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THE EFFECTS OF USING PERFORMANCE MEASUREMENT SYSTEMS (PMSS) ON ORGANIZATIONS' PERFORMANCE

Review Article

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Abstract

The current business environment proposes great pressure and challenges on organizations to sustain and prosper. Performance measurement systems (PMSs) are considered one of the most accepted and widely used tools that organizations adopt to help them implementing their strategies, monitoring their performance towards achieving their strategic goals, and gathering important and useful information to improve their performance frequently. Previous literature has theoretically suggested that using PMSs will affect the organizational performance; nevertheless, the empirical studies found different results regarding these effects, some of these results supported the suggested benefits, while some did not. In this paper, recent empirical pieces of evidence studying the effects of using these systems on organizational performance have been collected and reviewed, covering a wide variety of industries in different regions. All reviewed articles were published in peer-reviewed journals in the period between 2014 and 2020. Almost all of the reviewed articles support the theoretical claims of having different positive impacts on organizational performance. However, the effects of these systems were not always direct, they vary between being direct, indirect, mediating, or moderating. PMSs affect various aspects of organizations; for example, they affect the overall organizational performance, financial and non-financial performance, employees' behavior, and many other aspects of organizations.

INTRODUCTION

Since 1980s many performance measurement systems (PMSs) frameworks and approaches have been proposed, and till this moment, new frameworks and approaches are being continuously developed. Traditional PMSs were criticized for focusing only on financial perspective, short-term metrics, and for being linked weakly to the organizational strategies (Neely, Gregory, & Platts, 1995), therefore, more balanced and dynamic systems were needed. Economic performance, social performance, and environmental performance are three main components of nowadays global performance, which focus on both financial and non-financial performance equally (Cioclov & Lala-Popa, 2017). PMSs are important in every organization to assure its stability and prosperity in the current highly competitive environment, which increased the competition between organizations and made it very crucial for them to survive. Zsidó and Fenyves (2015) mentioned that the organizations' position and the achievement of their long-term goals are affected by the frequent assessment of performance. Nappi and Rozenfeld (2015) mentioned that a PMS is a vital part of any company's managerial system, it is an important element that has been recognized for improving business performance (Taticchi, Tonelli, & Cagnazzo, 2010), and it is defined by Neely et al. (1995) as "the set of indicators used to quantify both the efficiency and effectiveness of actions". Equbal and Ohdar (2017) explained that performance measurement describes the information or the feedbacks on activities concerning fulfilling both strategic objectives and customer expectations, which will assure that efficiency and quality can both be enhanced. When applying any measurement system, the goal is mainly to get feedback that is related to the set goals, which increases the chances of the efficient and effective achievement of goals. A PMS consists of performance measures, goals, and financial and non-financial objectives carefully selected to represent the key drivers of the organizations' success in meeting their strategic goals (Kaplan & Norton, 1996a). Using performance measures has an advantage of helping organizations and managers to improve future results and enhancing decision-making processes (Coste & Tiron-Tudor, 2015), also Pavlov and Bourne (2011) emphasized that organizations can improve the accuracy of data, deliver aligned metrics, and improve the decision-making processes flexibility by implementing performance measurement systems. Implementing PMSs to delivering information assumes that it will improve the performance eventually because leaders and managers of the organizations will use this information intentionally to manage the programs, plans, and allocate the resources in the most effective ways (Moynihan et al., 2011). Implementing PMSs has many impacts on firms' performance, they affect organizational capabilities, employees' behavior, and organizational, managerial, and teams' performance. Moreover, Franco-Santos, Lucianetti, and Bourne (2012) described that a PMS may be viewed as a valuable resource for organizations, since it is a resource that may be used to enhance the decision-making process, therefore, achieving competitive advantages and enhancing the organizational performance. PMSs also enhance the strategy translation into operations and the alignment between organizational competencies and different processes (Chenhall, 2005). "We expect that PMSs adoption helps managers to understand occurring development, trends, and events from different perspectives and that this kind of understanding enables them to respond appropriately, which in turn improves firms' performance" (Länsiluoto, Joensuu-Salo, Varamäki, Viljamaa, & Sorama, 2019). There are many identified roles for PMSs in literature, for example, PMSs are used for: strategy implementation (Kaplan & Norton, 1996b), measuring performance (Lebas, 1995), performance improvement (Neely et al., 1995), internal communications (Bititci, Carrie, & McDevitt, 1997) and monitoring progress (Atkinson, 1998). The organizational motivations to adopt and use PMSs are basically to achieve benefits for organizations and to improve the organizational performance ultimately (Ittner, Larcker, & Meyer, 2003), however, Micheli and Manzoni (2010) believe that PMSs may be both functional or dysfunctional to organizations and what determine the organizational outcomes are the design and the type of use of PMS. Strategic PMSs (SPMSs) are mechanisms to translate strategy into measures and objectives which are easily and clearly communicated, SPMSs also support the strategy implementation and improve the performance of organizations (Bisbe & Malagueño, 2012). The impact of these systems on organizational performance is vague, a positive association between organizational performance and SPMSs is found in some studies, in contrast, other studies found that the relationship depends on organizational performance types (Chenhall, 2005). This article aims to provide a literature review of the recent empirical studies published between 2014 and 2020, which investigated the effects of using PMSs on organizational performance. The reviewed articles cover organizations from a wide variety of fields: manufacturing, small-medium sized enterprises (SMEs), public, health care, and a part including studies from a wide variety of industries. The article is divided into seven parts,

and the next part is the methodology part. Each of the following parts discusses the findings in a specific field, and finally, the conclusion.

METHODOLOGY

This article mainly aims to provide a review of some recent empirical results about the effects of implementing and using PMSs on organizational performance. To scope the literature review, Scopus electronic databases and EBSCO Discovery Service (UDiscover) were used to search for articles in the area of performance measurement systems. Many possible keywords combinations were used to searching those databases, which resulted in a great number of articles; however, some of the most relevant studies were finally used. The relevant articles were chosen based on a predefined criterion that articles must: (1) include empirical findings, (2) published from 2014-2020, and (3) published in peer-reviewed journals. Finally, 24 selected articles were then reviewed to find the effects of using PMSs on organizations. Unfortunately, there were access limitations to many of the found articles which reduced the number of articles available for the further full review.

THE EFFECTS OF USING PMSs ON THE PERFORMANCE OF MANUFACTURING ORGANIZATIONS

The competition in the manufacturing sector is continuously and hugely increasing, and to gain advantages over competitors these organizations focus on a great number of objectives, and the most important is producing variable high-quality products at lower costs. And to get information about their effectiveness of achieving these predefined objectives, they use PMSs. In this part, a review of the studies investigated the impact of PMSs on manufacturing organizations performance is provided. Key performance indicators (KPIs) are "the indicators which focus on the aspects of organizational performance that are most crucial for their current and future success" (Parmenter, 2015), and according to Rusăneanu (2013), KPIs are important as a performance management tool since the selected KPIs (which are related to the company's field of work) provide the employees with a clear view on the processes that will help achieving the strategic objectives and therefore, driving the organization's success. Bhatti, Awan, and Razaq (2014) studied the effect of using KPIs on the overall performance of different manufacturing industries of Pakistan. The studied ten different indicators are financial and non-financial indicators which are widely used by organizations to measure and manage their performance, and they are discussed in the literature. A positive and significant association between financial, flexibility, quality, delivery reliability, employees' satisfaction, customers' satisfaction, safety, environmental/community, and learning and growth with the Overall Performance Index (OPI) was found, whereas the cost indicator was found to have a negative correlation with the OPI, however, their relationship is not significant. Furthermore, the simple regression analysis results show that except of learning and growth indicator which is found to have no effect on the OPI, measuring performance in terms of the other nine studied indicators positively and significantly impact the overall organizational performance. In Europe, using survey research method distributed to top executives in the German electronic manufacturing sector and conducting a multi-sample analysis, Barroso, Burkert, Dávila, Oyon, and Schuhmacher (2016) found significant moderating effects of PMSs sophistication. They found that PMSs sophistication positively moderates both the employees' commitment and market performance relationship, and the organizational flexibility and financial performance relationship. However, PMSs sophistication negatively moderates the relationship between internal efficiency and financial performance. Ahmad and Zabri (2016) studied the non-financial PMSs (NFPMSs) impact on Malaysian manufacturing firms' performance. The NFPMSs were measured using 29 different indicators under six important categories: internal efficiency, customer, product development and growth, employees, product quality, and corporate social responsibilities (CSR). The results of the analysis support that NFPMSs have significant effects on firms' performance, the result shows that five of the six categories used to measure NFPMSs (except product quality) have positive and significant relationships with performance. Furthermore, the regression analysis results show that all of the product development and business growth, efficiency, and CSR have strong relationships with the average performance. The results do not provide support for a significant direct effect of the customer, quality, and employees-based indicators on performance, however, indirect effects of these measures on performance could be present. Another study on Malaysian manufacturing companies was performed by Rasit, Satar, and Ramli (2018), who investigated the relationship between Just in Time (JIT) practices and organizational performance under the influence of PMSs, both JIT and PMSs are strategies adopted by companies to enhance manufacturing performance. They found that higher extensive PMSs are linked with higher benefits to the firms' performance, it was also found that firms which implement more

advanced PMSs (including both financial and non-financial metrics) with JIT system achieve higher performance. The association between JIT and organizational performance is positive and significant, however, it is stronger for companies that use more advanced PMSs than the ones that use traditional PMSs. The results support the view that advanced PMSs may be best suited for organizations with JIT system, and they indicate that companies which use more advanced performance measures, perform better than those companies that used traditional performance measures. SPMSs were found to have positive effects on the organizational learning and the information system strategic alignment of Korean manufacturing firms (Choe, 2016), Baird (2017) also studied the effects of SPMSs characteristics on their effectiveness on Australian manufacturing and business units' outcomes. The SPMSs effectiveness was divided into two dimensions, performance-related outcomes and staff-related outcomes. The result shows that using multidimensional performance measures is associated positively with all of PMSs satisfaction and both performance-related and staff-related outcomes. However, the level to which performance measures are linked to value drivers were found to be associated with only performance-related outcomes negatively, whereas the level to which performance measures are linked to the strategy was associated with neither of the organizational outcomes' dimensions.

THE EFFECTS OF USING PMSs ON THE PERFORMANCE OF SMEs

SMEs are a very important part of the business that need to be well studied, SMEs are defined by European Commission (2003) as "The category of micro, SMEs in made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million". SMEs according to Chenhall (2003) usually have limited resources, a reactive approach to management, non-formalized structures to manage performance, poor managerial skills, internal operational focus, and short-term operational focus which suggest that generally there is less interest in adopting PMSs by SMEs. A study by Mtar (2017) shows that implementing balanced scorecard (BSC) has a positive and significant effect on increasing the performance of French SME, BSC use has significantly improved both labor productivity and firm turnover. Länsiluoto et al. (2019) found that PMSs have a significant and positive impact on both financial and non-financial performance of Finish SMEs, which indicates the importance of PMSs adoption in SMEs, even though SMEs have few characteristics that could control the PMSs adoption in practice. Guenther and Heinicke (2019) surveyed mid-sized German enterprises to study the association between different uses of PMSs (interactive and diagnostic) and the accompanying benefits organizations achieve, as well as if the level of PMSs sophistication and firm size have any moderating role on the relationships. Simons (1994) defines the diagnostic systems as "formal feedback systems used to monitor organizational outcomes and correct deviations from pre-set standards of performance", whereas the systems which are used "by top managers to regularly and personally involve themselves in the decision activities of subordinates" are interactive systems (Simons, 1994). The Structural Equation Modeling (SEM) analysis results show that there is a direct, positive, and significant association between the emphasis on the both uses of PMSs and the achieved benefits when the level of PMSs sophistication is controlled. However, the path coefficient of the relationship between the interactive use of PMS and PMS benefits is higher than the one for the relationship between the diagnostic use of PMS and PMS benefits. Regarding the moderating effect of PMS sophistication, it is found that it significantly moderates both relationships. Firms with low sophistication levels of PMSs achieve higher PMSs benefits whether the emphasis is on the diagnostic or the interactive use of PMS, on the other hand, firms with high levels of PMSs sophistication achieve higher PMSs benefits with more emphasis on the interactive use of PMS since their relationship is positive and stronger. Firms' size also plays a moderating role when there is an emphasis on the interactive use of PMS, as larger mid-sized firms gain more benefits from PMSs than smaller ones.

THE EFFECTS OF USING PMSs ON THE PERFORMANCE OF HEALTH CARE FIELD

Previous literature has clearly identified using PMSs in health care as crucial in addressing the improved process of care, furthermore, PMSs are implemented by health organizations because of the common believe that these systems lead to achieving great benefits. PMSs provide managers of these systems with a support to their decision-making processes, therefore, the process of care is expected to be improved and become highly efficient. A study on Italian managers working in health care organization was performed by Demartini and Trucco (2017), and the PLS analysis of the collected data found that the strategic use of PMS has a direct and significant positive impact on the performance in terms of improved processes when used in health care, and it positively and

significantly affects perceived managerial discretion. The definition of the strategic use of PMSs is "the use of PMSs to detect strategic uncertainties related to change in competitive dynamics and internal competencies that may create opportunities or threats". On the other hand, using the PMS as a traditional feedback style to investigate the variations between the target and actual performance is known as the non-strategic use of PMSs. The results of their study provide a proof that the strategic use of PMS can benefit health care managers to allocate their time effectively by focusing on what could impact the performance of organizations in a positive way (improving processes), such as strategic opportunities and threats. There is a positive and statistically significant correlation between the strategic use of NFPMSs with the degree of perceived managerial discretion and the level of improved processes. In the same field, another recent study was conducted by van Elten, van der Kolk, and Sülz (2019) to investigate the effect of various uses of PMSs on hospital outcomes in relation to the degree of patient-oriented care (POC), operational performance (OP), process quality (PQ), and work culture (CWC). The study was performed on Dutch hospital managers and studied the effect of three different uses of PMS (exploratory, operational, and incentive oriented) on the hospital outcomes. The exploratory PMS use is simply defined as using PMS to learn and enhance, the operational PMS use, on the other hand, it is about the managerial dependency on performance measures for operational planning, budget allocation, and process monitoring, and finally, incentive-oriented PMS use which seeks to align organizational goals with employees' motivation. After conducting four ordinary least square models to find the relationships, they concluded that when explaining the relationships with hospital outcomes it does not only depend on the presence or design of PMSs, in fact, also the type of PMS use could impact the level of achieved objectives. The operational use of PMS could harm the degree of POC, however, at the same time enhances the OP of a medical unit. POC and CWC are positively associated with the exploratory use of PMS at the level of the organizational unit in a hospital. However, the hospital outcomes and incentive-oriented PMS do not have any positive or negative relation at the level of the organizational unit.

THE EFFECTS OF USING PMSs ON THE PERFORMANCE OF PUBLIC COMPANIES

"Performance measurement is an increasingly pervasive aspect of organizational life, especially in the public sector" (Townley, Cooper, & Oakes, 2003), and according to Hood (1995) PMSs improve the effectiveness, the efficiency, and the quality of organizations in the public sector. Therefore, the public sector cannot be neglected when discussing PMSs. Discussed earlier the effect of exploratory, operational, and incentive-oriented use of PMSs on health organizations, however, Spekle and Verbeeten (2014) studied their effects on Dutch public firms. The incentive-oriented use of PMS was found to negatively affects the performance; however, as the contractibility increases this effect becomes less negative. The exploratory use has a positive effect on the performance and this effect is unaffected by contractibility, and finally the operational use does not have any effect on performance. The degree to which the following three conditions (clear organizational goals, measurable outputs, and the knowledge of production function which transforms efforts into results) are met simultaneously refers to contractibility. Another study concerned studying the contribution of PMSs to improve the performance of public organizations is done in by Ambalangodage and Fie (2016) on the Sri Lankan Water Board. The analysis of the data revealed that there is a significant positive relationship between PMSs and employee behavior, thus PMSs significantly contribute to employee behavior. The study also found that PMSs and organizational capabilities have a positive relationship, thus PMSs also significantly contribute to the organizational capabilities. A piece of strong empirical evidence was found by Gomes, Mendes, and Carvalho (2017) supporting that Portuguese public sector organizational performance is positively and directly affected by both PMSs and the agencies context. Concluding that the extent to which PMSs are used by agencies and the organizational performance are positively associated, moreover, their results support a conclusion that the relationship between using PMSs and customer-focused strategies is possible to result in achieving enhanced performance. Another study revealed that using comprehensive PMSs (CPMSs) positively affects the performance of Malaysian public organizations, however, using PMSs in integration with enterprise risk management has no effect on these organizations' performance (Rasid, Golshan, Mokhber, Tan, & Mohd-Zamil, 2017).

THE EFFECTS OF USING PMSs ON THE PERFORMANCE OF ORGANIZATIONS FROM WIDE VARIETY OF INDUSTRIES

Studies on PMSs are performed in almost every field, this section includes different results of the effects of PMSs on organizational performance in different industries. Discussed earlier Guenther and

Heinicke (2019) study on the effect of the interactive and diagnostic uses of PMS on SMEs achieved benefits, Koufteros, Verghese, and Lucianetti (2014) on the other hand studied the effect of these PMS uses on multiple firms operating in Italy (public and private Italian and multinational firms). The solely diagnostic use or solely interactive use of PMS positively and significantly affects strategic management capabilities but using both of them together has a positive but moderately significant effect. Their effect on operational capability is positive whether they have been used solely or together, but the most significant effect is from the diagnostic use of PMS. However, their effect on external stakeholder relations capability is positive and significant if used for either diagnostic or interactive solely. Lowest levels of capabilities were recorded when the interactive use was used at low levels with high levels of diagnostic use, in contrast, higher levels of capabilities were achieved when both types of PMSs were used with high levels. Both of strategic management capabilities and operational capabilities were found to have a moderately significant positive effect on target performance, while the external stakeholder capability was found to have a positive and statistically significant influence on target performance. Target performance has a positive and significant impact on subjective financial performance, return on total assets (ROTA), return on assets (ROA), and return on equity (ROE), nevertheless, target performance effect on earnings before interest, taxes, and management (EBITM) is negative and moderately significant. Lisi (2018) studied the effects of PMSs implemented by Italian firms from a wide variety of industries for the purpose of managing social responsibility activities on the social and economic performance of these firms. Using social performance indicators (SPIs) and social performance are directly, strongly, and positively associated, and the use of SPIs positively affects the economic performance in an indirect way by social performance playing as the mediating variable in the relationship. Another study on Italian firms was done by Lucianetti, Battista, and Koufteros (2019) who found that the level of BSC design comprehensiveness has a great impact on organizational effectiveness (exploiting cause-and-effect relationships, aligning and translating corporate strategy into organizations, and mobilizing people), which means that with more comprehensive PMSs higher levels of organizational effectiveness are achieved. CPMSs and their mediating role in the relationship between strategy and company's performance of large European firms were investigated by Micheli and Mura (2017). Large companies are defined by the European Union as organizations which employ more than 250 persons and have either a turnover of more than 50 million Euros or total annual balance sheet of 43 million Euros (European Commission, 2003). Differentiation strategy and company's performance relationship is fully mediated by CPMSs, while differentiation strategy and innovative performance relationship is partially mediated by CPMSs, nevertheless, the differentiation strategy and operational performance relationship is not mediated by CPMSs. Also, the cost-leadership strategy and firm's performance relationship is partially mediated by CPMSs, however, both relationships cost-leadership with innovative performance and cost-leadership with operational performance are not affected by CPMSs. Moreover, more CPMSs which employ a wide variety of broad financial and non-financial indicators delivering information covering various areas of firms' operations, do support the cost-leadership strategy and differentiation strategy to deliver higher performance more than other PMSs which rely exclusively on just financial or non-financial indicators. On the other hand, Yuliansyah, Gurd, and Mohamed (2017) did not find any significant direct relationship between the reliance on interaction SPMSs and Indonesian organizational performance, however, reliance on interaction SPMSs affects organizational performance through business strategy. Severgnini, Vieira, and Galdamez (2018) studied the PMSs in the Information Technology field, specifically the Brazilian software companies to investigate how PMSs and organizational ambidexterity indirectly affect performance. Organizational ambidextrous firms are defined by Lubatkin, Simsek, Ling, and Veiga (2006) as firms that can balance and perform both, exploiting the already existing competencies in addition to exploring new opportunities. Using PMS for three different purposes (attention focus, strategic decision-making, and legitimization) impacts positively the organizational ambidexterity which was found to have a positive relationship with business performance, concluding that there is a positive and significant, but indirect influence of the use of PMS on organizational performance through ambidexterity. Taheri, Bititci, Gannon, and Cordina (2019) in their study on a multi-branch Iranian travel agency found that CPMSs have a significant and positive effect on market-focused learning (MFL), negative effect on entrepreneurial orientation, and both of CPMSs and MFL influence the employees' perception of firm's performance positively. Their study also involved taking into consideration the situation of the market (high market-turbulence (HMT) and low market-turbulence (LMT)), the findings suggest that there is a difference in the effects of CPMSs on MFL and entrepreneurial orientation, as well as in the effects of all MFL, CPMSs, and entrepreneurial orientation on employees' perception of firm's

performance between HMT and LMT. All of the influences were found to be stronger for HMT compared to LMT. The indirect effects were also investigated, which show that there is an indirect effect of CPMSs on employees' perception of firm's performance which was mediated by entrepreneurial orientation and MFL. Zhang and Yu (2020) surveyed 191 top Chinese managers (high-level executives, controllers, and managers) to study the PMS interactive use impacts on organizational learning and job performance. Their results suggest that the interactive use of PMS has a direct positive effect on both organizational learning and job performance. Also, organizational learning is positively and significantly associated with the interactive use of PMS, and there is a significant positive association between job performance and organizational learning, thus their supposed hypothesis that organizational learning strongly and positively mediates the interactive use of PMS and job performance relationship was supported. The four BSC perspectives (financial, customer, internal-business processes, and learning and growth) were found to impact the perceived organizational performance positively, however, except of the financial perspective, all other BSC perspectives have a positive impact on the sustainable development based on Rafiq, Zhang, Yuan, Naz, and Maqbool (2020) study on Chinese companies located in Pakistan.

Table 1 below includes a summary of the most important information and findings from the reviewed articles.

CONCLUSIONS

Based on the theoretical claims about the organizational benefits that are associated with implementing and developing PMSs. This article was proposed, to provide the most recent empirical evidence to assess whether these claims are true or not. The noticeable increase in the interests of PMSs may have been justified after providing the previous literature review, PMSs proved to have multiple and great benefits on organizations' performance. It is important also to highlight that when explaining the relationship between PMSs and organizational outcomes it does not only depend on the presence or the design of the PMS, but the degree of PMS sophistication, the type of PMS use, and the PMS characteristics also impact the extent to which objectives are realized. For example, the incentive-oriented use of PMS negatively affects the performance of public companies, while the exploratory use has a positive effect on public organizations' performance, however, the operational use has no effect on the performance of public organizations. PMSs affect organizational performance in different ways, nevertheless, the effects of PMSs vary between direct effects, indirect effects, mediating effects, or moderating effects. PMSs affect overall organizational performance, organizational learning, labor productivity, firms' turnover, financial and non-financial performance, employees' behavior, organizational capabilities, strategic management capability, operational capability, organizational effectiveness, organizational ambidexterity, and many other aspects of organizations. Also using SPIs specifically affects firms' social performance directly and firms' economic performance indirectly through impacting social performance.

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LIST OF TABLES

Table 1
Summary of PMSs effects on organizations' performance

Nr	Author, year	Country	Main Findings
			Manufacturing Sector
1	Bhatti et al. (2014)	Pakistan	Measuring performance in terms of the number of indicators positively and significantly impact the overall organizational performance.
2	Barroso et al. (2016)	Germany	Significant moderating effects of PMSs sophistication on some relationships. Highly sophisticated PMS positively moderates the employee commitment and market performance relationship, as well as the relationship between the company's flexibility and financial performance. However, negatively moderates the internal efficiency and financial performance relationship.
3	Ahmad and Zabri (2016)	Malaysia	NFPMSs have significant effects on firms' performance.
4	Rasit et al. (2018)	Malaysia	More extensive PMSs achieve higher benefits to organizations. With higher extensive PMSs the positive and significant relationship between JIT and organizational performance is stronger.
5	Choe (2016)	Korea	SPMS positively affects both organizational learning and information system strategic alignment.
6	Baird (2017)	Australia	Using multidimensional performance measures positively impact the SPMSs effectiveness.
			SMEs
7	Mtar (2017)	France	BSC positively and significantly affects firms' performance.
8	Länsiluoto et al. (2019)	Finland	PMSs have a significant and positive effect on firms' financial and non-financial performance.
9	Guenther and Heinicke (2019)	Germany	The relationships between the two types of PMS uses (interactive and diagnostic) and their benefits are direct and positive. Nevertheless, the interactive use and PMSs benefits relationship is positively moderated by PMSs sophistication, whereas PMSs sophistication negatively moderates the diagnostic use relationship with PMSs benefits.
			Health Care Sector
10	Demartini and Trucco (2017)	Italy	Using PMSs for strategic purposes significantly and positively affects the organizations performance in terms of improved processes and the perceived managerial discretion.
11	van Elten et al. (2019)	Netherlands	The operational use of PMS affects positively the operational performance and negatively the degree of POC. However, the exploratory use of PMS positively affects both POC and CWC. In contrast, the incentive-oriented use of PMS does not affect hospital outcomes.
			Public Sector
12	Spekle and Verbeeten (2014)	Netherlands	Both the incentive use and the exploratory use of PMS have effects on performance, their effects are negative and positive, respectively. On the other hand, the operational use of PMS does not impact performance.
13	Ambalangodage and Fie (2016)	Sri Lanka	PMSs have a positive and statistically significant effect on employee behavior and organizational capabilities.

14	Gomes et al. (2017)	Portugal	The level to which PMSs are used by agencies is associated with organizational performance positively.
15	Rasid et al. (2017)	Malaysia	Using comprehensive PMSs positively affects performance. However, using these systems in integration with enterprise risk management has no effect on organizational performance.
		Wide Variety of Industries	
16	Koufteros et al. (2014)	Italy	Using PMS enhances the capabilities, which also influence performance.
17	Lisi (2018)	Italy	Using SPIs and social performance are strongly and positively associated. Moreover, using SPIs positively affects organizations' economic performance through social performance.
18	Lucianetti et al. (2019)	Italy	The level of BSC comprehensiveness has a great impact on organizational effectiveness.
19	Micheli and Mura (2017)	European Countries	CPMSs play a positive mediating role in the relationship between differentiation strategy and both organizational and innovative performance, and on the relationship between cost-leadership strategy and organizational performance.
20	Yuliansyah et al. (2017)	Indonesia	The reliance on interaction SPMSs does not have a direct effect on organizational performance, however, it affects organizational performance through business strategy.
21	Severgnini et al. (2018)	Brazil	Using PMS for attention focus, strategic decision-making, and the legitimization is associated positively with organizational ambidexterity, which positively influences business performance. PMSs and performance relationship is mediated by organizational ambidexterity.
22	Taheri et al. (2019)	Iran	CPMS has a positive impact on MFL, therefore, perceptions of firm performance are positively affected. CPMS also has a negative impact on entrepreneurial orientation, which impacts the perceptions of firm performance negatively.
23	Zhang and Yu (2020)	China	The interactive use of PMS has a direct positive effect on both organizational learning and job performance. Furthermore, the interactive use of PMS and job performance relationship is mediated by organizational learning.
24	Rafiq et al. (2020)	Chinese companies in Pakistan	The four BSC perspectives have a positive impact on the perceived organizational performance, and the three perspectives other than the financial have a positive impact on sustainable development.

Source: Author's own summary based on reviewed articles