing corporate indicators identified are corporate image or reputation (e.g., Cheffi et al., 2021), market share (e.g., Laitinen et al., 2016), sales (Oduro & Haylemariam, 2019), and corporate culture (Sánchez-Hernández et al., 2019).

Marketing products or service indicators are products or service quality (e.g., Bhuyan et al., 2020; Cadez & Guilding, 2008), on time deliveries (Caglio, 2018; Kalkhouran et al., 2017b), development of new products (Jarrar & Smith, 2014; Kalkhouran et al., 2017b), delivery performance, fill rate, order fulfillment (Caglio, 2018), delivery schedules (Cheffi et al., 2021), development of cost-efficient product and/or services (Diefenbach et al., 2018), rework (Duh et al., 2014), successful new products (Fikri et al., 2022), order cycle time (Rao et al., 2015), and deadline (Antón et al., 2016).

Marketing customer indicators is identified as customer satisfaction (e.g., Fikri et al., 2022; Monteiro et al., 2022), customer retention (e.g., Bhuiyan et al., 2020; Rao et al., 2015), new customers (e.g., Diefenbach et al., 2018; Laitinen et al., 2016), customer service (Frare et al., 2022; Rao et al., 2015), repeat purchases (Fikri et al., 2022), customer loyalty (Oduro & Haylemariam, 2019), know-how and accumulated experience (Sánchez-Hernández et al., 2019).

Social community indicators are the follow political-public affairs (Baines & Langfield-Smith, 2003), social responsibility (Monteiro et al., 2022), labor law compliance, donations to charity, and participation in community activities (Nuhu et al., 2021).

Social employee-related indicators are personnel development (e.g., Baines & Langfield-Smith, 2003; Jarrar & Smith, 2014), employee retention (e.g., Monteiro et al., 2022; Sánchez-Hernández et al., 2019), employees satisfaction (Cheffi et al., 2021; Sánchez-Hernández et al., 2019), employee morale (Duh et al., 2014), employee growth (Ismail, 2016), working condition (Monteiro et al., 2022), respect and fairly treatment, overtime work, employee turnover (Nuhu et al., 2021), employee creativity (Rao et al., 2015), and share values (Sánchez-Hernández et al., 2019).

Environmental specific indicators focus on a particular part of environmental subjects. Different indicators include informed decision-making, assisting with internal and external reporting, increased competitive advantage (Deb et al., 2022), material costs, levels of waste, levels of emissions, costs associated with cleaning up environmental damage, fines paid and remediation costs regarding environmental damage, filters and controls on emissions and discharges, residue recycling (Nuhu et al., 2021), results for waste management, results for carbon trading, results for water conservation, results for greenhouse gas emissions, estimate level of pollutions emitted after using pollution-

control technology (Rae et al., 2015), compliance with the requirements or expectations of standard, energy input, relationship with the community, the solid waste output, output of air emissions, maintenance for the installation, operation, facilities and facilities for physical equipment, liquid waste output, raw materials input, water input, implementation of environmental policies and programs, auxiliary materials, environmental conditions locally, regionally and nationally (Solovida & Latan, 2017).

Environmental general indicators are a broader indicator of the environment, such as impact on the environment (Cheffi et al., 2021), improved EP (Deb et al., 2022), and financial impact (Solovida & Latan, 2017).

There are other indicators that can be associated with non-financial indicators but does not fit any other group mention before, being innovation (Cheffi et al., 2021; Rao et al., 2015), knowledge transfer, flexibility, and adaptability (Cheffi et al., 2021) and research and development activity (Kalkhouran et al., 2017b).

With this study is possible to verify that financial economic indicators seem to be the ones most used by researchers, but most of the time the distinction between the different types is unclear and can be debatable. The same thing happens to the NFP indicators, where there is a clear preference for a broad number of environmental indicators, with some of them also being considered as marketing or social indicators. Also, when comparing the two of them, financial and non-financial, it is possible to detect that there are some debates regarding the type of indicators. For example, sales as cash indicator (e.g., Vetchagool et al., 2020) and marketing corporate indicator (e.g., Oduro & Haylemariam, 2019), and market share as market indicator (e.g., Deb et al., 2022; Frare et al., 2022) and marketing corporate indicator (Laitinen et al., 2016; Oduro & Haylemariam, 2019). Environmental indicators, despite being considerate as a type of non-financial performance, some articles use indicators that are related to financial performance, such as financial impact (e.g., Solovida & Latan, 2017), and costs associated with environmental damage (e.g., Nuhu et al., 2021).

This study demonstrates that there is not a clear distinction between the different types of indicators. The vague differentiation between the types of indicators can be the result of the background research based on and the authors own opinion. The categorization into some groups, derived from the literature, along with the creation of novel groups, serves

as an attempt to structure the vast array of information pertaining to organizational indicators. Furthermore, it aims to facilitate future research endeavors in the collection of indicators for specific types of performance.

4.2.2. Determinants of performance

The analysis of the 50 papers in the sample reveals that investigating performance issues can be made in different ways. One of the most important issues is to understand what drives performance in the corporate domain. Most of the studies continue to use financial performance indicators although non-performance indicators are assuming a more relevant role in the recent years. The number of papers that use CB-SEM as their methodology is 26 whereas the number of papers using PL-SEM is 24. The sample papers have investigated the impact of several issues at the performance level. This subsection discusses such issues to clarify what are the determinants of corporate performance.

Corporate Social Responsibility

Corporate Social Responsibility (CSR) issues are one of the investigated topics that may impact at the overall performance. There is evidence that CSR initiative can improve OP (Cheffi et al., 2021; Sánchez-Hernández et al., 2019) and such improvement is strengthened when accountants participate in the CSR management (Cheffi et al., 2021). In addition, CSR can contribute to an unsuppressed effect on the impact between market orientation and FP (Oduro & Haylemariam, 2019). In fact, market orientation is perceived to have a positive relationship with FP (Oduro & Haylemariam, 2019), OP (Cadez & Guilding, 2008; Fikri et al., 2022) and marketing performance (Oduro & Haylemariam, 2019). However, there is also evidence that CSR practices, in general, have a negative impact on FP and OP, despite minimizing illegal activities on both FP and NFP (Bhuiyan et al., 2020). This conclusion, contrary to what was mentioned by Cheffi et al. (2021) and Sánchez-Hemández et al. (2019), can be caused by the different quantity and types of indicators used to measure variables, and the sample used. Cheffi et al. (2021) used 10 indicators, as Saánches-Hermández et al. (2919) and Bhuiyam et al. (2020) applied 44 and 56 respectively to analyse CSR. It is also important to mention that Cheffi et al. (2021) and Saánches-Hermández et al. (2919) consider objective and subjective

constructs to measure OP, while Bhuiyam et al. (2020) only use subjective. Another factor is the geography and culture of observations, Cheffi et al. (2021) focus on Emirate of Abu Dhabi, Saánches-Hermández et al. (2919) on Guinea-Bissau and the Ivory Coast, and Bhuiyam et al. (2020) on Bangladeshi. All this factors together could lead to distinct conclusions.

In addition, despite the results that social performance can increase FP (Nuhu et al., 2021), the specific case of bank institutions suggests that external social effects impact negatively on bank liquidity, but not on profitability, operation, and funding (Moufty et al., 2021).

Sustainability practices

Environmental activities, environmental analysis, environmental cost analysis and environmental ABC can direct and indirect impact TBL performance through two sustainability strategies: social and environmental (Nuhu et al., 2021). At the environmental level, businesses that introduce circular economy-related activities are influenced by the analyzed capabilities that can improve EP and FP in a circular economy context (Scarpellini et al., 2020). Environmental management accounting ca(Deb et al., 2022; Solovida & Latan, 2017)., 2022; Solovida & Latan, 2017) through the positive relationship between environmental strategies and EP (Solovida & Latan, 2017). EP, alongside with work practices process, influence the regulatory and environmental value-creating process (Rae et al., 2015). There is evidence that innovation, improvement, and work practices (Rae et al., 2015), knowledge management and energy efficiency have a significant impact with EP (Deb et al., 2022). Importantly, an increase in EP can lead to an increase in FP (Deb et al., 2022; Nuhu et al., 2021). Primary stakeholders are significantly linked with eco-control EP determinants and eco-controls incentives. Eco-controls incentives and eco-control systems are likely to have a positive effect on EP (Abdel-Maksoud et al., 2021). However, despite the evidence that a strong sustainability accounting practice improves and preserve FP (Oyewo et al., 2022), some studies claim that there is not a strong relationship between sustainability and FP in the same year, but sustainability can have an impact on profitability at a later period (Moufty et al., 2021).

Strategy

Most of the papers addressing the relationship between strategy and performance suggest that business strategies can increase financial performance (Krishnan et al., 2014) and organizational performance (Tuanmat & Smith, 2011). In fact, the effectiveness process of strategic planning can influence OP, when middle managers participate in the process and top managers have a dominant role in it (Schaefer & Guenther, 2016). Moreover, the efficient usage of strategic MA can lead to an increase in OP (Cadez & Guilding, 2008) and this impact is perceived to be greater when the CEO has high levels of education (Kalkhouran et al., 2017a). However, despite the success of decision making can lead to improvement on NFP (Monteiro et al., 2022), the participation of an accountant in strategic decision making in not associated with OP (Cadez & Guilding, 2008). Also, attention to strategically aligning has a strong and consistent relationship with FP (Reinking et al., 2020).

Information systems

Information systems are also identified as a determinant of corporate performance. For instance, information systems quality and specially information systems strategy impacts positively on FP (Pérez-Méndez & Machado-Cabezas, 2015). Importantly, there is also evidence that IS maturity is positively related to OP (Rao et al., 2015) and information technology applications may impact on FP by enabling other business processes and capabilities (Maiga et al., 2013). Conversely, there is a negative relationship between changes on management accounting systems and FP (Laitinen, 2011), although MA information based on different perspectives and broad information can have an effective relationship with FP (Laitinen, 2014). The use of this information by CEOs and managers can also influence FP (Laitinen, 2014). The focus on non-financial information do not influence NFP (Monteiro et al., 2022), but can influence OP (Baines & Langfield-Smith, 2003).

Management control systems

Management control systems are also identified in the sample papers as a potential determinant of corporate performance. For instance, there is evidence that the adoption of a management control system package can directly improve FP (Frare et al., 2022; Laitinen, 2011) and mediate the positive influence on entrepreneurial orientation and FP. In addition, the cost management control systems, together with cost efficiency, have a positive effect on OP (Diefenbach et al., 2018) with sophisticated cost practices acting as a mediator of between perceived environmental uncertain and OP (Kalkhouran et al., 2017b). Despite that the cost system design by itself do not have an influence on NFP, it produces an indirect impact through management accounting practices (Uyar & Kuzey, 2016b). In addition, there is evidence that eco-control systems do not have a significant influence on FP (Abdel-Maksoud et al., 2021).

Costing systems are also investigated in this domain and the evidence is mixed on its relationship with corporate performance. In fact, although some evidence that the Activity Based Costing (ABC) method do not affect ROA or ROS (Maiga & Jacobs, 2007; Vetchagool et al., 2020), there is evidence that it can improve ROI (Cagwin & Bouwman, 2002) and overall FP through the improvement of operational performance (Vetchagool et al., 2020) and generic manufacturing performance measures, product quality and costs (Maiga & Jacobs, 2007). The improvement of the manufacturing performance measures will, also, improve the FP (Maiga & Jacobs, 2007).

There are also conflicting results on the impact of budgeting practices in performance. In fact, there is evidence of a positive impact on NFP (Uyar & Kuzey, 2016a) and OP (Sandalgaard & Nielsen, 2018), although some evidence of non-significant impact (Laitinen et al., 2016). This disagreement can be related to the use of different indicators to measure performance (Laitinen et al., 2016; Sandalgaard & Nielsen, 2018; Uyar & Kuzey, 2016a)

Intellectual capital

The relationship between intellectual capital and performance is a relevant topic in the sample papers as it is perceived as having an important role in this domain. In fact, there is evidence that structural capital, spiritual capital and human capital have a significant relationship with OP (Laallam et al., 2022). Human capital is, also, positive associated

with FP (Bataineh et al., 2022) and EP, when fostering higher affective commitment among their employees, delivering targeted training, and putting in place efficient employee performance procedures (Rae et al., 2015). In addition, a greater adoption of an intellectual capital oriented corporate performance management system has a significant and positive indirect effect on FP through its association with intellectual levels (Young et al., 2007). However, relational capital, social capital and technological capital are identified as not having significant influence on OP (Laallam et al., 2022).

Innovation

There is evidence in the sample papers that, in general, innovation can be directly associated with a positive impact on OP in small and medium-sized enterprises within Indonesia's creative industries (Ismail, 2016) and an indirect positive relationship with OP in manufacturing Australian firms (Jarrar & Smith, 2014). At a more detailed level, some papers suggest that product innovation can positively influence both FP and NFP (Laitinen et al., 2016) and service innovation can impact on OP (Fikri et al., 2022). When focusing on a market perspective, literature posits that market performance, together with operating and cash performance can significantly influence the risk and managerial attitudes towards problematic and innovative searches (Dasgupta & Singh, 2021). In addition, the change in the culture of an organization towards CSR orientation can have an impact on performance mediated by innovation (Sánchez-Hernández et al., 2019).

Other issues

There are yet other factors that are less studied than those discussed previously that can influence FP and OP. At the FP level, previous studies suggest that FP can be positively influenced by Social Employee-Related process (Sands et al., 2016), corporate disclosure and transparency (Sharif & Ming Lai, 2015), by sales increase because of highly developed internal processes that are greatly valued by customers (Sands et al., 2016), by debt restructuring and reorganization plan (Laitinen, 2011), corporate governance quality and earnings quality (Elzahaby, 2021). Open book accounting has, also, a positive effect on FP and OP, with higher significance on FP (Caglio, 2018). At the OP level, studies

claim that can be affected by world-class manufacturing, management accountants' cross-functional participation (Duh et al., 2014), total quality management (Fikri et al., 2022), competition, advanced manufacturing technology (e.g., Tuanmat & Smith, 2011), knowledge application (e.g., Antón et al., 2016) and negative impacted by corporate governance (Ramachandran et al., 2018).

4.2.3. Opportunities for future research

A SLR allows the researcher to identify suggestions for future research that are both mentioned sample papers and are identified following a deep understanding of the topic. This section presents these research opportunities that were expressly stated by the sample studies, whereas there are seven studies without direct suggestion (e.g., Laitinen et al., 2016; Moufty et al., 2021; Oyewo et al., 2022; Tuanmat & Smith, 2011). In addition, some of the limitations addressed in these papers are also used to identify additional research opportunities.

Some papers mention that the size of the samples used in this research is small, leading to potential incorrect conclusions (Baines & Langfield-Smith, 2003; Deb et al., 2022; Laitinen, 2011; Pérez-Méndez & Machado-Cabezas, 2015; Ramachandran et al., 2018; Rao et al., 2015; Sandalgaard & Nielsen, 2018; Schaefer & Guenther, 2016; Solovida & Latan, 2017; Tuanmat & Smith, 2011). Another limitation was the characteristics of the samples as some articles focus only in one sector. With this, research suggest focusing on additional sectors (Antón et al., 2016; Bataineh et al., 2022; Cagwin & Bouwman, 2002; Deb et al., 2022; Elzahaby, 2021; Jarrar & Smith, 2014; Kalkhouran et al., 2017b, 2017a; Laallam et al., 2022; Maiga et al., 2013; Sánchez-Hernández et al., 2019; Vetchagool et al., 2020), countries (Antón et al., 2016; Dasgupta & Singh, 2021; Duh et al., 2014; Elzahaby, 2021; Mohd Sofian & Muhamad, 2020; Monteiro et al., 2022; Oduro & Haylemariam, 2019; Sánchez-Hernández et al., 2019; Vetchagool et al., 2020) , cultures (Diefenbach et al., 2018; Rao et al., 2015; Sands et al., 2016), market cycles (Dasgupta & Singh, 2021), organizations with different sizes (Cheffi et al., 2021; Monteiro et al., 2022) and the comparison of such results (Duh et al., 2014; Elzahaby, 2021) may lead to more robust conclusions.

Survey-based research was considerably applied, as this method is commonly utilized when SEM is implemented. This type of research has some limitations (Bhuiyan et al., 2020; Jarrar & Smith, 2014; Kalkhouran et al., 2017b, 2017a; Laitinen et al., 2016; Sandalgaard & Nielsen, 2018), that can be overcome by using more than one survey per organization (Caglio, 2018; Oduro & Haylemariam, 2019), a more detailed survey (Baines & Langfield-Smith, 2003), objective secondary data (Cheffi et al., 2021), multiple methods for collecting data, gather a random sample (Rao et al., 2015), or surveys to middle level management staff (Krishnan et al., 2014). In addition, the strength of some findings may be achieved by developing different types of studies (Abdel-Maksoud et al., 2021; Duh et al., 2014; Maiga & Jacobs, 2007; Vetchagool et al., 2020), such as longitudinal studies (Abdel-Maksoud et al., 2021; Baines & Langfield-Smith, 2003; Cagwin & Bouwman, 2002; Cheffi et al., 2021; Deb et al., 2022; Diefenbach et al., 2018; Frare et al., 2022; Laallam et al., 2022; Maiga & Jacobs, 2007; Nuhu et al., 2021; Pérez-Méndez & Machado-Cabezas, 2015; Rao et al., 2015; Scarpellini et al., 2020; Sharif & Ming Lai, 2015; Solovida & Latan, 2017; Vetchagool et al., 2020; Young et al., 2007), experimental studies (Laitinen, 2014), and qualitative studies (Duh et al., 2014; Frare et al., 2022; Solovida & Latan, 2017), including case studies (Duh et al., 2014; Kalkhouran et al., 2017b, 2017a; Laitinen, 2011, 2014; Nuhu et al., 2021; Solovida & Latan, 2017; Uyar & Kuzey, 2016a; Venkatraman & Ramanujam, 1986), interviews (Vetchagool et al., 2020), field studies (Duh et al., 2014), dyadic studies (Schaefer & Guenther, 2016), and fuzzy set qualitative comparative analysis (Solovida & Latan, 2017).

Future research should consider applying more complex models to include other variables (Maiga & Jacobs, 2007), such as more control variables (Oduro & Haylemariam, 2019; Vetchagool et al., 2020), objective measures (Antón et al., 2016) for FP (Abdel-Maksoud et al., 2021; Laitinen, 2011; Vetchagool et al., 2020), EP (Abdel-Maksoud et al., 2021), and to use blocks with reflective indicators (Laitinen, 2014). Researchers can also use or add different indicators for performance in firm and interfirm levels (Caglio, 2018), earning quality (Frare et al., 2022), corporate governance (Elzahaby, 2021), FP (Frare et al., 2022; Rao et al., 2015), NFP (Elzahaby, 2021), contingency factors (Krishnan et al., 2014), small reorganizing firms (Laitinen, 2011), entrepreneurial orientation (Frare et al., 2022), circular economy activities, environmental management accounting (Scarpellini et al., 2020), and strategic variables (Oduro & Haylemariam, 2019).

This systematic review of the literature also identified specific research opportunities that are related to the determinants of OP.

Corporate Social Responsibility

Some papers have suggested the exploration of other mediators between CSR initiatives and OP (Cheffi et al., 2021). This research could help us to understand how CSR practices are affected by corporate governance, organizational control systems, strategic directions, changing values, individual employee value (Bhuiyan et al., 2020), manufacturing firms' green supply chain management (Oduro & Haylemariam, 2019), oil production (Cheffi et al., 2021). Also, is important to understand how some dimensions of CSR practices, like minimizing illegal activities can have a positive impact on OP (Bhuiyan et al., 2020). Furthermore, it seems important to provide a comparative analysis of specific voluntary and mandatory CSR practices and their outcomes based on country and industry characteristics (Sánchez-Hernández et al., 2019), as well as their distinctions between private and public manufacturing firms (Oduro & Haylemariam, 2019). These settings may impact CSR reporting quality across various sectors in emerging economies (Oduro & Haylemariam, 2019).

Articles point the importance of analyzing the implementation of CSR practices by management to satisfy specific stakeholders' pressure groups, and to understand the effects of cultural traits on the role played by management control systems in translating CSR practices into performance outcomes. Another interesting topic would be studying the social contextual factors in CSR management in post-pandemic (COVID-19 pandemic) (Cheffi et al., 2021). Other suggestions are related with the impact of diverse strategic variables on the intricate nexus between CSR and market orientation, to dissect the dynamics of CSR communication and its integration with marketing strategies (Oduro & Haylemariam, 2019), and to explore and clarify the benefits associated with sustainability (Oduro & Haylemariam, 2019; Sánchez-Hernández et al., 2019), potentially influencing new approaches and attitudes towards CSR practices among firms (Sánchez-Hernández et al., 2019).

Sustainability practices

Suggested avenues for future research in the realm of sustainability practices encompass a range of interconnected themes. These include investigating the propensity of management to implement strategic changes aimed at satisfying specific stakeholder groups, fostering interdisciplinary research that explores the socio-political-managerial dynamics, examining the associations between firm performance and stakeholder pressures, and conducting analyses across industries with varying levels of environmental management control systems (Abdel-Maksoud et al., 2021). Moreover, research prospects extend to scrutinizing the role of alternative control mechanisms in mediating the impact of environmental accounting and management practices on TBL performance, assessing the influence of alternative environmental management accounting practices on various facets of TBL performance, and investigating the mediating roles played by specific internal variables in these relationships, as well as exploring other variables pertinent to sustainability (Nuhu et al., 2021).

Further research opportunities involve delving into the mediating effects of organizational resources on both EP and FP, treating them as separate outcomes (Rae et al., 2015). Additionally, consideration can be given to the role of organizational capabilities and environmental management control systems as mediators in the relationship between environmental strategy and EP, with attention to contextual and contingency factors, including the utilization of renewable instruments (Solovida & Latan, 2017). Lastly, there is potential for in-depth exploration into the moderation and mediation effects within structural models (Deb et al., 2022).

Strategy

Focusing on strategy, Jarrar & Smith (2014) suggests the development and use of an instrument of strategy measurement that will be able to measure independently the extent of implementation of both strategy types, while simultaneously addressing dimensionality

Information systems

For management IS related research, subsequent studies would benefit from explore other variables that can affect the internal management system from organization. In particular, this research avenue can explore the support level of top management, user's resistance to change, educational background of employees, managers and management accountants perceived need for more sophisticated management IS. Taking into consideration that organizations are dynamic environments, future studies should gather the effects of new variables of IS and their evolution. (Pérez-Méndez & Machado-Cabezas, 2015).

Management control systems

The management control systems related studies may benefit from investigating more accurately the reasons for the negative relation between management accounting change and performance (Laitinen, 2011), to develop a newer framework for managerial work (Laitinen, 2014), analyze firms that tried to implement ABC and failed (Maiga & Jacobs, 2007), and study combined effect of ABC and other organizations initiatives on OP (Vetchagool et al., 2020). Some studies also suggest the use of longitudinal studies on design implementation and use of cost management systems (Maiga & Jacobs, 2007), and to analyze the performance before and after the implementation of ABC (Cagwin & Bouwman, 2002). In addition, study the control of different types of IS use, such as enterprise resource planning systems and customer relationship management systems; incorporate environmental variables and firm characteristics to similar studies (Maiga et al., 2013) may provide additional evidence on these issues.

An additional research avenue in this domain involves a more in-depth analysis of the underlying reasons for the observed negative correlation between management accounting changes and performance (Laitinen, 2011). Furthermore, there is a call to develop a fresh framework for understanding managerial work (Laitinen, 2014). Further exploration can involve examining firms that attempted to implement ABC but encountered challenges or failed (Maiga & Jacobs, 2007).

Moreover, longitudinal studies examining the design, implementation, and utilization of cost management systems (Maiga & Jacobs, 2007), can provide valuable insights into the evolution of these systems over time.

Beyond these topics, research opportunities extend to exploring the effects of forecasting in management control systems, examining the utilization of budgets in small- and medium-sized enterprises in non-production organizations, introducing additional contingency variables, such as different strategies or business model configurations, to understand their influence on budget utilization in small- and medium-sized production companies, and to exploring the impact of family ownership on budgeting practices in small and medium-sized firms (Sandalgaard & Nielsen, 2018).

Intellectual capital

The intellectual capital related research may benefit from the use of indicators that combine monetary and non-monetary, for intellectual capital (Bataineh et al., 2022). Researchers should also study the relationship between knowledge management practices and intellectual capital components within Waqf institutions[2] (Laallam et al., 2022).

Other

There are additional intriguing research avenues for further exploration that do not fit on the determinants defined above. One example is related to a comprehensive assessment of the effects of more detailed reorganization actions, possibly even tasks, on FP (Laitinen, 2011). Additionally, an exploration into the relationship between human resource dimensions and internal processes within companies operating in emerging economies is warranted, as well, studies focus on how information capital and organizational capital, from the perspective of learning and growth, are linked with internal processes and FP (Sands et al., 2016).

[2] Waqf institutions can be viewed as nonprofit organizations tasked with the management of endowment funds and properties within Muslim-majority countries (Laallam et al., 2022).

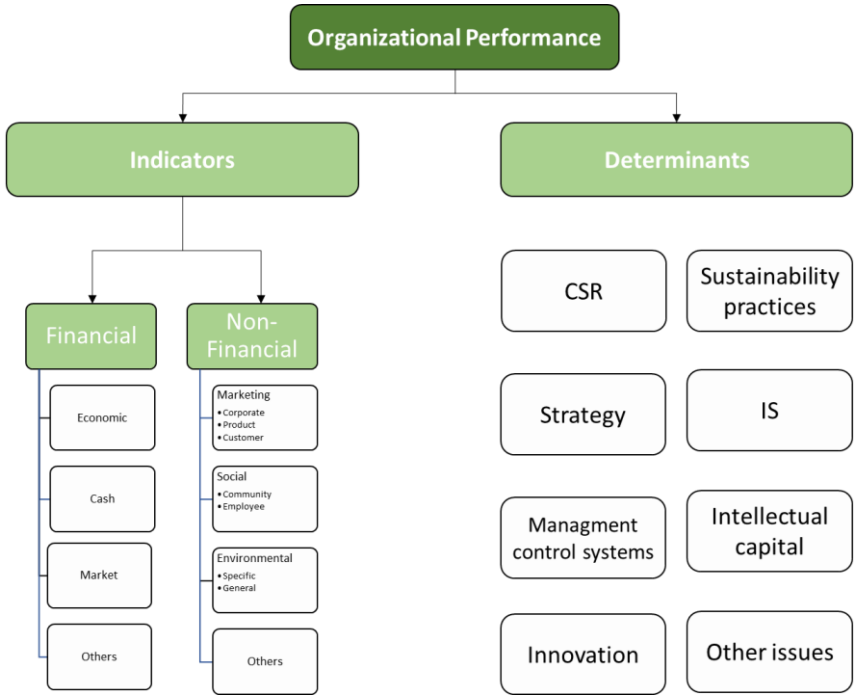
Regarding corporate disclosure and transparence practices research, upcoming investigations should explore data from various sources beyond annual reports, such as press conferences and analysts' meetings, and study these practices in the context of family-owned firms (Sharif & Ming Lai, 2015). Lastly, there is potential for illuminating insights by examining benchmarking companies to gain a deeper understanding of the implementation of corporate performance management systems in the context of the new economy (Young et al., 2007). These multifaceted research directions collectively contribute to a richer and more nuanced understanding of various dimensions within the domain of organizational studies.

Chapter 5 CONCLUSION

OP can be defined as an open concept, with a barely defined and structured (Richard et al., 2009). In fact, this SLR provides evidence to support this idea as several studies measure performance as a combination of different proxies based on different concepts, theories, and background research. Some research focuses on analyzing a specific type of performance, like FP or NFP whereas others provide a more generic analysis to measure OP.

The sample of 50 papers analyzed in this SLR suggests that the investigation of performance issues using SEM has grown over the last two decades. These studies use different background theories such as contingency theory, resource-based theory and stakeholder theory, with several papers focusing on exploring the different contingency factors on OP. The results of this study also reveal that, OP can be measure using a variety of indicators that can be divided in two groups: financial indicators and non-financial indicators. At a more detailed level, financial indicators can be subdivided into four categories: economic, market, cash, and general indicators. Is notable that economic indicators are the most common ones when addressing financial indicators. Non-financial indicators can also be divided in other three dimensions: marketing, social, environment. There is a variety of environmental indicators, but more papers use marketing indicators in their research. This variety is caused by the large number of environmental indicators used by each paper. The methodological approach of the sample papers shows that CB-SEM was used in 26 cases whereas PLS-SEM was used in 24. It is important to notice that CB-SEM was the first of the SEM to be developed. The results on the determinants of OP are divided in eight groups: CSR, sustainability, strategy, IS, management control systems, innovation, intellectual capital and others. CSR and management control systems were the most addressed topic and the determinants where more research avenues are identified. Figure 5.1. summarize the major findings of this thesis.

Figure 5.1. Indicators and Determinants of Organizational Performance



The analysis of the sample papers allows the identification of several important research avenues. For example, researchers are concerned that the reduced number of observations and the specific scenarios addressed in some papers may limit the robustness of such conclusions. Therefore, it is important that future studies use larger samples and consider expanding their work by inquiring other sectors, countries, cultures, market cycles and to compare their analyzes. Articles also refer the importance of using different types of research. Survey-based research is the most common one when applying SEM, but it is important to use other methods, such as longitudinal studies, experimental studies, case studies, interviews, field studies, dyadic studies and fuzzy set qualitative comparative analyses.

Like every study, this one also has some limitations. First, the quality criteria used in this thesis dismiss all papers published in journals outside the ABS list. Despite being a good reference for the articles quality, it limits the number of studies in the sample. In future research, academics may use different quality criteria and compare with the results here presents. Second, only papers that investigate the private sector were selected. As we know, private and public sectors can have significant differences. Investigating public sector performance, as well as comparing it with private sector is a possible future research topic. Third, only papers that use SEM were selected, because of its characteristics and possible connection with MAR. The selection of other methodologies,

like linear regression models or path models, can be interesting for future research. For future research, I also suggest the analysis of performance using different methodologies and addressing other MA or accounting topics.

Finally, I can state that there is a huge debate among academics to identify the best indicators to measure OP and the determinants of such performance. As far as I understand, this discussion derives from the objectives of the researcher and what theories and studies their work is based on. In a practical way, it is important that managers support their performance measurement regarding the firm objective, vison and mission. The maintenance of such indicators allows the firm to have an evolution of such performance through the years and to compare such indicators with their competitors. The performance indicators that a company uses, as demonstrated in this research, should be from different types, like financial and non-financial, with some indicators for analyzing short-term and others for long-term periods.

BIBLIOGRAPHY

Abdel-Maksoud, A., Jabbour, M., & Abdel-Kader, M. (2021). Stakeholder pressure, eco-control systems, and firms' performance: empirical evidence from UK manufacturers. *Accounting Forum*, *45*(1), 30–57. https://doi.org/10.1080/01559982.2020.1827697

Elsevier. (n.d.). *Scopus: Comprehensive, multidisciplinary, trusted abstract and citation database*. Retrieved September 30, 2022, from https://www.elsevier.com/solutions/scopus

Antón, J. M. R., Pérez, A. B., & Andrada, L. R. (2016). ¿Cómo el aprendizaje organizativo y la aplicación del conocimiento mejoran el rendimiento organizativo en los servicios de asesoramiento financiero? *Revista Espanola de Financiacion y Contabilidad*, *45*(4), 415–439. https://doi.org/10.1080/02102412.2016.1226008

Artiach, T., Lee, D., Nelson, D., & Walker, J. (2010). The determinants of corporate sustainability performance. *Accounting and Finance*, *50*(1), 31–51. https://doi.org/10.1111/J.1467-629X.2009.00315.X

Baines, A., & Langfield-Smith, K. (2003). Antecedents to management accounting change: A structural equation approach. *Accounting, Organizations and Society*, *28*(7–8), 675–698. https://doi.org/10.1016/S0361-3682(02)00102-2

Barney, J. B., & Clark, D. N. (2007). *Resource-Based Theory Creating and Sustaining Competitive Advantage*. Oxford University Press.

Bataineh, H., Abbadi, S. S., Alabood, E., & Alkurdi, A. (2022). The effect of intellectual capital on firm performance: the mediating role of family management. *Journal of Islamic Accounting and Business Research*, *13*(5), 845–863. https://doi.org/10.1108/JIABR-02-2022-0032

Bhuiyan, F., Baird, K., & Munir, R. (2020). The association between organisational culture, CSR practices and organisational performance in an emerging economy. *Meditari Accountancy Research*, *28*(6), 977–1011. https://doi.org/10.1108/MEDAR-09-2019-0574

Binh Dao, T. T., & Tra Nguyen, T. (2020). A meta-analysis of corporate governance and firm performance. *Journal of Governance and Regulation*, *9*(1), 18–34. https://doi.org/10.22495/jgrv9i1art2

Burkert, M., Davila, A., Mehta, K., & Oyon, D. (2014). Relating alternative forms of contingency fit to the appropriate methods to test them. *Management Accounting Research*, *25*(1), 6–29. https://doi.org/10.1016/j.mar.2013.07.008

Cadez, S., & Guilding, C. (2008). An exploratory investigation of an integrated contingency model of strategic management accounting. *Accounting, Organizations and Society*, *33*(7–8), 836–863. https://doi.org/10.1016/j.aos.2008.01.003

Caglio, A. (2018). To Disclose or Not to Disclose? An Investigation of the Antecedents and Effects of Open Book Accounting. *European Accounting Review*, *27*(2), 263–287. https://doi.org/10.1080/09638180.2017.1315313

Cagwin, D., & Bouwman, M. J. (2002). The association between activity-based costing and improvement in financial performance. *Management Accounting Research*, *13*(1), 1–39. https://doi.org/10.1006/mare.2001.0175

Cheffi, W., Abdel-Maksoud, A., & Farooq, M. O. (2021). CSR initiatives, organizational performance and the mediating role of integrating CSR into management control systems: Testing an inclusive model within SMEs in an emerging economy. *Journal of Management Control*, *32*(3), 333–367. https://doi.org/10.1007/s00187-021-00323-6

Dasgupta, R., & Singh, R. (2021). Antecedents of Firm's Risk-play – A Structural Equation Modeling Approach in an Emerging Market Context. *Australasian Business, Accounting and Finance Journal*, *15*(3), 67–94. https://doi.org/10.14453/aabfj.v15i3.5

Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, *173*. https://doi.org/10.1016/j.techfore.2021.121092

Deb, B. C., Rahman, M. M., & Rahman, M. S. (2022). The impact of environmental management accounting on environmental and financial performance: empirical evidence from Bangladesh. *Journal of Accounting and Organizational Change*. https://doi.org/10.1108/JAOC-11-2021-0157

Denyer, D., & Tranfield, D. (2009). Producing a Systematic Review. *The Sage Handbook of Organizational Research Methods*, 671–689.

Dess, G. G., & Robinson, R. B. (1984). Measuring Organizational Performance in the Absence of Objective Measures: The Case of the Privately-held Firm and Conglomerate Business Unit. In *Strategic Management Journal* (Vol. 5).

Diefenbach, U., Wald, A., & Gleich, R. (2018). Between cost and benefit: investigating effects of cost management control systems on cost efficiency and organisational performance. *Journal of Management Control*, *29*(1), 63–89. https://doi.org/10.1007/s00187-018-0261-5

Duh, R. R., Hsu, A. W. hsin, & Chow, C. W. (2014). World-class manufacturing, management accountants' cross-functional participation, and firm performance. *Asia-Pacific Journal of Accounting and Economics*, *21*(3), 262–283. https://doi.org/10.1080/16081625.2012.751868

Elzahaby, M. A. (2021). How firms' performance mediates the relationship between corporate governance quality and earnings quality? *Journal of Accounting in Emerging Economies*, *11*(2), 278–311. https://doi.org/10.1108/JAEE-09-2018-0100

Fikri, A. R., Ratnasari, R. T., Ahmi, A., & Kirana, K. C. (2022). Market orientation and business performance: the mediating role of total quality management and service innovation among Moslem fashion macro, small and medium enterprises in Indonesia. *Journal of Islamic Accounting and Business Research*, *13*(8), 1234–1252. https://doi.org/10.1108/JIABR-12-2021-0321

Frare, A. B., Cruz, A. P. C. da, Lavarda, C. E. F., & Akroyd, C. (2022). Packages of management control systems, entrepreneurial orientation and performance in Brazilian startups. *Journal of Accounting and Organizational Change*, *18*(5), 643–665. https://doi.org/10.1108/JAOC-04-2021-0052

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman Publishing Inc.

Govindan, K., Khodaverdi, R., & Jafarian, A. (2013). A fuzzy multi criteria approach for measuring sustainability performance of a supplier based on triple bottom line approach. *Journal of Cleaner Production*, *47*, 345–354. https://doi.org/10.1016/J.JCLEPRO.2012.04.014

Goyal, L. (2022). Stakeholder theory: Revisiting the origins. *Journal of Public Affairs*, *22*(3). https://doi.org/10.1002/pa.2559

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. In *European Business Review* (Vol. 26, Issue 2, pp. 106–121). Emerald Group Publishing Ltd. https://doi.org/10.1108/EBR-10-2013-0128

Hair, Joseph. F., Hult, G. Tomas. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Sage Publications, Inc.

Hesford, J. W., Lee, S.-H. (Sam), Van der Stede, W. A., & Young, S. M. (2006). Management Accounting: A Bibliographic Study. In C. S. Chaoman, A. G. Hopwood, & M. D. Shields (Eds.), *Handbook of Management Accounting Research* (1st ed., Vol. 1, pp. 3–26). Elsevier. https://doi.org/10.1016/S1751-3243(06)01001-7

Hoyle, R. (Ed.). (1995). *Structural Equation Modeling -Concepts, Issues, and Applications*. SAGE Publications, Inc.

Ismail, T. (2016). Culture control, capability and performance: evidence from creative industries in Indonesia. *Asian Review of Accounting*, *24*(2), 171–184. https://doi.org/10.1108/ARA-01-2014-0014

Janssen, S., Moeller, K., & Schlaefke, M. (2011). Using performance measures conceptually in innovation control. *Journal of Management Control*, *22*(1), 107–128. https://doi.org/10.1007/s00187-011-0130-y

Jarrar, N. S., & Smith, M. (2014). Innovation in entrepreneurial organisations: A platform for contemporary management change and a value creator. *British Accounting Review*, *46*(1), 60–76. https://doi.org/10.1016/j.bar.2013.07.001

Kalkhouran, A. A. N., Nedaei, B. H. N., & Rasid, S. Z. A. (2017a). The indirect effect of strategic management accounting in the relationship between CEO characteristics and their networking activities, and company performance. *Journal of Accounting and Organizational Change*, *13*(4), 471–491. https://doi.org/10.1108/JAOC-05-2015-0042

Kalkhouran, A. A. N., Nedaei, B. H., & Rasid, S. Z. A. (2017b). An exploratory investigation of an integrated model of costing practices in small and medium-sized enterprises An exploratory investigation of an integrated model of costing practices. In *Int. J. Managerial and Financial Accounting* (Vol. 9, Issue 4).

Kanzari, A., Rasmussen, J., Nehler, H., & Ingelsson, F. (2022). How financial performance is addressed in light of the transition to circular business models - A systematic literature review. *Journal of Cleaner Production*, *376*, 134134. https://doi.org/10.1016/J.JCLEPRO.2022.134134

Kaplan, R. (1984). The Evolution of Management Accounting. *The Accounting Review*, *LIX*(3), 390–418.

Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard--measures that drive performance. *Harvard Business Review*, *70*(1), 71–79.

Keats, B. W. (1988). The Vertical Construct Validity of Business Economic Performance Measures. *The Journal of Applied Behavioral Science*, *24*(2), 151–160. https://doi.org/10.1177/0021886388242002

Kopecká, N. (2018). A Literature Review of Financial Performance Measures and Value Relevance. *Springer Proceedings in Business and Economics*, 385–393. https://doi.org/10.1007/978-3-319-68762-9_42

Krishnan, A., Tun, U., Razak, A., & Joshi, P. (2014). An empirical study of the influence of business strategy, uncertainty and market position on financial measures using

the SEM approach R. Ravindran. In *Int. J. Accounting, Auditing and Performance Evaluation* (Vol. 10, Issue 2).

Laallam, A., Uluyol, B., Kassim, S., & Engku Ali, E. R. A. (2022). The components of intellectual capital and organisational performance in waqf institutions: evidence from Algeria based on structural equation modelling. *Journal of Islamic Accounting and Business Research*, *13*(7), 1110–1136. https://doi.org/10.1108/JIABR-07-2021-0192

Labuschagne, C., Brent, A. C., & Van Erck, R. P. G. (2005). Assessing the sustainability performances of industries. *Journal of Cleaner Production*, *13*(4), 373–385. https://doi.org/10.1016/J.JCLEPRO.2003.10.007

Laitinen, E. K. (2011). Effect of reorganization actions on the financial performance of small entrepreneurial distressed firms. *Journal of Accounting and Organizational Change*, *7*(1), 57–95. https://doi.org/10.1108/18325911111125540

Laitinen, E. K. (2014). The association between CEO work, management accounting information, and financial performance: evidence from Finnish top managers. *Journal of Management Control*, *25*(3–4), 221–257. https://doi.org/10.1007/s00187-014-0197-3

Laitinen, E. K., Länsiluoto, A., & Salonen, S. (2016). Interactive budgeting, product innovation, and firm performance: empirical evidence from Finnish firms. *Journal of Management Control*, *27*(4), 293–322. https://doi.org/10.1007/s00187-016-0237-2

Maiga, A. S., & Jacobs, F. A. (2007). Activity-Based Cost Management and Manufacturing, Operational and Financial Performance: A Structural Equation Modeling Approach. In *Advances in Management Accounting* (Vol. 16, pp. 217–260). https://doi.org/10.1016/S1474-7871(07)16008-1

Maiga, A. S., Nilsson, A., & Jacobs, F. A. (2013). Extent of managerial IT use, learning routines, and firm performance: A structural equation modeling of their relationship. *International Journal of Accounting Information Systems*, *14*(4), 297–320. https://doi.org/10.1016/j.accinf.2013.04.001

Malmi, T., & Granlund, M. (2009). In search of management accounting theory. *European Accounting Review*, *18*(3), 597–620. https://doi.org/10.1080/09638180902863779

Mohd Sofian, F. N. R., & Muhamad, R. (2020). Modified integrated Islamic CSRD index and financial performance of Malaysian Islamic banks: Stakeholders' perception. *Journal of Islamic Accounting and Business Research*, *11*(8), 1599–1617. https://doi.org/10.1108/JIABR-10-2018-0158

Monteiro, A. P., Vale, J., Leite, E., Lis, M., & Kurowska-Pysz, J. (2022). The impact of information systems and non-financial information on company success. *International Journal of Accounting Information Systems*, *45*. https://doi.org/10.1016/j.accinf.2022.100557

Moufty, S., Clark, E., & Al-Najjar, B. (2021). The different dimensions of sustainability and bank performance: Evidence from the EU and the USA. *Journal of International Accounting, Auditing and Taxation*, *43*. https://doi.org/10.1016/j.intaccaudtax.2021.100381

Nitzl, C. (2016). The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development. *Journal of Accounting Literature*, *37*, 19–35. https://doi.org/10.1016/j.acclit.2016.09.003

Nitzl, C., & Chin, W. W. (2017). The case of partial least squares (PLS) path modeling in managerial accounting research. *Journal of Management Control*, *28*(2), 137–156. https://doi.org/10.1007/s00187-017-0249-6

Nuhu, N. A., Baird, K., & Su, S. (2021). The impact of environmental activity management and sustainability strategy on triple bottom line performance. *Advances in Management Accounting*, *33*, 175–207. https://doi.org/10.1108/S1474-787120210000033009

Oduro, S., & Haylemariam, L. G. (2019). Market orientation, CSR and financial and marketing performance in manufacturing firms in Ghana and Ethiopia. *Sustainability Accounting, Management and Policy Journal*, *10*(3), 398–426. https://doi.org/10.1108/SAMPJ-11-2018-0309

Oyewo, B., Tawiah, V., & Zakari, A. (2022). *Actualising Agenda 2030 through Sustainability Accounting: Evidence from the Nigerian Manufacturing Sector* (pp. 105–133). https://doi.org/10.1108/S1479-359820220000010006

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, *10*(1), 89. https://doi.org/10.1186/s13643-021-01626-4

Pang, A., Jin, Y., & Cameron, G. T. (2023). The Contingency Theory of Strategic Conflict Management: Review From Three Decades of Theory Development, Extension, and Application. *Journalism and Communication Monographs*, *25*(2), 193–214. https://doi.org/10.1177/15226379231167141

Penrose, E. (2009). *The Theory of the Growth of the Firm* (4th ed.). Oxford University Press.

Pérez-Méndez, J. A., & Machado-Cabezas, Á. (2015). Relationship between management information systems and corporate performance. *Revista de Contabilidad-Spanish Accounting Review*, *18*(1), 32–43. https://doi.org/10.1016/j.rcsar.2014.02.001

Rae, K., Sands, J., & Gadenne, D. L. (2015). Associations between organisations' motivated workforce and environmental performance. *Journal of Accounting and Organizational Change*, *11*(3), 384–405. https://doi.org/10.1108/JAOC-10-2013-0090

Ramachandran, J., Chen, K. K., Subramanian, R., Yeoh, K. K., & Khong, K. W. (2018). Corporate governance and performance of REITs: A combined study of Singapore and Malaysia. *Managerial Auditing Journal*, *33*(6–7), 586–612. https://doi.org/10.1108/MAJ-09-2016-1445

Rao, P. M., & Vinod, H. D. (2023). Economic and financial performance of Indian IT services export firms. *Telecommunications Policy*, *47*(3), 102507. https://doi.org/10.1016/J.TELPOL.2023.102507

Rao, Y., Guo, K. H., & Chen, Y. (2015). Information systems maturity, knowledge sharing, and firm performance. *International Journal of Accounting and Information Management*, *23*(2), 106–127. https://doi.org/10.1108/IJAIM-11-2013-0060

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, *26*(4), 332–344. https://doi.org/10.1016/j.ijresmar.2009.08.001

Reinking, J., Arnold, V., & Sutton, S. G. (2020). Synthesizing enterprise data through digital dashboards to strategically align performance: Why do operational managers use dashboards? *International Journal of Accounting Information Systems*, *37*. https://doi.org/10.1016/j.accinf.2020.100452

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: Towards methodological best practice. In *Journal of Management* (Vol. 35, Issue 3, pp. 718–804). https://doi.org/10.1177/0149206308330560

Rojon, C., Okupe, A., & McDowall, A. (2021). Utilization and development of systematic reviews in management research: What do we know and where do we go from here? *International Journal of Management Reviews*, *23*(2), 191–223. https://doi.org/10.1111/ijmr.12245

Sánchez-Hernández, M. I., Carvalho, L. C., & Paiva, I. S. (2019). Orientation towards social responsibility of North-West African firms. *Sustainability Accounting, Management and Policy Journal*, *10*(2), 365–394. https://doi.org/10.1108/SAMPJ-07-2018-0171

Sandalgaard, N., & Nielsen, C. (2018). Budget emphasis in small and medium-sized enterprises: evidence from Denmark. *Journal of Applied Accounting Research*, *19*(3), 351–364. https://doi.org/10.1108/JAAR-08-2016-0087

Sands, J. S., Rae, K. N., & Gadenne, D. (2016). An empirical investigation on the links within a sustainability balanced scorecard (SBSC) framework and their impact on

financial performance. *Accounting Research Journal*, *29*(2), 154–178. https://doi.org/10.1108/ARJ-04-2015-0065

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, *5*(1), 105–115. https://doi.org/10.1016/j.jfbs.2014.01.002

Scarpellini, S., Marín-Vinuesa, L. M., Aranda-Usón, A., & Portillo-Tarragona, P. (2020). Dynamic capabilities and environmental accounting for the circular economy in businesses. *Sustainability Accounting, Management and Policy Journal*, *11*(7), 1129–1158. https://doi.org/10.1108/SAMPJ-04-2019-0150

Schaefer, T., & Guenther, T. (2016). Exploring strategic planning outcomes: the influential role of top versus middle management participation. *Journal of Management Control*, *27*(2–3), 205–249. https://doi.org/10.1007/s00187-016-0230-9

Sharif, S. P., & Ming Lai, M. (2015). The effects of corporate disclosure practices on firm performance, risk and dividend policy. *International Journal of Disclosure and Governance*, *12*(4), 311–326. https://doi.org/10.1057/jdg.2015.2

Shokravi, S. (2013). An Environmental and Economic Performance Measure for Industrial Supply Networks. *20th International Congress on Modelling and Simulation*, 1–6. www.mssanz.org.au/modsim2013

Šiška, Ladislav. (2017). Comparing CB-SEM and PLS-SEM: A case showing management accounting impact on performance. *Polish Journal of Management Studies*, *15*(2), 240–249. https://doi.org/10.17512/pjms.2017.15.2.22

Slavin, R. E. (1986). *Best-Evidence Synthesis: An Alternative t o Meta-Analytic and Traditional Reviews*. http://www.jstor.org/stable/1174711

Solovida, G. T., & Latan, H. (2017). Linking environmental strategy to environmental performance: Mediation role of environmental management accounting. *Sustainability Accounting, Management and Policy Journal*, *8*(5), 595–619. https://doi.org/10.1108/SAMPJ-08-2016-0046

Thakkar, J. J. (2020). *Structural Equation Modelling Application for Research and Practice (with AMOS and R)* (Vol. 285). Springer Singapore. https://doi.org/https://doi.org/10.1007/978-981-15-3793-6

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review*. In *British Journal of Management* (Vol. 14).

Clarivate. (n.d.). *Web of Science platform*. Retrieved September 30, 2022, from https://clarivate.com/webofsciencegroup/solutions/web-of-science/

Tuanmat, T. Z., & Smith, M. (2011). The effects of changes in competition, technology and strategy on organizational performance in small and medium manufacturing companies. *Asian Review of Accounting*, *19*(3), 208–220. https://doi.org/10.1108/13217341111185137

Uyar, A., & Kuzey, C. (2016a). Contingent Factors, Extent of Budget Use and Performance: A Structural Equation Approach. *Australian Accounting Review*, *26*(1), 91–106. https://doi.org/10.1111/auar.12090

Uyar, A., & Kuzey, C. (2016b). Does management accounting mediate the relationship between cost system design and performance? *Advances in Accounting*, *35*, 170–176. https://doi.org/10.1016/j.adiac.2016.06.004

Venkatraman, N., & Ramanujam, V. (1986). Measurement of Business Performance in Strategy Research: A Comparison of Approaches. *Academy of Management Review*, *11*(4), 801–814. https://doi.org/10.5465/amr.1986.4283976

Vetchagool, W., Augustyn, M. M., & Tayles, M. (2020). Impacts of activity-based costing on organizational performance: evidence from Thailand. *Asian Review of Accounting*, *28*(3), 329–349. https://doi.org/10.1108/ARA-08-2018-0159

Wood, D. J. (2010). Measuring corporate social performance: A review. In *International Journal of Management Reviews* (Vol. 12, Issue 1, pp. 50–84). https://doi.org/10.1111/j.1468-2370.2009.00274.x

Young, C. S., Tsai, L. C., & Lee, H. W. (2007). Relationship between intellectual capital-oriented corporate performance management systems, intellectual capital and corporate performance: an exploratory study. *International Journal of Accounting, Auditing and Performance Evaluation*, *4*(4/5), 422. https://doi.org/10.1504/IJAAPE.2007.017087

Yu, J. J., & Madison, G. (2021). Gender quotas and company financial performance: A systematic review. *Economic Affairs*, *41*(3), 377–390. https://doi.org/10.1111/ecaf.12487

APPENDIX 1 – Organizational Performance Main Results

Research	Citation[3]	Methodology	Organizational Performance Indicators	Main Results
Antón et al., 2016	3	CB-SEM	Operational - My department achieved a high degree of client satisfaction; My department meets deadlines; My department does high quality work; My department has a high level of productivity	Knowledge application has a positive direct effect on performance
Baines & Langfield-Smith, 2003	290	CB-SEM	ROI; Profit; Cash flow from operations; Cost control; Development of new products; Sales volume; Market share; Market development; Personnel development; Political-public affairs	Change in MA information with dependence on non-financial accounting information is positive associated with firm performance
Bhuiyan et al., 2020	17	CB-SEM	Financial - Profit goals have been achieved; Sales goals have been achieved; ROI goals have been achieved Non-financial - Our products/services are of a higher quality than those of our competitors; We have a higher customer retention rate than our competitors	CSR practice has a negative impact on performance. The specific practice of CSR, minimizing illegal activities, is positively associated with performance. Culture dimensions, respect for people, innovation and attention to detail have a positive effect on performance mediated by the minimizing illegal activities dimension of CSR practices.
Cadez & Guilding, 2008	307	CB-SEM	ROI; Margin on sales; Capacity utilization; Customer satisfaction; Product quality; Development of new product; market share	Greater Strategic management accounting usage is positively associated with performance. Greater accountant participation in strategic decision making is not associated with performance. Market orientation is positively associated with performance
Caglio, 2018	7	PLS-SEM	Financial - Total supply chain cost; Cost of goods sold; Productivity: sales per employee Non-financial - delivery performance: on time deliveries; fill rate; order fulfillment - lead time	Performance is positive affected by the application of open book accounting

[3] All the citations were search at 25th of May 2023 in the data base Scopus.

Research	Citation[3]	Methodology	Organizational Performance Indicators	Main Results
Cheffi et al., 2021	6	PLS-SEM	Costs reduction and saving; ROI; Return on Sales; Labor productivity; Quality of products and services; Delivery schedules; Flexibility and adaptability; Resources optimization; Capacity utilization; Process optimization; Risk taking capability; Customer satisfaction; Innovation and knowledge transfer; Employees' satisfaction; Image and reputation; Environmental performance (impact on the environment)	CSR initiatives is positive associated with performance. Involvement of accountants in CSR management is a determinant of firm performance. Integration of CSR into management control technology do not affect performance
Dasgupta & Singh, 2021	2+1*	PLS-SEM	Operational - Actual ROA	Operating, market and cash performance can significantly influence risk and managerial attitudes towards problematic and innovative searches
Diefenbach et al., 2018	13	PLS-SEM	Customer satisfaction; Retention and extension of customer base; Development of cost-efficient product and or/services; ROS; Market shares; Productivity of the performance process	OP is positive affected by cost management control systems and cost efficiency
Duh et al., 2014	1	CB-SEM	Product quality; Rework; Customer satisfaction; Employee morale; ROA	World-class manufacturing and management accountants' cross-functional participation can positively influence the performance
Fikri et al., 2022	1	PLS-SEM	Our company's sales development is better than competitors; The development of our company's profitability is better than competitors; Our customers often express satisfaction with our company; Many of our customers make repeat purchases; Our company releases more successful new products than competitors	Service innovation and market orientation have a strong positive relationship with performance. Total quality management can also affect the performance
Ismail, 2016	22	CB-SEM	Sales growth; Market share; Employment growth; Profit	Organization creativity and innovation have a positive influence in performance

Research	Citation[3]	Methodology	Organizational Performance Indicators	Main Results
Jarrar & Smith, 2014	18	CB-SEM	ROI; Profit; Cash flow from operation; Cost control; Development of new products; Sales volume; Market share; Market development; Personal development	Innovation has an indirect positive relationship with performance thru entrepreneurial strategy
Kalkhouran et al., 2017a	10	PLS-SEM	do not say	Results confirm the principal hypothesis of contingency theory, organizational performance depends of the structure of an organization and the context. Level of education of the chief executive officer influence in a indirect way the performance through strategic management accounting, that have a positive effect on performance
Kalkhouran et al., 2017b	3	PLS-SEM	ROI; Sales growth; Level of productivity; Product quality; Development of new products; Market share; Operating profit; Cash flow growth rate; Manufacturing cost; R&D activity; Number of on-time deliveries; Personnel development by the respondent	Results confirm the principal hypothesis of contingency, organizational performance depends of the structure of an organization and the context. Sophisticated costing practices have a direct positive relation with the performance of small and medium-sized enterprises. Involvement in networks and perceived environmental uncertainty can indirectly influence performance by sophisticated costing practices
Laallam et al., 2022	2	PLS-SEM	do not say	Human capital, structural capital and spiritual capital have a significant and positive effect on organizational performance. Relational capital, social capital and technological capital do not have significant influence on performance. Human capital, structural capital, spiritual capital, relational capital, social capital and technological capital are constituents of intellectual capital

Research	Citation[3]	Methodology	Organizational Performance Indicators	Main Results
Laitinen et al., 2016	12	PLS-SEM	Financial - Rate of sales growth; Rate of profit growth; ROI; Profit/sales ratio Non-financial - Increase in market share; Customer satisfaction; Customer retention; Acquisition of new customers	Budget use do not have a direct relation with performance
Nuhu et al., 2021	0	CB-SEM	Financial (with financial and non-financial indicators) - Profit goals have been achieved; Sales goals have been achieved; ROI goals have been achieved; Our product(s) are of a higher quality than that of our competitors; We have a higher customer retention rate than our competitors; We have a lower employee turnover rate than our competitors Environmental - Reductions in material costs due to the efficient use of material; Reductions in the levels of waste; Reductions in process/production costs; Increased process/production efficiency; Increased knowledge about effective ways of managing operations; Increased organization-wide learning among employees; Reductions in energy consumption; Reductions in water usage; Reductions in the levels of emissions; Reduction in the costs associated with cleaning up environmental damage; Reduction in the fines paid and remediation costs regarding environmental damage; Increased filters and controls on emissions and discharges; Increased residue recycling Social - Employees are all respected and treated fairly; Our company strictly abides by labor laws; Employees are not forced to work overtime; Our company donates to charities; Our company actively participates in community activities	Environmental activities management, environmental activity analysis, environmental activity cost analysis and environmental ABC can direct and indirect impact TBL performance. The indirect impact is possible because of the two sustainability strategies (social and environmental). There is a positive relationship between EP and social performance with FP
Ramachandran et al., 2018	9	CB-SEM	ROE; ROA; Profitability	Performance is negative affected by corporate governance

Research	Citation[3]	Methodology	Organizational Performance Indicators	Main Results
Rao et al., 2015	35	PLS-SEM	ROI; Sales growth; Customer retention rate; New customers; Innovations (e.g., new products, and new services); Order cycle time (from placing order to receiving products); Product quality; Customer service; Employee retention rate; Employee creativity	Information systems maturity is positively related to firm performance.
Sánchez-Hernández et al., 2019	5	PLS-SEM	Pre-tax profits; Profitability; Increase in sales; Profit margin on sales; Market share of our goods and services; Client satisfaction and loyalty; Satisfaction and retention of best employees; Corporate image and reputation; Shared values and corporate culture; Market knowledge; Know-how and accumulated experience	Emergent CSR orientation has a positive relationship with performance. The change in the culture of an organization towards CSR orientation has an indirect association with performance mediated by innovation.
Sandalgaard & Nielsen, 2018	4	CB-SEM	Financial performance latest year compared to competitors; Actual results in latest budget period; Performance on markets compared to competitors	Budget emphasis is positive related to performance
Schaefer & Guenther, 2016	12	CB-SEM	Profit growth (EBIT or EBITDA); Profitability	When middle managers participate in the process of strategic planning, there is an association between strategic planning effectiveness and firm performance. Implementation Success of strategies has a stronger effect on OP when top managers take a dominant role in the process
Tuanmat & Smith, 2011	24	CB-SEM	do not say	Competition, advanced manufacturing technology and strategy have a positive strong relation with performance
Vetchagool et al., 2020	6	CB-SEM	Operational - Total costs; Product/service quality; Delivery reliability; Process effectiveness	Comprehensive usage of ABC can directly increase operational performance, leading to a boost on financial performance

APPENDIX 2 – Financial Performance Main Results

Research	Citation	Methodology	Performance indicators	Main results
Abdel-Maksoud et al., 2021	10	PLS-SEM	Economic - Respondents were asked to indicate the degree of importance/rate performance of their units, in the past 12 months, compared to leading competitors of these items	There is not a significant relation between any of the eco-control systems and economic performance
Bataineh et al., 2022	8	CB-SEM	ROA; Earning per share; price to earnings ratio; price to book value ratio	Human capital is one of the main determinants of firms' FP
Bhuiyan et al., 2020	17	CB-SEM	Profit goals have been achieved; Sales goals have been achieved; ROI goals have been achieved	CSR practices in general have a negative association with financial performance. Despite that some specific practices as minimizing illegal activities has a positive effect in financial performance
Caglio, 2018	7	PLS-SEM	Total supply chain cost; cost of goods sold; productivity – sales per employee	Application of Open Book Accounting has a high influence on FP
Cagwin & Bouwman, 2002	109	CB-SEM	ROI	There is a positive association between ABC and improvement in ROI
Dasgupta & Singh, n.d.	2+1*	PLS-SEM	Market - Annualized monthly market return; Cash - [(Operational Cash Flow/Average total assets) *100] and average total assets	Operating, market and cash performance can significantly influence the risk and managerial attitudes towards problematic and innovative searches

Research	Citation	Methodology	Performance indicators	Main results
Deb et al., 2022	8	PLS-SEM	Increase in profit margin and sales revenue; Increases in market share; Increase in ROI; Increase in overall financial performance	EP improves the financial performance of manufacturing firms
Elzahaby, 2021	10	CB-SEM	Accounting based: Per managed earnings; ROA; ROE; Market based: price-to-earnings ratio (P/E) and market-to-book value ratio (MTBV)	Corporate governance quality has a direct positive and significant relationship with performance, consistent with resource-based theory. Earnings quality has a direct positive relationship with performance, consistent with signalling theory. Performance has a significant mediating effect on the relation between corporate governance quality and earnings quality
Frare et al., 2022	11	PLS-SEM	ROI; Profit; Cash flow from operation; Cost control; Development of new products; Sales volume; Market share; Market development; Personal development	The adoption of n management control system package and entrepreneurial orientation are positively associated with firm performance. Management control system package mediates the relationship between entrepreneurial orientation and firm performance
Krishnan et al., 2014	2	CB-SEM	11 variables based of BSC but don't mention which are. Add Economic Value Add (EVA) and Market value added (MVA)	Businesses strategy, market position, business environmental uncertainty and market strength have some influence financial performance but not significant
Laitinen et al., 2016	12	PLS-SEM	Rate of sales growth; Rate of profit growth; ROI; Profit/sales ratio.	Product innovation has a positively effect on financial performance

Research	Citation	Methodology	Performance indicators	Main results
Laitinen, 2011	13	PLS-SEM	Profitability; Growth; Liquidity; Solvency; Stability of business activities	Positive relation between debt restructuring and FP. Positive relation between the change in management control system change and performance. Negative relation between change on management accounting systems and performance. Positive relation between compatibility of actions with the reorganization plan and performance
Laitinen, 2014	3	PLS-SEM	Profitability: ROA and the EBIT to net sales ratio; Solvency: equity to total assets ratio; Liquidity: quick ratio.	MA information based on many perspectives and broad information was positively associated with financial performance. There is an association between information-user CEO work and performance
Maiga & Jacobs, 2007	14	CB-SEM	ROA; return on sales (ROS)	quality improvement and cost improvement have significant positive effects on financial performance. Impact of cycle time improvement is not significant on financial performance. manufacturing performance measures (quality, cost, and cycle time) mediate the relationship between ABC implementation factors and financial performance. ABC implementation do not have a significant relation with financial performance
Maiga et al., 2013	24	CB-SEM	ROS subtracted by net income before corporate expenses, divided by sales; turnover on assets (TOA) subtracted by sales, divided by total assets; ROA	Information technology applications affect firm performance by enabling other business processes and capabilities, which in turn may affect firm performance
Mohd Sofian & Muhamad, 2020	3	PLS-SEM	it uses four indicators but don't mention which are	the application of modified integrated Islamic CSR directive index in line with the stakeholder theory, Shariah principles (unity, equilibrium, free will, responsibility) and ‘urf principle can improve FP of Islamic banks

Research	Citation	Methodology	Performance indicators	Main results
Moufty et al., 2021	4	CB-SEM	Profitability Return on Average Assets (ROAA); Liquidity percentage of net loans in total assets; Operation percent of non-interest income in total income; Funding the percent of customer deposits in total funding	Significant positive impact among the internal social effect and profitability, operation, funding, and liquidity, following stakeholder theory. External social effects have a significant negative relation on bank liquidity, but not on profitability, operation, and funding. It was not confirming a strong relationship between sustainability and financial performance, but sustainability has an influence on profitability at a later period of time having weaker influence on profitability in the same year
Oduro & Haylemariam, 2019	9	PLS-SEM	Profit; ROCE; ROA	Market Orientation significantly improves financial performance. CSR contributes to an unsuppressed effect on the direct impact between market orientation and financial performance in manufacturing organizations in Ghana, having a suppression effect on the financial performance of manufacturing firms in Ethiopia
Oyewo et al., 2022	2	CB-SEM	Economic - Profitability: ROA; Stakeholders value creation: Tobin's Q; Customer patronage: turnover; Market share: annual turnover of a company to the total turnover in the sector multiplied by 100	A strong sustainability accounting practice improves and preserve economic performance

Research	Citation	Methodology	Performance indicators	Main results
Pérez-Méndez & Machado-Cabezas, 2015	79	PLS-SEM	Margin 1. Resources generated by ordinary activities over revenue from ordinary activities; MARGIN 2. Operational profit over revenue from ordinary active-ties; ROI 1. Operational profit over total assets; ROI 2. Profit from ordinary activities over total assets; ROI 3. Operational profit over operational assets; ROI HC. ROI of human capital; COSTS/OI. Operating costs over ordinary income.	Information systems strategy and information systems quality have a positive effect on financial results, being the first one more important and significant
Reinking et al., 2020	22	PLS-SEM	Relative to your business unit's stated objectives, how is your business unit performing in sales growth? Relative to your business unit's stated objectives, how is your business unit performing in profitability? Relative to your major competitors in the industry, how is your business unit performing in profitability? Relative to your business unit's expectations, how is your business unit performing? Relative to your major competitors in the industry, how is your business unit's overall financial performance? Overall	Emphasis on strategically aligning has a strong and consistent relationship with organizational performance

Research	Citation	Methodology	Performance indicators	Main results
			performance of your business unit relative to expectations.	
Rodríguez Antón et al., 2016	3	CB-SEM	During the last 3 years: my department has achieved against its main competitor; Growth or lower reduction in revenue; Growth or lower reduction in profits	Operational effectiveness needs to be distinct from FP

Research	Citation	Methodology	Performance indicators	Main results
Sands et al., 2016	13	CB-SEM	ROI; Comparative costs with similar unit of competitors (or service provider Decrease in percentage of waste and rework (or error correction); Decrease in percentage of total cost to net; sales (services or products); Decrease in percentage of sales returns; Profit (surplus) before tax from operations; Cash flow from operations	Highly developed internal processes may be greatly valued by customers, whose consequent sales enhance the FP. There is a direct influence of the Social Employee-Related process on FP
Scarpellini et al., 2020	80	PLS-SEM	ROE; ROS; ROA	Businesses that introduce Circular Economy-related activities are influenced by the analyzed capabilities that can improve the EP and FP of firms in a Circular Economy framework.
Sharif & Ming Lai, 2015	22	PLS-SEM	ROA; Operating ROA; Tobin's Q; ROE; Tobin's Q estimation; Earnings per share	Corporate disclosure and transparency have a significant positive effect on company performance
Vetchagool et al., 2020	6	CB-SEM	Sales; ROA	ABC do not directly improve financial performance but can improve indirectly through improving operational performance
Young et al., 2007	3	CB-SEM	Actual average ROI; Actual average sales growth rate of the current and subsequent year; Actual average Tobin's Q of the current and subsequent year	Greater adoption of an Intellectual Capital (IC)-oriented corporate performance management (CPM) system has a significant and positive indirect effect on corporate performance through its association with IC levels

APPENDIX 3 – Financial Indicators

Financial Performance Indicator	No.	Sample studies that use such indicator
Economic Indicators		
ROI	8	Baines & Langfield-Smith, 2003; Cadez & Guilding, 2008; Cheffi et al., 2021; Jarrar & Smith, 2014; Kalkhouran et al., 2017b; Laitinen et al., 2016; Nuhu et al., 2021; Rao et al., 2015
profitability	8	Fikri et al., 2022; Laitinen, 2011, 2014; Oyewo et al., 2022; Ramachandran et al., 2018; Reinking et al., 2020; Sánchez-Hernández et al., 2019; Schaefer & Guenther, 2016
profit	6	Baines & Langfield-Smith, 2003; Bhuiyan et al., 2020; Ismail, 2016; Jarrar & Smith, 2014; Nuhu et al., 2021, Oduro & Haylemariam, 2019
return on sales	5	Cheffi et al., 2021; Diefenbach et al., 2018; Maiga et al., 2013; Maiga & Jacobs, 2007; Scarpellini et al., 2020
cost control	3	Baines & Langfield-Smith, 2003; Frare et al., 2022; Jarrar & Smith, 2014
ROA	3	Dasgupta & Singh, 2021; Duh et al., 2014; Ramachandran et al., 2018
changes in revenues	2	Antón et al., 2016; Sands et al., 2016
profit growth	2	Laitinen et al., 2016; Schaefer & Guenther, 2016
margin of sales	1	Cadez & Guilding, 2008
capacity utilization	1	Cadez & Guilding, 2008
cost of goods sold	1	Caglio, 2018
total supply chain cost	1	Caglio, 2018
cost reduction and saving	1	Cheffi et al., 2021
labor productivity	1	Cheffi et al., 2021
profit margin	1	Deb et al., 2022
sales revenue	1	Deb et al., 2022
manufacturing cost	1	Kalkhouran et al., 2017b
operation profit	1	Kalkhouran et al., 2017b
economic value added	1	Krishnan et al., 2014
profit per sales ratio	1	Laitinen et al., 2016
stability of business activities	1	Laitinen, 2011

Financial Performance Indicator	No.	Sample studies that use such indicator
EBIT to net sales ratio	1	Laitinen, 2014
profitability retun on average assets	1	Moufty et al., 2021
return on capittal employed	1	Oduro & Haylemariam, 2019
operational profit over revenue from ordinary activities	1	Pérez-Méndez & Machado-Cabezas, 2015
operationg costs over ordinary income	1	Pérez-Méndez & Machado-Cabezas, 2015
resources generated by ordinary activities over revenue from ordinary activities	1	Pérez-Méndez & Machado-Cabezas, 2015
ROI of human capital	1	Pérez-Méndez & Machado-Cabezas, 2015
ROE	1	Ramachandran et al., 2018
pre-tax profits	1	Sánchez-Hernández et al., 2019
profit margin on sales	1	Sánchez-Hernández et al., 2019
budget results	1	Sandalgaard & Nielsen, 2018
changes in expenses	1	Sands et al., 2016
comparative costs	1	Sands et al., 2016
profit before tax from operations	1	Sands et al., 2016
total cost to net	1	Sands et al., 2016
total costs	1	Vetchagool et al., 2020
Cash Indicators		
cash flows from operations	4	Baines & Langfield-Smith, 2003; Frare et al., 2022; Jarrar & Smith, 2014; Sands et al., 2016
sales	3	Bhuiyan et al., 2020; Nuhu et al., 2021; Vetchagool et al., 2020
cash flows per average total assets	1	Dasgupta & Singh, 2021
sales development	1	Fikri et al., 2022
cash flow growth	1	Kalkhouran et al., 2017b
liquidity	1	Krishman et al., 2014
solvency	1	Krishnan et al., 2014
equity to total sales ratio	1	Laitinen, 2014

Financial Performance Indicator	No.	Sample studies that use such indicator
quick ratio	1	Laitinen, 2014
turnover of assets	1	Maiga et al., 2013
funding the percentage of customers deposits in total funding	1	Moufty et al., 2021
liquidity percentage of net loans in total assets	1	Moufty et al., 2021
operational percentage of non-interest income in total income	1	Moufty et al., 2021
sales return	1	Sandes et al., 2016
Market Indicators		
sales growth	7	Ismail, 2016; Kalkhouran et al., 2017b; Laitinen et al., 2016; Reinking et al., 2020; Sánchez-Hernández et al., 2019; Rao et al., 2015; Young et al., 2007
market share	4	Deb et al., 2022; Frare et al., 2022; Oyewo et al., 2022; Cadez & Guilding, 2008
market development	3	Baines & Langfield-Smith, 2003; Frare et al., 2022; Jarrar & Smith, 2014
Tobin's Q	3	Oyewo et al., 2022; Sharif & Ming Lai, 2015; Young et al., 2007
sales volume	3	Baines & Langfield-Smith, 2003; Frare et al., 2022; Jarrar & Smith, 2014;
earnings per share	2	Bataineh et al., 2022; Sharif & Ming Lai, 2015
price to earnings	2	Bataineh et al., 2022; Elzahaby, 2021
market -to-book value ratio	2	Bataineh et al., 2022; Elzahaby, 2021
market return	1	Dasgupta & Singh, 2021
development of new products	1	Frare et al., 2022
market value added	1	Krishnan et al., 2014
Tobin's Q estimation	1	Sharif & Ming Lai, 2015
Other Indicators		
profit growth	2	Antón et al., 2016; Laitinen et al., 2016
productivity	2	Caglio, 2018; Rodríguez Antón et al., 2016
overall finanical performance	2	Deb et al., 2022; Reinking et al., 2020

Financial Performance Indicator	No.	Sample studies that use such indicator
sales goal	1	Bhuiyan et al., 2020
risk taking capacity	1	Cheffi et al., 2021
resources optimization	1	Cheffi et al., 2021
process optimization	1	Cheffi et al., 2021
average total assets	1	Dasgupta & Singh, 2021
per managed earnings	1	Elzahaby, 2021
personal development	1	Frare et al., 2022
growth	1	Laitinen, 2011
process effectiveness	1	Vetchagool et al., 2020

ANEXO 4 – Non-Financial Performance Main Results

APPENDIX 4 – Non-Financial Performance Main Result

Research	Citation[4]	Methodology	Performance indicators	Main results
Abdel-Maksoud et al., 2021	10	PLS-SEM	Environmental - 15 items, using exploratory factor analysis, resulted in two factors. The first factor is labelled “operational environmental performance”; while the second factor is labelled “non-operational environmental performance”.	Primary stakeholders are significantly linked with eco-control EP determinants and eco-controls incentives. Eco-controls incentives and eco-control systems have a positive effect on EP
Bhuiyan et al., 2020	17	CB-SEM	Our products/services are of a higher quality than those of our competitors; We have a higher customer retention rate than our competitors	The specific practice of CSR, minimizing illegal activities, is positive associated with non-financial performance
Deb et al., 2022	8	PLS-SEM	Environmental - Improved environmental performance; More informed decision-making; Assisting with internal and external reporting; Increased competitive advantage	Environmental management accounting has a significant positive impact on EP. Improved EP leads to better FP. Knowledge management and energy efficiency are significant factors of EP
Laitinen et al., 2016	12	PLS-SEM	Increase in market share; Customer satisfaction; Customer retention; Acquisition of new customers.	Product innovation has a positive effect on non-financial. There is a strong association between innovation and non-financial performance

[4] All the citations were search at 25th of May 2023 in the data base Scopus.

Oduro & Haylemariam, 2019	9	PLS-SEM	Marketing - sales; customer loyalty; customer satisfaction; market share; corporate image/reputation	Market Orientation significantly improves marketing performance
Monteiro et al., 2022	5	CB-SEM	The company has improved its customer service; The company has improved working conditions, regardless of the employee's position; The company has improved its performance in terms of social responsibility (voluntary effort on the part of the company in the creation of various measures to meet the expectations of the different interested parties—stakeholders);The company achieved improvements in customer satisfaction; The company has increased its employee retention rates; The company has increased its customer retention rates; The company's (non-financial) performance has been successful	The quality of non-financial information do not have a direct relation to non-financial performance. Decision-making success has a positive effect on NFP

Rae et al., 2015	12	CB-SEM	Environmental - results for waste management; results for carbon trading; results for water conservation; results for greenhouse gas emissions; estimate level of pollutions emitted after using pollution-control technology	Together with work practices process, EP is a factor of the regulatory and environmental value-creating process. The three value-creating processes (innovation process, process improvement, work practices process) have a significant relationship with EP. Human capital is positive associated with EP, when fostering higher affective commitment among their employees, delivering targeted training, and putting in place efficient employee performance procedures
Solovida & Latan, 2017	92	PLS-SEM	Environmental - Compliance with the requirements or expectations of standard; Energy input; Relationship with the community; The solid waste output; Output of air emissions; Financial impact; Maintenance for the installation, operation, facilities and facilities for physical equipment; Liquid waste output; Raw materials input; Water input; Implementation of environmental policies and programs; Input auxiliary materials; The indicators provide information about the environmental conditions locally, regionally and nationally	Environmental strategies have a positive effect on EP. Environmental management accounting have an indirect relationship with EP through environmental strategies
Uyar & Kuzey, 2016a	15	CB-SEM	do not say	The application of budged and use of some contingent facts, like structure, functionality of IT and perceived environmental uncertainty have a positive effect on performance

Uyar & Kuzey, 2016b	45	CB-SEM	do not say	Management accounting practices have a positive impact on performance. Cost system design by itself does not have a significant direct effect on performance, having an indirect impact thru management accounting practices

APPENDIX 5 – Non-Financial Indicators

Non-Financial Performance Indicator	No.	Sample studies that use such indicador
Marketing indicators		
Corporate indicators		
corporate image/reputation	3	Cheffi et al., 2021; Oduro & Haylemariam, 2019; Sánchez-Hernández et al., 2019
market share	2	Laitinen et al., 2016; Oduro & Haylemariam, 2019
Sales	1	Oduro & Haylemariam, 2019
corporate culture	1	Sánchez-Hernández et al., 2019
Products or service indicators		
products or services quality	9	Bhuiyan et al., 2020; Cadez & Guilding, 2008; Cheffi et al., 2021; Duh et al., 2014; Kalkhouran et al., 2017b; Nuhu et al., 2021; Rao et al., 2015; Antón et al., 2016; Vetchagool et al., 2020
on time deliveries	2	Caglio, 2018; Kalkhouran et al., 2017b
devolopment of new products	2	Jarrar & Smith, 2014; Kalkhouran et al., 2017b
delivery performance	1	Caglio, 2018
fill rate	1	Caglio, 2018
order fulfillment - lead time	1	Caglio, 2018
delivery schedules	1	Cheffi et al., 2021
development of cost-efficient product and/or services	1	Diefenbach et al., 2018
rework	1	Duh et al., 2014
successful new products	1	Fikri et al., 2022
order cycle time	1	Rao et al., 2015
deadlines	1	Antón et al., 2016
Customer indicators		
customer satisfaction	9	Cadez & Guilding, 2008; Cheffi et al., 2021; Diefenbach et al., 2018; Duh et al., 2014; Fikri et al., 2022; Laitinen et al., 2016; Oduro & Haylemariam, 2019; Monteiro et al., 2022; Antón et al., 2016
customer retention	7	Bhuiyan et al., 2020; Diefenbach et al., 2018; Laitinen et al., 2016; Nuhu et al., 2021; Monteiro et al., 2022; Rao et al., 2015; Sánchez-Hernández et al., 2019;

new customers	3	Diefenbach et al., 2018; Laitinen et al., 2016; Rao et al., 2015
customer service	2	Frare et al., 2022; Rao et al., 2015
repeat purchases	1	Fikri et al., 2022
customer loyalty	1	Oduro & Haylemariam, 2019
know-how	1	Sánchez-Hernández et al., 2019
accumulated experience	1	Sánchez-Hernández et al., 2019
Social indicator		
Community indicators		
politicial-public affairs	1	Baines & Langfield-Smith, 2003
social responsibility	1	Monteiro et al., 2022
labor law complience	1	Nuhu et al., 2021
donations to charity	1	Nuhu et al., 2021
participation in community activities	1	Nuhu et al., 2021
Employee-related indicators		
personnel development	3	Baines & Langfield-Smith, 2003; Jarrar & Smith, 2014; Kalkhouran et al., 2017b
employee retention	3	Monteiro et al., 2022; Rao et al., 2015; Sánchez-Hernández et al., 2019
employees satisfaction	2	Cheffi et al., 2021; Sánchez-Hernández et al., 2019
employee morale	1	Duh et al., 2014
employee growth	1	Ismail, 2016
working condition	1	Monteiro et al., 2022
respected and fairly treatment	1	Nuhu et al., 2021
overtime work	1	Nuhu et al., 2021
employee turnover	1	Nuhu et al., 2021
employee creativity	1	Rao et al., 2015
share values	1	Sánchez-Hernández et al., 2019
Environmental indicators		
Specific indicators		
informed decision-making	1	Deb et al., 2022

assisting with internal and external reporting	1	Deb et al., 2022
increased competitive advantage	1	Deb et al., 2022
material costs	1	Nuhu et al., 2021
levels of waste	1	Nuhu et al., 2021
levels of emissions	1	Nuhu et al., 2021
costs associated with cleaning up environmental damage	1	Nuhu et al., 2021
fines paid and remediation costs regarding environmental damage	1	Nuhu et al., 2021
filters and controls on emissions and discharges	1	Nuhu et al., 2021
residue recycling	1	Nuhu et al., 2021
results for waste management	1	Rae et al., 2015
results for carbon trading	1	Rae et al., 2015
results for water conservation	1	Rae et al., 2015
results for greenhouse gas emissions	1	Rae et al., 2015
estimate level of pollutions emitted after using pollution-control technology	1	Rae et al., 2015
compliance with the requirements or expectations of standard	1	Solovida & Latan, 2017
energy input, relationship with the community	1	Solovida & Latan, 2017
the solid waste output, output of air emissions	1	Solovida & Latan, 2017
maintenance for the installation	1	Solovida & Latan, 2017
operation, facilities and facilities for physical equipment	1	Solovida & Latan, 2017

liquid waste output	1	Solovida & Latan, 2017
raw materials input	1	Solovida & Latan, 2017
water input	1	Solovida & Latan, 2017
implementation of environmental policies and programs	1	Solovida & Latan, 2017
auxiliary materials	1	Solovida & Latan, 2017
environmental conditions locally, regionally and nationally	1	Solovida & Latan, 2017
General indicators		
impact on the environment	1	Cheffi et al., 2021
improved EP	1	Deb et al., 2022
financial impact	1	Solovida & Latan, 2017
Other indicators		
innovation	2	Cheffi et al., 2021; Rao et al., 2015
knowledge transfer	1	Cheffi et al., 2021
flexibility and adaptability	1	Cheffi et al., 2021
research and development activity	1	Kalkhouran et al., 2017b