

# THESES OF THE DOCTORAL (PhD) DISSERTATION

## THE IMPACTS OF ADOPTING PERFORMANCE MEASUREMENT SYSTEMS (PMSS) ON THE PERFORMANCE OF THE JORDANIAN INDUSTRIAL ESTATES' COMPANIES

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# 1. INTRODUCTION OF THE TOPICS AND OBJECTIVES

In today's world, the business field is suffering from a highly competitive environment that puts great pressure on organisations to achieve their desired goals. The rapid changes in the business environment are primarily driven by factors such as continuous changes in customer demands, globalisation, and advancement related to information and technology. As a result of these changes, organisations' strategies change consequently. Therefore, organisations strive to implement methods that help them sustain their existence in such difficult environments by periodically measuring their progress towards achieving their goals and continuously improving their performance. The frequent performance measurement significantly influences organisations' position and their ability to achieve long-term goals. This emphasises the critical role that performance measurement plays in the life of organisations, especially in the context of sustainable development (Zsidó & Fenyves, 2015).

One of the methods related to this manner that has spread greatly and widely nowadays is the Performance Measurement Systems (PMSs). Since the first use of performance management as an approach in the 1980s until now many definitions, frameworks, and concepts have been introduced. The increased interest in these systems gained lately by academics and practitioners is due to the current situation of the business environment. Applying any measurement system has the ultimate aim of gathering information related to the organisations' set of goals (Alegre et al., 2014), which significantly increases the chances of achieving these goals efficiently and effectively. It is important to note that there is an agreement regarding the fact that businesses cannot improve their performance unless they measure some indicators since the management will then use the results of these indicators to make corrective actions and concrete decisions. Furthermore, these measures will provide the firms with an indication of their current situation (Rajnoha et al., 2016).

PMSs can be defined as "a set of performance measures that are used to quantify the efficiency and effectiveness of past actions" (Neely et al., 2002), which assist organisations in planning, measuring, and controlling their performance according to a pre-defined strategy (Johnson et al., 2007).

Different organisations employ various approaches to measure performance. As noted by Parker (2000), measuring performance is a common practice across all organisations, however, the difference lies in the way they carry out these measurements. In comparison, some organisations assess their performance rigorously and comprehensively, while others decide to use informal and superficial approaches.

These systems affect various aspects of organisations' performance. For example, they have effects on employees' behaviour, organisational capabilities, and organisational, managerial, and teams' performance. Franco-Santos et al. (2012) further emphasised that PMS positively affect the decision-making process, consequently improving organisational performance and achieving competitive advantages, making them a recognised and valuable resource for organisations. The empirical studies, however, show ambiguous results regarding the effects of using PMSs on organisational performance (Guenther & Heinicke, 2019), and for that reason, there is a recognised need for further research into the effects of PMSs on performance (Asiaei & Bontis, 2020; Bourne et al., 2013; Gomes et al., 2017; Micheli & Mura, 2017).

When adopting PMSs correctly, organisations are expected to achieve several benefits, nevertheless, this is not always the case for all implemented PMSs. Unfortunately, in some cases, these systems either eventually fail or, for some reason, fail to initiate in the first place. Numerous factors contributing to the unsuccessful implementation of PMSs have been extensively discussed in the literature. Many of these factors are grounded in theoretical assumptions. These include a lack of understanding of PMSs (Northcott & Taulapap, 2012), the poor definition and use of performance measures (Schneiderman, 1999), uncertainty surrounding PMSs (Neely & Bourne, 2000), required resources (Kaplan & Norton, 2001), lack of the managerial commitment and support (Bourne, 2005), and difficulties related to the Information System (IS) and data accessibility (Bourne & Neely, 2002). A comprehensive literature review reveals a dearth of empirical studies specifically addressing the underlying causes of PMSs failure. Moreover, the scarcity of in-depth analyses based on actual experiences that explore the reasons behind PMS failures has been highlighted by Van Camp and Braet (2016). They have emphasised that “successful business cases or failure analyses are a scarce find in literature”.

Practices such as empowerment and engagement are very important to organisations since they have been proven to have several benefits to organisational performance. For instance, employee empowerment positively affects both the individuals' and organisational performance (Bordin et al., 2007; Spreitzer, 1995), and it has an important role in providing work systems that are high in performance (Takeuchi et al., 2009). Therefore, many researchers consider it vital for the success of organisations (Baird et al., 2018; De Geuser et al., 2009), especially in the current business environment. Employee engagement was further found to affect organisational performance positively (Farndale et al., 2014; Saks, 2006) since engaged people have passion for their work, which results in enhancing performance (Meyer, 2017; Sanneh & Taj, 2015). Many researchers refer to human resources as being the organisations' most important asset, which must be properly managed (Brown & Eisenhardt, 1998).

While an association between PMSs and employee empowerment (De Geuser et al., 2009; Kuwaiti & Kay, 2000), as well as the role of these systems and performance management practices in enhancing employee engagement (Bourne et al., 2013; Smith & Bititci, 2017; Sorenson, 2013), are recognised by researchers, there is still limited research on the behavioural consequences of these systems (Hall, 2008). Smith and Bititci (2017) further stressed that the way management and measurement practices affect employee engagement is usually neglected.

In the context of PMSs, it is important to explore their application and effectiveness in different settings. The existing literature on PMSs demonstrates a substantial research interest in their multiple roles and efficiency in organisational management. However, as we concluded from the literature, the majority of these studies have focused on developed countries, and there remains a dearth of research examining PMSs in developing countries (Othman & Mahmoud, 2020), particularly in the Middle East region, including Jordan.

This lack of research hampers our understanding of how PMSs are utilised and adapted to the unique organisational, cultural, and environmental factors in Jordan. As such, there is a need for further empirical research on the adoption, usability, impacts, and effectiveness of PMSs, specifically in the Jordanian context.

Given the limited number of studies on PMSs from Jordan, there is a gap in our understanding of how these systems are implemented, utilised, and contribute to organisational performance in the Jordanian context. This knowledge gap limits our ability to make informed decisions about the design and implementation of PMSs in organisations in Jordan and hinders practitioners and policymakers' ability to utilise PMSs to drive performance improvement in the country effectively.

### **1.1 Aims of the Research**

This dissertation primarily aims to conduct an in-depth investigation into PMSs within the context of the manufacturing industry in Jordan. The main objective of this study is to explore the multiple impacts of these systems on the performance of manufacturing companies. Specifically, the research aims to investigate whether PMSs have significant impacts on the financial, non-financial, and overall performance and on the effectiveness of these companies, explaining the areas that experience the most significant impact. Besides, the possible mediation effects of employee empowerment and engagement in the relationship between PMSs and companies' performance is also investigated.

Furthermore, this research seeks to address the degree to which companies faced various challenges during the implementation of the PMSs. These challenges have the potential to influence the ultimate success or failure of these systems.

### **1.2 Objectives of the Research**

1. To identify the impacts of PMSs on the manufacturing companies' financial, non-financial, and overall performance.
2. To identify the impact of PMSs on organisational effectiveness.
3. To illustrate the relationships between:
  - PMSs and companies' financial, non-financial, and overall performance.
  - PMSs and both work engagement and employee empowerment.
  - Work engagement, employee empowerment, and companies' financial, non-financial, and overall performance.

4. To address the challenges encountered by manufacturing companies when implementing the PMSs.

### **1.3 Structure of the Dissertation**

This dissertation is divided into six different chapters, each with its own specific focus and contribution:

**Chapter 1:** The opening chapter provides an in-depth discussion of the research's aims, objectives, questions, and hypotheses. It provides the necessary context and description, thus presenting a sufficient foundation for the construction of subsequent chapters.

**Chapter 2:** The chapter provides a comprehensive review of the existing literature, covering all topics related to the study and offering a synthesis of the current state of knowledge in the field.

**Chapter 3:** In this chapter, the methodology adopted for this study is presented and explained. It covers and explains the methods used for data collection and data analysis. This chapter provides a discussion of the research variables, population, and questionnaire development.

**Chapter 4:** The chapter discusses the data analysis and explains the primary findings of the research.

**Chapter 5:** The chapter provides a discussion of the research conclusions. Additionally, the chapter addresses research limitations and provides future recommendations based on the research outcomes.

**Chapter 6:** The chapter highlights the novelty and significance of the study in the academic field and its contribution to existing literature.

### **1.4 Hypotheses of the Research**

*Hypothesis 1 (H1): Comprehensive Performance Measurement Systems (CPMSs) positively affect companies' overall performance.*

*Hypothesis 2 (H2): CPMSs positively affect companies' financial performance.*

*Hypothesis 3 (H3): CPMSs positively affect companies' non-financial performance.*

**Hypothesis 4 (H4):** CPMSs positively contribute to organisational effectiveness (in terms of aligning, exploiting, and mobilising).

**Hypothesis 5 (H5):** CPMSs have a positive indirect effect on companies' financial performance through employee empowerment, as employee empowerment positively affects companies' overall performance.

**Hypothesis 6 (H6):** CPMSs have a positive indirect effect on companies' financial performance through employee empowerment, as employee empowerment positively affects companies' financial performance.

**Hypothesis 7 (H7):** CPMSs have a positive indirect effect on companies' non-financial performance through employee empowerment, as employee empowerment positively affects companies' non-financial performance.

**Hypothesis 8 (H8):** CPMSs have a positive indirect effect on companies' overall performance through work engagement, as work engagement positively affects companies' financial performance.

**Hypothesis 9 (H9):** CPMSs have a positive indirect effect on companies' financial performance through work engagement, as work engagement positively affects companies' financial performance.

**Hypothesis 10 (H10):** CPMSs have a positive indirect effect on companies' non-financial performance through work engagement, as work engagement positively affects companies' non-financial performance.

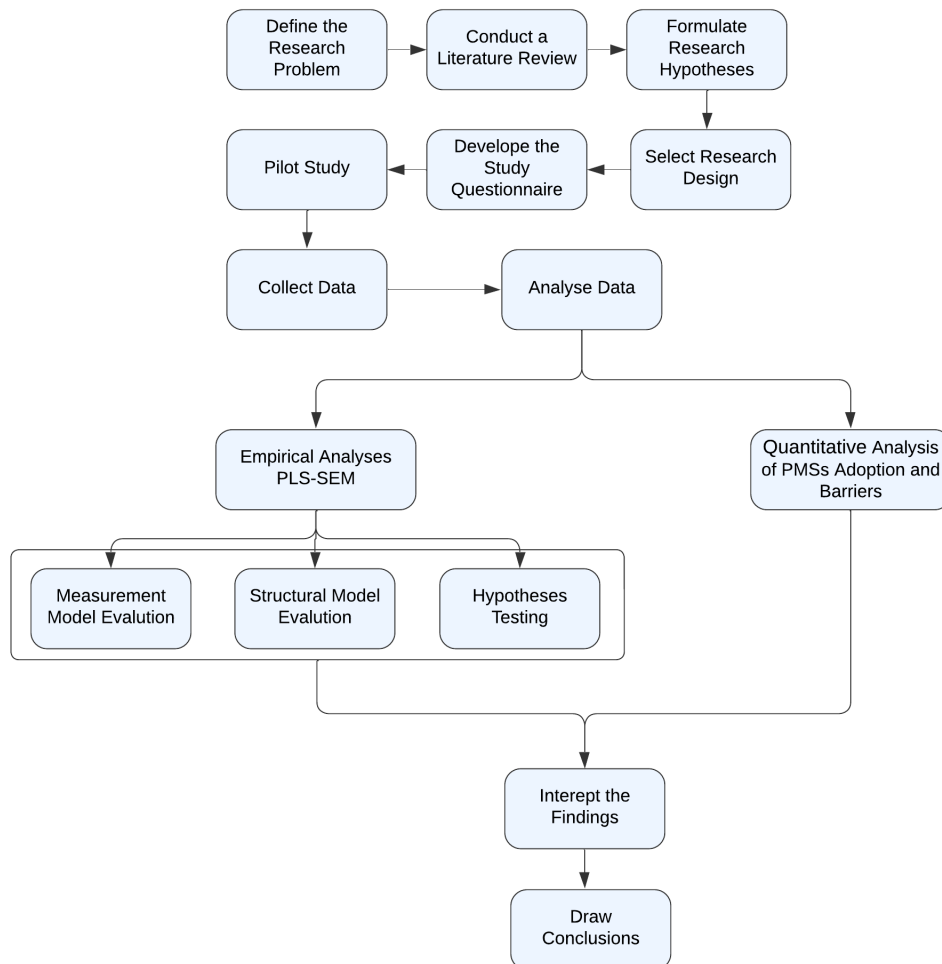
## 2. MATERIAL AND METHODS

### 2.1 Introduction

As discussed earlier, the aim of this research is to find the impacts of adopting PMSs on manufacturing companies' performance and effectiveness and, moreover, to find the possible mediating effects of employee engagement and empowerment in this relationship, in addition to exploring the factors most hindering the achievement of successful PMSs. In this part, a brief discussion of the research methods and strategies used to collect and analyse data is provided.

### 2.2 Research Methodology of the Study

The current research methodology followed in this study is represented in Figure 1 below.



**Figure 1: Methodology of the Study**

*Source: Author's own development (2024)*

### **2.3 The Quantitative Research Approach**

A quantitative study was conducted to achieve the research aim and provide empirical evidence explaining the hypothesised relationships.

The study was conducted in normal settings, within the natural corporate environment. The primary data was collected by questionnaires adopted from previous studies and modified to suit the current study. The research mainly involved top managers of manufacturing companies in Jordan. Most of the questions were closed-ended. Some open-ended questions and blanks were provided to give respondents the freedom to elaborate their points of view if needed.

The questionnaires were paper-based, written in English and Arabic, and sent to the targeted population. To increase the response rate, they were filled anonymously. The questionnaires were handled in person to the general directors' assistants of the two second largest industrial estates. For the rest of the estates, the main office of the Jordan Industrial Estates Company (JIEC) made arrangements to deliver the questionnaires. Furthermore, a visit was paid later to the largest industrial estate, where I was able to handle the questionnaires personally for several companies and had the chance to discuss the questionnaire and its content with several managers of the companies there. The data collection process took almost four months, from August 2023 to November 2023.

### **2.4 Research Instruments**

The questionnaire consisted of eight sections. The first section introduced the questionnaire topic, its aim, and assuring the respondents' privacy. The second section intended to collect general information about the respondents and their representative organisations. Section three asked the respondents to report the reason(s) for their adoption of PMSs. The following section, section four, covered questions regarding the comprehensiveness level of the systems used. Section five asked questions to measure the effectiveness level of the organisation. Moving forward to section six, the respondents were asked to indicate whether they faced any barriers that affected the successful implementation of the PMSs and to rate, on a 7-point scale, the extent to which some barriers were faced. In section seven, the respondents were asked to rate their organisation's performance compared to their competitors. Finally, section eight collected information about the level of employees'

engagement and empowerment in the organisation. The entire questionnaire used a 7-point Likert scale. The study consisted of ten constructs, CPMSs, organisational effectiveness (ORGEFFECT), aligning (AL), exploiting (EX), mobilising (MO), organisational performance (ORGPOR), financial performance (FIN), non-financial performance (NON-FIN), empowerment (EMPW), and engagement (ENG).

Partial Least Squares (PLS) method was adopted in this research. SmartPLS 4.1 software is used for the purpose of analysing the data empirically and testing the proposed hypotheses. Partial Least Squares Structural Equation Modelling (PLS-SEM) is a variance-based approach to SEM and is particularly useful when the sample size is small, when the researcher has to deal with complex models incorporating many indicators and relationships (Chin, 2010), or when the data distribution is not normal as PLS-SEM makes no distributional assumptions (Hair et al., 2022).

## **2.5 Pilot Study**

Prior to the pilot study, the content validity of the questionnaire was assessed. For this purpose, two academics and three professionals working in the manufacturing industry have reviewed the questionnaire and its content validity. As a result, rewording of some of the questions was suggested to improve the clarity and understanding of the questionnaire questions, in addition to suggesting adding some items to measure the organisational performance.

The pilot sample consisted of 25 questionnaires collected from top managers in Jordanian manufacturing companies. The main aim was to test the questionnaire's reliability. These companies are not part of the main study population, and the responses were used only to assess the statistical reliability of the constructs.

Cronbach's  $\alpha$  was assessed to measure the reliability of the study constructs. The SPSS software version 29 was used to assess the instrument internal consistency. The results showed that all constructs' Cronbach's  $\alpha$  values were higher than the 0.7 threshold, ranging between 0.795 and 0.935; thus, the research constructs are reliable.

### **3. MAIN FINDINGS OF THE DISSERTATION**

#### **3.1 Descriptive Analysis**

The initial analysis was conducted at the item level. Descriptive statistics were examined to identify any abnormalities in the data. The responses for most items covered the complete scale range of 1–7, indicating a diverse range of opinions and experiences. However, five items (specifically, items CPMS2, CPMS3, CPMS4, CPMS9 and NONFIN5) exhibited a narrower scale width, ranging from 2 to 7. Despite this, the standard deviations (SD) and mean widths for the majority of items did not indicate any significant abnormalities.

#### **3.2 Part One: Empirical Analysis**

##### ***3.2.1 Evaluating the Measurement Model***

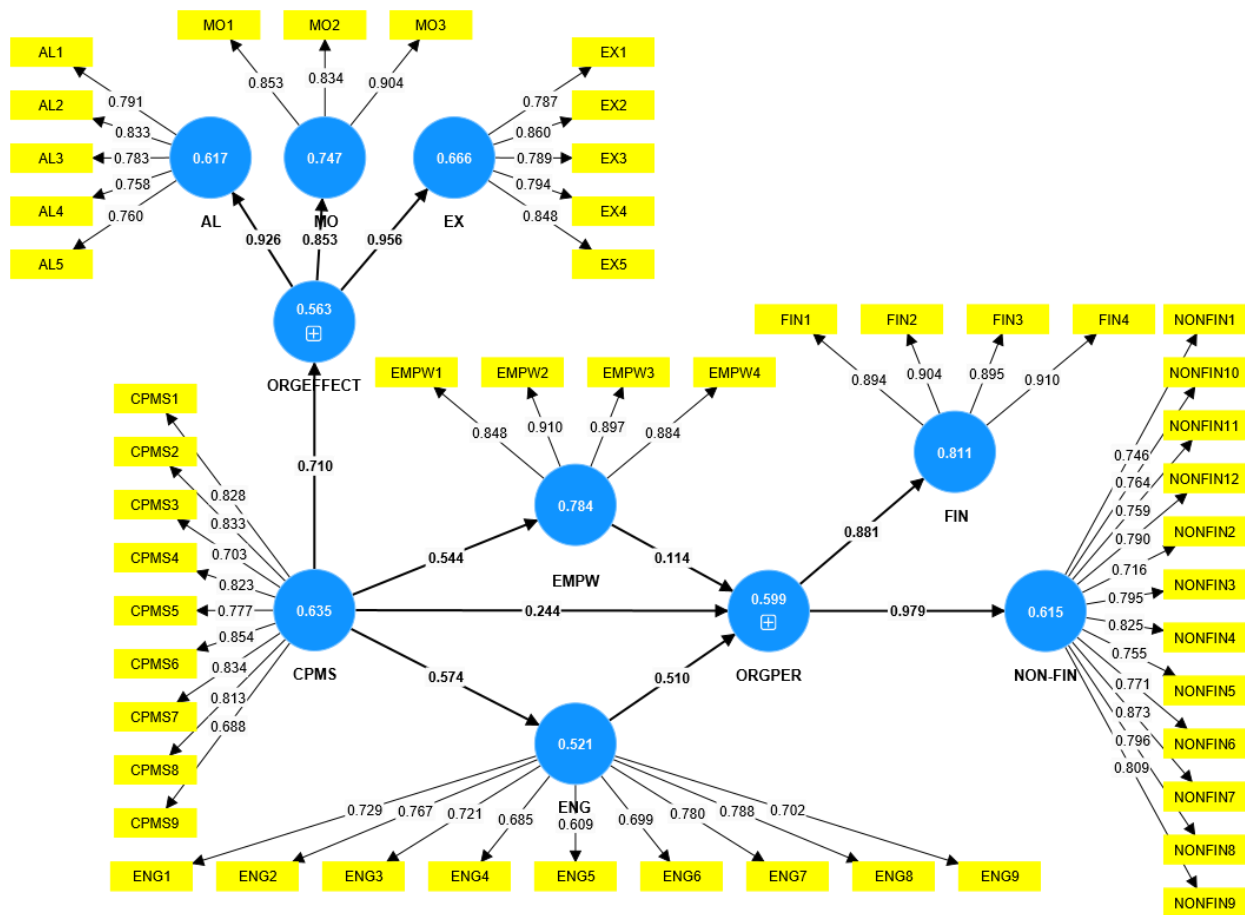
###### *Indicator Reliability*

The indicator reliability is assessed based on the outer loadings, which should be 0.70 or higher. All items, except CPMSs9 and ENG4-6, have outer loadings of more than 0.7. As suggested by Hair et al. (2022), items having outer loadings between 0.4 and 0.7 should be removed only if removing them would increase the internal consistency reliability and convergent validity significantly. Thus, each item was deleted individually to assess the effect of their removal. All items were eventually retained in the model, as each item's removal did not lead to any significant increase. Figure 2 shows the research model and each construct with its items and outer loadings.

###### *Internal Consistency Reliability and Convergent Validity*

Cronbach's  $\alpha$ , composite reliability (CR), and the reliability coefficient ( $\rho_{\text{A}}$ ) were checked to assess the internal consistency reliability. All values fell within the recommended range between 0.7 and 0.95. Cronbach's  $\alpha$  values ranged between 0.83 and 0.943, CR values ranged between 0.889 and 0.95, and the  $\rho_{\text{A}}$  values between 0.831 and 0.946, indicating an adequate internal consistency.

AVE was further used to test for the convergent validity, all values were above the minimum value of 0.5, ranging from 0.521 to 0.883.



**Figure 2: Path Model and Outer Loadings**

Source: Author's own calculations based on SmartPLS 4.1 (2024)

### Discriminant validity

Fornell-Larcker criterion, the cross-loadings, and the HTMT ratio were tested to establish discriminant validity.

The Fornell-Larcker criterion assesses discriminant validity by comparing the square root of the AVE for each construct with the correlations between that construct and other constructs in the model. According to the criterion, discriminant validity is established if the square root of the AVE for each construct is greater than its correlations with other constructs. This criterion was met as the square root of the AVE for each construct exceeded its correlations with other constructs in the model, indicating that each construct shares more variance with its own indicators than with indicators of other constructs.

For the cross-loadings, it is checked if the indicator's outer loading with the associated construct is higher than its correlation with other constructs. The assessment confirmed that every item's loading on its construct is higher than its loading on any other construct.

The final indicator to establish discriminant validity is the HTMT ratio. Almost all of the values were below the most conservative threshold of 0.85, only two values were higher, yet they were still within the recommended threshold of 1 (Gaskin et al., 2018).

Thus, all constructs met the quality criteria by being valid and reliable, and we can continue to the structural model evaluation.

### ***3.2.2 Evaluating the Structural Model***

#### *Step 1: Check for Collinearity Issues*

To check for collinearity issues in the model, the VIF values are calculated and checked. All VIF values were below the preferable value of 3 (Hair et al., 2019). As the highest VIF value is 2.1, no multicollinearity issue exists, and the model can be further examined.

#### *Step 2: Evaluating the Significance of the Structural Model Relationships*

To evaluate the significance of the relationships, a procedure called bootstrapping was used. A two-sided significance test with a 5% significance level was performed. The path coefficients ( $\beta$ ) refer to the estimates of the relationships between the model's constructs (Hair et al., 2014). The path coefficients range between -1 and +1, where -1 indicates a strong negative relationship, 0 means there is no relationship, and +1 indicates a strong positive relationship (Garson, 2016). Therefore, higher path coefficients suggest stronger effects of the predictors on the predicted variables. The significance of the supposed relationships has been established by measuring the significance of the  $p$ -values for each path, with a threshold of  $p < 0.05$ , and in some cases,  $p < 0.01$ , to assess the significance of the path coefficient estimations (Henseler et al., 2009; Hair et al., 2017).

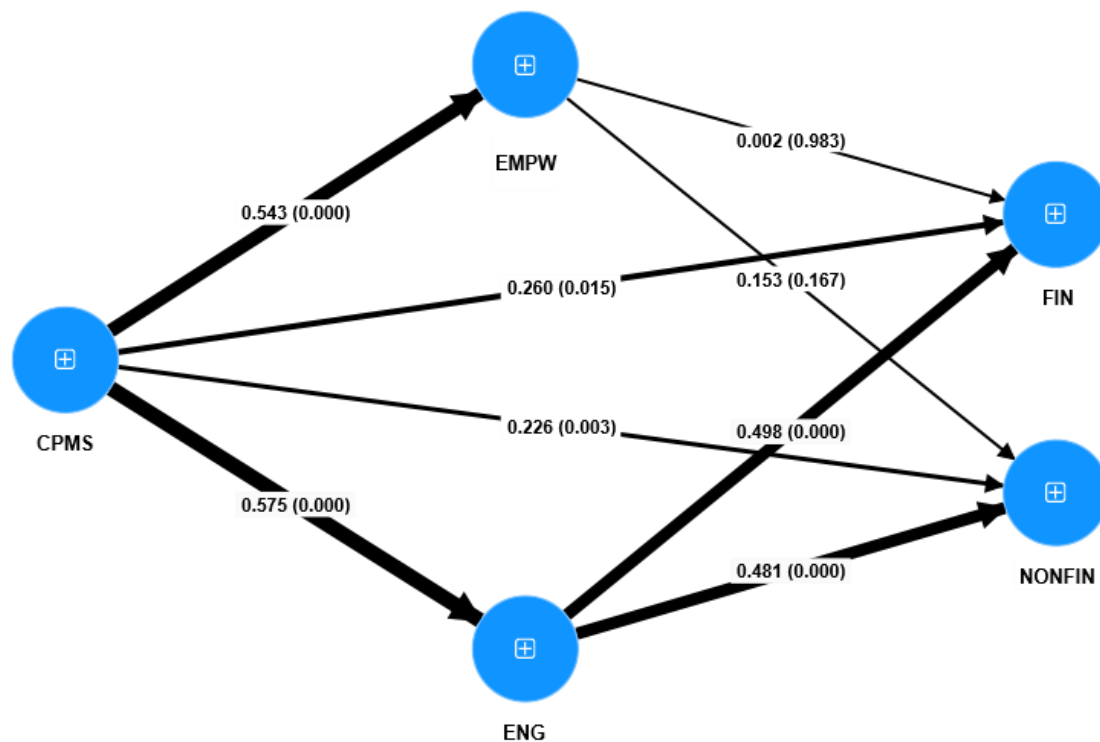
The results reveal that CPMS significantly and positively affects organisations' overall performance ( $\beta = 0.244$ ,  $t = 3.087$ ,  $p < 0.01$ ). Thus, the first hypothesis is accepted. The results further provide support for the effects of CPMS on organisational effectiveness ( $\beta = 0.710$ ,  $t = 12.101$ ,  $p < 0.001$ ), which stands out as the highest among all tested relationships. This robust coefficient underscores the profound impact of CPMS on enhancing organisational effectiveness, thereby providing strong support for *H4*.

In addition to impacting organisational effectiveness and organisation's overall performance, CPMS also positively and significantly affects employee empowerment ( $\beta = 0.544, t = 8.656, p < 0.001$ ) and work engagement ( $\beta = 0.574, t = 10.615, p < 0.001$ ).

The results also indicate a significant positive effect of work engagement on organisations' overall performance ( $\beta = 0.510, t = 5.457, p < 0.001$ ).

The findings present a notable deviation from the hypothesised relationship, as employee empowerment failed to exhibit a significant effect on organisations' overall performance ( $p > 0.05$ ), contrary to initial expectations posited in *H5*, accordingly, *H5* is rejected.

To test the hypothesis related to the specific effects on financial and non-financial performance, the following model depicted in Figure 3 was assessed and used.



**Figure 3: Model Used for Testing Specific Effects on the Financial and Non-financial Performance**

*Source: Author's own calculations (2024)*

In terms of the specific direct effects of CPMS on financial and non-financial performance, the results reveal the existence of positive and significant relationships. Specifically, CPMS affects financial performance ( $\beta = 0.260, t = 2.432, p < 0.05$ ) and non-financial performance ( $\beta = 0.226, t = 2.969, p < 0.01$ ), thereby *H2* and *H3* have also been supported.

The effects of work engagement on financial and non-financial performance were further examined, work engagement significantly affects financial performance ( $\beta = 0.498$ ,  $t = 4.976$ ,  $p < 0.001$ ) and non-financial performance ( $\beta = 0.481$ ,  $t = 4.928$ ,  $p < 0.001$ ), consequently, *H9* and *H10* are accepted.

Contrary to expectations, employee empowerment was not found to have significant effects on either financial performance ( $\beta = 0.002$ ,  $t = 0.022$ ,  $p > 0.05$ ) or non-financial performance ( $\beta = 0.153$ ,  $t = 1.383$ ,  $p > 0.05$ ).

The indirect (mediating) relationship analysis reveals significant insights into the dynamics between CPMS, employee empowerment, work engagement, and organisational performance. Contrary to expectations outlined in the fifth hypothesis, the data indicates that employee empowerment does not serve as a mediator in the relationship between CPMS and overall organisational performance. Moreover, further analysis demonstrates that employee empowerment similarly fails to mediate the relationships between CPMS and both financial and non-financial performance. Thus, rejecting all of *H5*, *H6*, and *H7*.

Conversely, the results underscore the mediating role of work engagement in the relationship between CPMS and organisational overall performance, thus providing a support for *H8*. Additionally, the results indicate that work engagement similarly mediates the relationships between CPMS and both financial ( $\beta = 0.286$ ,  $t = 4.364$ ,  $p < 0.001$ ) and non-financial performance ( $\beta = 0.276$ ,  $t = 4.571$ ,  $p < 0.001$ ), providing support for *H9* and *H10*.

To further identify the type of mediation, full or partial, researchers assess the significance of the direct and indirect relationships to decide. The decision was made on the basis of Baron and Kenny (1986) rules.

Table 1 shows the significance of direct and direct effects for each of the accepted hypotheses with the decision regarding the type of mediation.

**Table 1: Significance for Direct and Indirect Effects with Mediation Classification**

Path	Hypothesis	Direct Effect		Indirect Effect		Decision
		$\beta$	$p$	$\beta$	$p$	
<i>CPMS</i> → <i>ENG</i> → <i>ORGP</i>	H8	0.244	0.002	0.293	< 0.001	Partial mediation
<i>CPMS</i> → <i>ENG</i> → <i>FIN</i>	H9	0.259	0.015	0.286	< 0.001	Partial mediation
<i>CPMS</i> → <i>ENG</i> → <i>NON-FIN</i>	H10	0.225	0.003	0.276	< 0.001	Partial mediation

*Source: Author's own calculations (2024)*

### *Step 3: Evaluating the Model's Explanatory Power*

In this step, the explanatory power of the model was examined using the coefficient of determination. All of the model's constructs, except for EMPW, had a moderate  $R^2$  ranging from 0.330 to 0.586. EMPW exhibited a weak  $R^2$  (0.296) suggesting that the model explains only a small proportion of the variance in this construct.

In addition to  $R^2$ , the effect size ( $f^2$ ) was also assessed according to Cohen's (1998) recommendations. The  $f^2$  ranged from no effect to large effect. The largest effect is for CPMS on ORGEFFECT (1.014), followed by the effects of CPMS on ENG (0.493) and EMPW (0.420). EMPW has no relevant effect on ORGP or FIN. The remaining effects varied between small and medium.

### *Step 4: Evaluating the Model's Predictive Power*

Subsequently, the model's predictive power was assessed.  $Q^2$  for the endogenous constructs were higher than 0. Furthermore, applying the  $PLS_{predict}$  procedure,  $Q^2_{predict}$  values were greater than 0, and the majority of the root mean squared error (RMSE) values from the PLS-SEM were lower than the RMSE values from the linear regression model (LM), thus, indicating an intermediate predictive power of the model (Hair et al., 2022).

Table 2 below provides a summary of the research hypotheses testing results.

**Table 2: Summary of Hypotheses Testing Results**

<b>Hypothesis Number</b>	<b>Hypothesis</b>	<b>Result</b>
<b>H1</b>	CPMSs positively affect companies' overall performance.	Supported
<b>H2</b>	CPMSs positively affect companies' financial performance.	Supported
<b>H3</b>	CPMSs positively affect companies' non-financial performance.	Supported
<b>H4</b>	CPMSs positively contribute to organisational effectiveness (in terms of aligning, exploiting, and mobilising).	Supported
<b>H5</b>	CPMSs have a positive indirect effect on companies' overall performance through employee empowerment, as employee empowerment positively affects companies' overall performance.	Not supported
<b>H6</b>	CPMSs have a positive indirect effect on companies' financial performance through employee empowerment, as employee empowerment positively affects companies' financial performance.	Not supported
<b>H7</b>	CPMSs have a positive indirect effect on companies' non-financial performance through employee empowerment, as employee empowerment positively affects companies' non-financial performance.	Not supported
<b>H8</b>	CPMSs have a positive indirect effect on companies' overall performance through work engagement, as work engagement positively affects companies' overall performance.	Supported
<b>H9</b>	CPMSs have a positive indirect effect on companies' financial performance through work engagement, as work engagement positively affects companies' financial performance.	Supported
<b>H10</b>	CPMSs have a positive indirect effect on companies' non-financial performance through work engagement, as work engagement positively affects companies' non-financial performance.	Supported

*Source: Author's own development (2024)*

### **3.3 Part Two: Quantitative Analysis of PMSs Adoption and Barriers**

Part two focuses on quantitatively analysing the reasons for PMSs adoption and the barriers hindering their implementation, primarily focusing on frequencies and means. This section employs statistical methods to examine the prevalence of PMSs adoption within organisations and identify the barriers most affecting PMSs implementation and success.

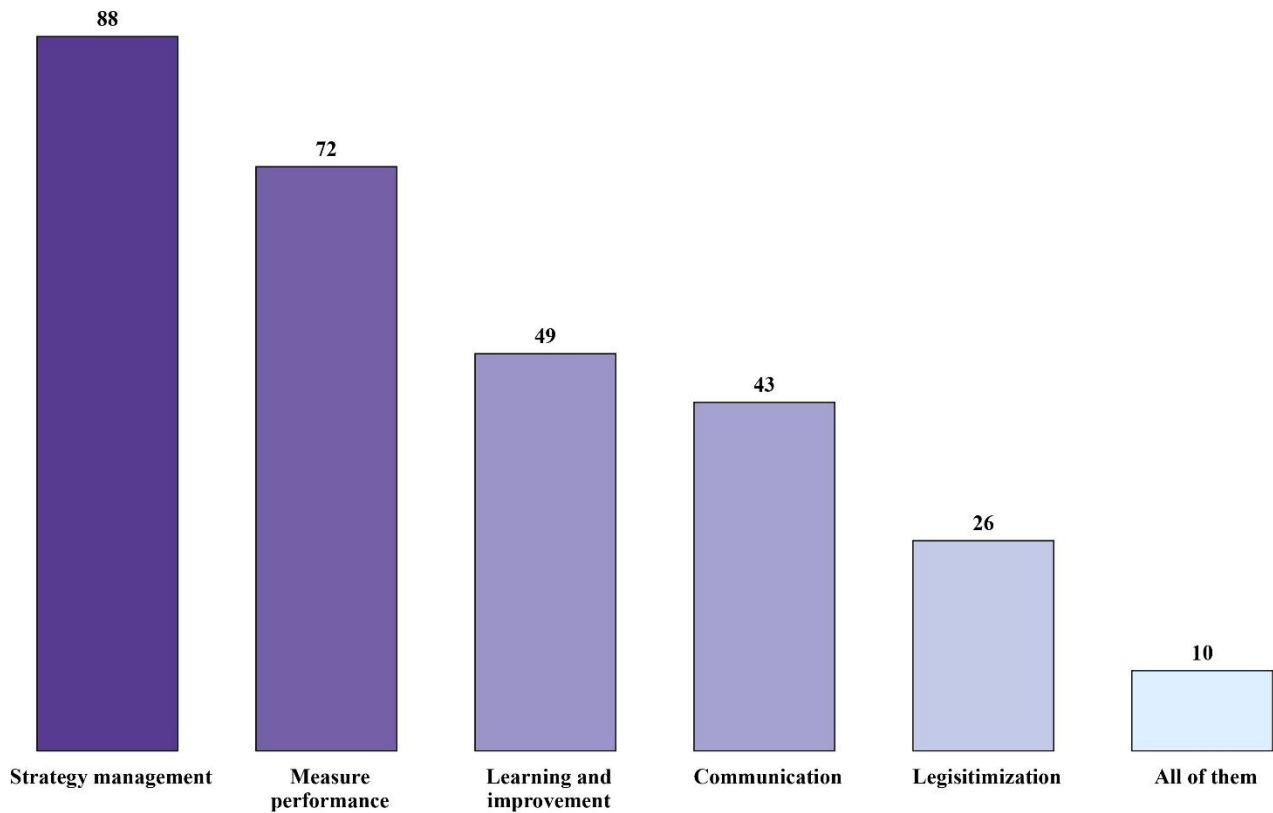
### ***3.3.1 Reasons for PMSs adoption***

Respondents were asked to select the main reason(s) for the adoption of PMS in their organisation, drawing from a list compiled from scholarly literature (Henri, 2006; Severgnini et al., 2018; Sonson, 2019).

- Legitimation, PMS, in this case, serves as a mechanism to justify decisions or actions, providing a sense of legitimacy to organisational practices.
- Secondly, measure performance, PMS plays a crucial role in monitoring progress, evaluating performance, and measuring outcomes, enabling organisations to assess their effectiveness and make informed decisions.
- The third reason is strategy management, PMS contributes to strategy formulation, execution, and alignment, facilitating strategic decision-making and ensuring organisational goals are effectively translated into action.
- Fourth, in terms of communication, PMS supports internal and external communication efforts, facilitates benchmarking activities, ensures compliance with regulations, and enables the inspection of suppliers, fostering transparency and accountability.
- Finally, learning and improvement, PMS promotes a culture of continuous learning and improvement by providing feedback, facilitating double-loop learning, identifying areas for performance enhancement, enhancing efficiency, exploring opportunities for development, mitigating risks, responding rapidly to change, and identifying opportunities for cost reduction.

As depicted in Figure 4, strategy management emerges as the predominant reason for the adoption of PMSs, as reported by 88 of the companies participating in the study. Following closely behind is performance measurement, reported by 72 companies. Notably, learning and improvement, as well as communication, were reported almost equally, with 49 and 43 companies respectively indicating these factors as drivers for PMS adoption. Legitimation was reported by 26 companies, suggesting its importance though to a lesser extent. Additionally, 10 companies indicated that all of the mentioned reasons contributed to their decision to adopt PMS.

These findings underscore the diverse motivations behind PMS adoption within organisations, with strategy management and performance measurement being the most prominent factors driving their implementation.

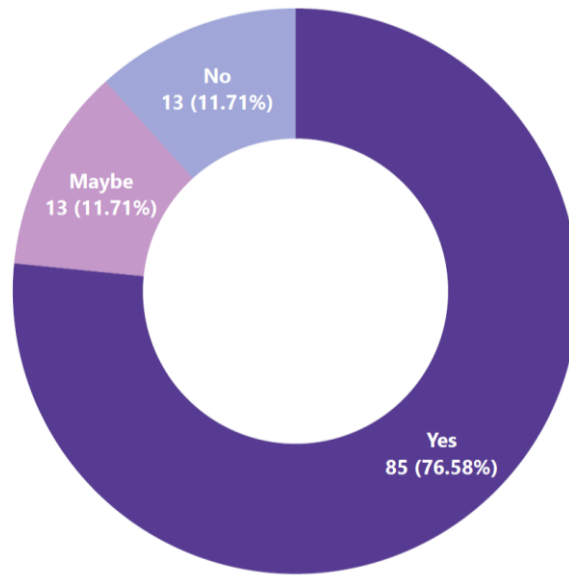


**Figure 4: Reasons for PMSs Adoption**

*Source: Author's own calculations (2024)*

### **3.3.2 Barriers to PMSs**

Respondents were initially asked to indicate whether they encountered any challenges, barriers, or factors affecting the successful implementation of the PMS. Figure 5 illustrates that approximately 77% of the companies reported facing challenges related to PMSs, while the remaining 23% of companies were evenly split between those who did not face any challenges and those who were uncertain (i.e., "maybe").



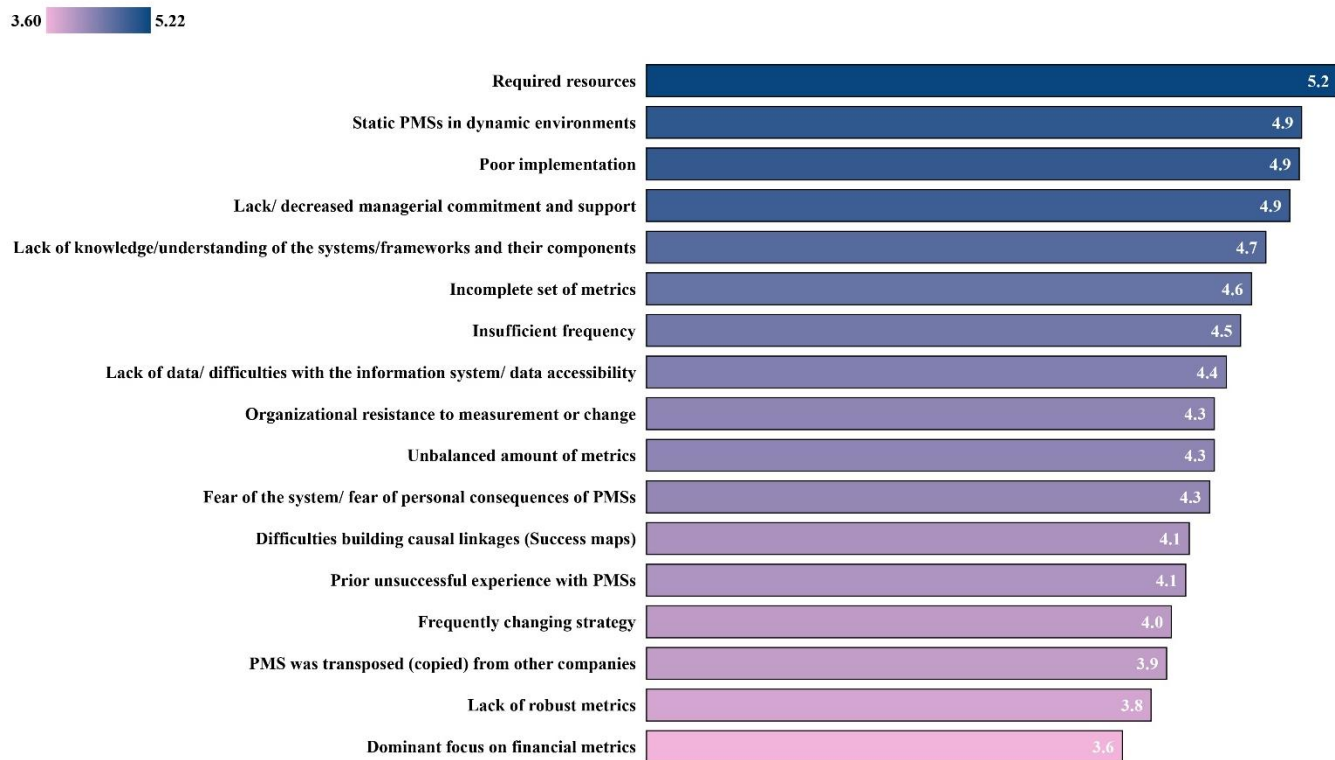
**Figure 5: Frequency of Reported Challenges Faced by Companies**

*Source: Author's own calculations (2024)*

Respondents were then asked to “rate the extent to which each of the following barriers have affected or you believe could affect the implementation/achievement of successful PMS”, on a 7-point Likert scale, from 1: not at all to 7: to a great extent. The mean values provided in Figure 6 represent the reported significance of various barriers to the success and implementation of PMSs, as perceived by respondents in our study. These barriers encompass a wide range of factors, that can impede the effective adoption and utilisation of PMSs within organisations.

At the forefront of these barriers is the challenge of required resources, indicated by the highest mean value of 5.216. This suggests that organisations often encounter difficulties related to resource allocation, including financial, human capital, and technological resources, which are essential for implementing and maintaining robust PMSs. Another notable barrier is the presence of static PMSs in dynamic environments, with a mean value of 4.946. This highlights the challenge organisations face in ensuring that their PMSs remain relevant and adaptable to changing internal and external circumstances. Poor implementation (mean = 4.928) and lack/decreased managerial commitment and support (mean = 4.856) are also significant barriers. These findings underscore the importance of effective implementation strategies and strong leadership to drive successful PMS adoption and utilisation. Furthermore, the lack of knowledge/understanding of the systems/frameworks and their components (mean = 4.676) and incomplete set of metrics

(mean = 4.568), where metrics are not carefully chosen within a clearly identified scope for clearly identified goals, indicate the importance of ensuring clarity and comprehensiveness in PMS design and implementation.



**Figure 6: PMSs Barriers Mean Values**

*Source: Author's own calculations (2024)*

Issues related to data accessibility and system usability, such as lack of data/difficulties with the IS/data accessibility (mean = 4.378), and insufficient frequency (mean = 4.486), referring to failure in updating the metrics, also pose significant challenges to PMS effectiveness. Using unbalanced amounts of metrics (mean = 4.288), monitoring too many or too few measures, organisational resistance to measurement or change (mean = 4.288), and fear of the system/fear of personal consequences of PMSs (mean = 4.252) reflect the human factors that can hinder PMS adoption and implementation efforts.

Difficulties building causal linkages (success maps) (mean = 4.099) and prior unsuccessful experiences with PMSs (mean = 4.072) highlight the importance of learning from past experiences and ensuring clarity in the cause-and-effect relationships embedded within the PMS framework. Frequently changing strategy (mean = 3.964) and the transposition (copying) of PMSs from other companies (mean = 3.928) suggest challenges related to

alignment with organisational goals and the suitability of adopted PMSs to the specific organisational context. Lastly, the dominant focus on financial metrics (mean = 3.595) and the lack of robust metrics (mean = 3.811), where metrics can be manipulated, point to the importance of adopting a balanced and comprehensive set of performance metrics that align with organisational objectives and provide a holistic view of performance.

Notably, the fact that the dominant focus on financial metrics was ranked as the least affecting barrier reveals companies' continued belief in the strength and importance of financial metrics as a key aspect of performance measurement and management, despite theoretical and modern PMSs emphasis on a more balanced approach to performance measurement and management.

In conclusion, the discussion of these barriers underscores the multifaceted challenges organisations face in successfully implementing and utilising PMSs. Addressing these barriers requires a comprehensive approach that encompasses strategic alignment, resource allocation, leadership commitment, stakeholder engagement, and continuous improvement efforts. By recognising and proactively addressing these barriers, organisations can enhance the effectiveness and impact of their PMSs.

## **4. NEW AND NOVEL RESULTS OF THE DISSERTATION**

### **4.1 Conclusion**

PMSs have become increasingly prevalent in organisations as a mean to enhance performance. These systems are designed to provide valuable information about an organisation's performance and help guide decision-making processes. They offer a structured approach to monitor and evaluate the achievement of organisational objectives, develop strategies, and improve performance. However, the effectiveness and impact of these systems on companies' performance have been a topic of debate among researchers and practitioners.

The main goal of the study was to examine the effects of using PMSs on companies' performance. Specifically, manufacturing companies in the context of Jordanian industrial estates were studied to determine the relationship between PMSs and companies financial, non-financial, and overall performance. Furthermore, the effect of these systems on organisational effectiveness and the mediating role of employee empowerment and work engagement were also explored. Quantitative and qualitative methods were utilised to fulfil this aim and answer the research questions.

A questionnaire was developed and distributed to manufacturing companies in the Jordanian industrial estates to test the research hypotheses. A model was then developed using the SmartPLS software to explore the relationships between the different research constructs.

#### ***CPMS, organisational performance, and organisational effectiveness***

The results of the data analysis revealed that these systems indeed have significant effects on the performance of manufacturing companies in Jordan industrial estates. The adoption of PMSs that are comprehensive and incorporate a wide variety of performance measures covering different aspects of organisations positively affect financial, non-financial, and overall organisations' performance. These systems also contribute significantly to organisational effectiveness in terms of aligning the organisations' activities and operations to its intended strategy, exploiting the organisation's resources and capabilities to ensure the optimal implementation of the strategy, and fostering improved communication and motivation within the organisation.

### ***CPMS, employee empowerment, and organisational performance***

According to the findings of testing hypotheses five, six, and seven, there is a significant relationship between the use of CPMSs and structural empowerment. The results indicate that organisations that effectively implement CPMS are more likely to empower their employees. However, contrary to expectations, our results did not find any effects of employee empowerment on organisations financial, non-financial, or overall performance. The study suggests that while the use of CPMSs can lead to employee empowerment, it may not directly impact the financial, non-financial, or overall performance of organisations. Therefore, employee empowerment does not mediate the relationship between CPMSs and companies' performance. Nevertheless, it is important to note that this study focused on a specific context and further research is needed to explore the link between employee empowerment and organisational performance in other contexts and industries.

### ***CPMS, employee engagement, and organisational performance***

The results of testing the mediating role of work engagement in the relationship between CPMSs and organisational performance support the notion that the effective implementation and utilisation of CPMSs can lead to increased employee engagement, which in turn positively impacts organisational performance. These findings suggest that PMSs have the potential to significantly enhance organisational performance by promoting employee engagement. By fostering communication and motivation, CPMSs can engage employees in the pursuit of organisational goals and objectives. This highlights the importance of creating a work environment that encourages active participation and commitment from employees, ultimately contributing to improved organisational performance.

In conclusion, the findings of this study underscore the significant role of PMSs in organisational performance enhancement. The research has shed light on the interplay between CPMSs, employee empowerment, and work engagement, and their collective impact on companies' performance. By providing a structured framework for goal setting, progress monitoring, and improvement identification, PMSs serve as key enablers for organisational effectiveness when aligned with strategic goals.

The study has revealed that the effective implementation of CPMSs can lead to organisational empowerment and employee engagement. While a direct relationship

between employee empowerment and organisational performance was not established, the mediating role of work engagement in enhancing organisational performance through CPMSs has been clearly identified.

PMSs are not free from challenges and difficulties, as previously highlighted in the literature. The comprehensive literature review revealed that many barriers and factors can hinder the effective implementation and utilisation of PMS. In the context of our study, the required resources stood out as the factor most affecting the successful implementation of these systems. As these systems require investment in infrastructure, technology, and training, organisations need to allocate sufficient resources to ensure their successful implementation. Furthermore, static PMSs in dynamic environments was found to be another significant challenge. With the business landscape constantly evolving, organisations must ensure that their PMSs are flexible and adaptable to changes in the external environment. This may involve regular reviews and updates to the performance measures to align with the organisation's strategic goals and industry best practices.

The poor implementation of these systems, the decreased managerial commitment and support, and the lack of understanding of these systems and their components were also identified as significant barriers to effective PMS implementation.

The implications of this research extend beyond the specific context studied, emphasising the need for further exploration of PMSs in diverse cultural, geographical, and industry-specific contexts. Understanding the variations in PMS effectiveness across different organisational settings will be critical in developing tailored strategies for implementation and maximising their potential impact on companies' performance.

Overall, this study signifies the enduring importance of PMSs as critical components of organisational strategic initiatives and operational practices. As organisations continue to strive for excellence and sustainable growth, the effective implementation and utilisation of PMSs will undoubtedly remain central to their success.

## **4.2 Research Limitations and Future Recommendations**

While this dissertation provides valuable insights into the effects of using PMSs on companies' performance, it is important to acknowledge certain limitations.

First, the study focused on selected manufacturing companies in Jordan, which may limit the generalisability of the findings to other contexts. Future research could explore the effects of PMSs on companies' performance in different industries and countries to provide a more comprehensive understanding.

Second, the study primarily relied on self-reported data from surveys, which may introduce response bias and subjectivity. Future research could consider using objective measures and longitudinal designs to strengthen the validity of the findings.

Third, due to the extremely low response rate achieved through attempts to collect data using online questionnaires in Hungary and Jordan, where around 2200 companies in total were contacted through e-mail and phone calls, the decision was made to collect data from the manufacturing companies located in the Jordanian industrial estates. This led to the sample size used in this research being small (111 responses). Therefore, the findings might not fully represent the population of manufacturing companies in Jordan. However, efforts were made to ensure representativeness and diversity within the sample. Future research should aim to obtain a larger and more diverse sample size to improve the generalisability of the findings.

### **4.3 Novel Findings**

This dissertation contributes to the body of knowledge by filling some research gaps in the literature in the field of PMSs. The novelty of this dissertation can be summarised as follows.

1. The dissertation was conducted in the context of manufacturing companies in a developing country, Jordan. While the literature discusses the effects of PMSs on companies' performance, the majority of these studies are conducted in developed countries. To the best of the researcher's knowledge, studies conducted in the Middle East, and specifically in Jordan, are scarce. This scarcity of research in the region underscores the significance of the present study in contributing to the understanding of PMSs effects within a unique socio-economic context. Additionally, exploring the application of PMSs in Jordan provides valuable insights that can inform both theory and practice in similar contexts across the Middle East and other developing regions. Therefore, this study fills an important gap in the existing literature by examining the

effects of PMSs on companies' performance in Jordanian industrial estates, thereby enriching the global body of knowledge on this topic.

2. The research also contributed to the literature by examining the possible mediating effects of certain human resources practices, such as employee empowerment and work engagement, in the relationship between PMSs and companies' performance. By exploring these mediating mechanisms, the study fills a research gap regarding the role of human resources practices as mediators, providing a more comprehensive understanding of how PMSs impact companies' performance.

3. This study further contributes to the existing literature by providing a comprehensive analysis of the obstacles and challenges faced by organisations in implementing effective PMSs. Additionally, it offers insights into the factors that significantly impact and hinder the successful implementation of these systems, drawing from real-life experiences within organisations. This addresses a notable gap in the literature. By examining the practical challenges encountered during PMS implementation, this research enhances our understanding of the complexities involved in adopting and integrating such systems within organisational contexts. Through the reporting of these critical factors, the study offers valuable guidance for organisations seeking to navigate and overcome the challenges associated with PMS implementation, thereby facilitating more informed decision-making and strategic planning processes.

## **PRACTICAL APPLICABILITY OF THE RESULTS**

The findings of this dissertation offer valuable insights that can be practically applied by manufacturing companies and practitioners in Jordan and beyond. Some practical implications derived from the study are as follows:

1. **Enhancing PMSs:** The research underscores the importance of comprehensive and adaptable PMSs in improving organisational performance and effectiveness. Manufacturing companies in Jordan can utilise these findings to assess and refine their existing PMSs, ensuring they cover a wide variety of performance measures and align with organisational strategies. By enhancing their PMSs, companies can better monitor progress, identify areas for improvement, and make informed decisions to achieve their goals effectively.
2. **Promoting employee engagement:** The study highlights the significant role of employee engagement in driving organisational performance. Manufacturing companies can focus on fostering a work environment that encourages active participation, communication, and motivation among employees. By promoting employee engagement, companies can enhance productivity, creativity, and overall performance, ultimately contributing to their success in competitive markets.
3. **Addressing implementation challenges:** The research identifies common challenges faced by organisations in implementing effective PMSs, such as resource constraints and the need for adaptability. Companies can use these insights to anticipate and address potential barriers to successful PMS implementation. By allocating sufficient resources, providing training and support, and ensuring flexibility in PMS design, organisations can overcome implementation challenges and maximise the benefits of these systems.
4. **Guiding strategic planning:** The research provides valuable insights for strategic planning and decision-making processes within manufacturing companies. By understanding the relationships between PMSs, employee empowerment, and organisational performance, companies can develop strategic initiatives that leverage these factors to drive success. Additionally, companies can use the findings to identify areas for improvement in their performance management practices and develop targeted strategies to address them.

In conclusion, the practical applicability of this study extends to manufacturing companies and practitioners in Jordan and other similar contexts. By utilising the insights and recommendations derived from the research, organisations can enhance their performance management practices, promote employee engagement, overcome implementation challenges, and guide strategic planning efforts. Ultimately, these practical applications can contribute to organisational success, competitiveness, and sustainability in the dynamic business environment.

## REFERENCES

- Alegre, H., Cabrera Rochera, E., Hein, A., & Brattebø, H. (2014). Framework for Sustainability Assessment of UWCS and development of a self-assessment tool.
- Asiaei, K., & Bontis, N. (2020). Translating knowledge management into performance: the role of performance measurement systems. *Management Research Review*, 43(1), 113-132.
- Baird, K., Su, S., & Munir, R. (2018). The relationship between the enabling use of controls, employee empowerment, and performance. *Personnel Review*.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- Bordin, C., Bartram, T., & Casimir, G. (2007). The antecedents and consequences of psychological empowerment among Singaporean IT employees. *Management Research News*.
- Bourne\*, M. (2005). Researching performance measurement system implementation: the dynamics of success and failure. *Production Planning & Control*, 16(2), 101-113.
- Bourne, M., & Neely, A. (2002). Why measurement initiatives succeed and fail: The impact of parent company initiatives. *Business performance measurement*, 198. (P: 199/215)
- Bourne, M., Neely, A., Platts, K., & Mills, J. (2002). "The success and failure of performance measurement initiatives: Perceptions of participating managers", *International Journal of Operations & Production Management*, Vol. 22 No. 11, pp. 1288-1310.
- Bourne, M., Pavlov, A., Franco-Santos, M., Lucianetti, L., & Mura, M. (2013). Generating organisational performance: The contributing effects of performance measurement and human resource management practices. *International journal of operations & production management*.
- Brown, S. L., & Eisenhardt, K. M. (1998). *Competing on the edge: Strategy as structured chaos*. Harvard Business Press.
- Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares: Concepts, methods and applications* (pp. 655-690). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Academic press.
- De Geuser, F., Mooraj, S., & Oyon, D. (2009). Does the balanced scorecard add value? Empirical evidence on its effect on performance. *European Accounting Review*, 18(1), 93-122.
- Farndale, E., Beijer, S. E., Van Veldhoven, M. J., Kelliher, C., & Hope-Hailey, V. (2014). Work and organisation engagement: Aligning research and practice. *Journal of Organizational Effectiveness: People and Performance*.

- Franco-Santos, M., Lucianetti, L., & Bourne, M. (2012). Contemporary performance measurement systems: A review of their consequences and a framework for research. *Management accounting research*, 23(2), pp.79-119.
- Garson, G. D. (2016). *Partial least squares. Regression and structural equation models*.
- Gaskin, J., Godfrey, S., & Vance, A. (2018). Successful system use: It's not just who you are, but what you do. *AIS Transactions on Human-Computer Interaction*, 10(2), 57-81
- Gomes, P., Mendes, S.M., & Carvalho, J. (2017). Impact of PMS on organizational performance and moderating effects of context. *International Journal of Productivity and Performance Management*.
- Guenther, T.W., & Heinicke, A. (2019). Relationships among types of use, levels of sophistication, and organizational outcomes of performance measurement systems: The crucial role of design choices. *Management Accounting Research*, 42, pp.1-25.
- Hair, J. F., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial management & data systems*, 117(3), 442-458.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A Primer on partial least squares structural equation modeling*. Sage, Thousand Oaks, CA.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24.
- Hall, M. (2008). The effect of comprehensive performance measurement systems on role clarity, psychological empowerment and managerial performance. *Accounting, organizations and society*, 33(2-3), 141-163.
- Henri, J. F. (2006). Organizational culture and performance measurement systems. *Accounting, organizations and society*, 31(1), 77-103.
- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In *New challenges to international marketing* (Vol. 20, pp. 277-319). Emerald Group Publishing Limited.
- Johnson, C. C., Beiman, I., & Thompson, J. (2007). *Balanced scorecard: For state-owned enterprises: Driving performance and corporate governance*. Asian Development Bank.
- Kaplan, R. S., & Norton, D. P (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*. Harvard Business Press.
- Kuwaiti, M. E., & Kay, J. M. (2000). The role of performance measurement in business process re-engineering. *International Journal of Operations & Production Management*, 20(12), 1411-1426.

- Meyer, J. P. (2017). Has Engagement Had Its Day—What's Next and Does It Matter? *Organizational Dynamics*, 46(2), 87.
- Micheli, P., & Mura, M. (2017). Executing strategy through comprehensive performance measurement systems. *International Journal of Operations & Production Management*.
- Neely, A., & Bourne, M. (2000). Why measurement initiatives fail. *Measuring business excellence*. Vol. 4 No. 4, pp. 37. <https://doi.org/10.1108/13683040010362283>
- Neely, A., Adams, C., & Kennerley, M. (2002). *The performance prism: The scorecard for measuring and managing business success*. London: Prentice Hall Financial Times.
- Northcott, D., & Taulapapa, T. M. A. (2012). Using the balanced scorecard to manage performance in public sector organizations: Issues and challenges. *International Journal of Public Sector Management*.
- Othman, R., & Mahmoud, M. A. T. (2020). Performance management system of Jordanian public sector organizations: Greater Amman Municipality's (GAM) Experience. *International Journal of Human Resource Studies*, 10(2), 308329-308329.
- Parker, C. (2000). Performance measurement. *Work study*.
- Rajnoha, R., Lesnikova, P., & Korauš, A. (2016). From financial measures to strategic performance measurement system and corporate sustainability: empirical evidence from Slovakia. *Economics and Sociology*.
- Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of managerial psychology*.
- Sanneh, L., & Taj, S. A. (2015). Employee engagement in the public sector: A case study of Western Africa. *International Journal of Human Resource Studies*, 5(3), 70-101.
- Schneiderman, A. M. (1999). Why balanced scorecards fail. *Journal of strategic performance measurement*, 2(11), 6-11.
- Severgnini, E., Vieira, V.A., & Galdamez, E.V.C. (2018). The indirect effects of performance measurement system and organizational ambidexterity on performance. *Business Process Management Journal*.
- Smith, M., & Bititci, U. S. (2017). Interplay between performance measurement and management, employee engagement and performance. *International Journal of Operations & Production Management*.
- Sonson, S. J. (2019). *Performance measurement and management within construction firms in Saint Lucia* (Doctoral dissertation, University of Salford).
- Sorenson, S. (2013). How employee engagement drives growth. *Gallup business journal*, 1, 1-4.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal*, 38(5), 1442-1465.
- Takeuchi, R., Chen, G., & Lepak, D. P. (2009). Through the looking glass of a social system: cross-level effects of high-performance work systems on employees' attitudes. *Personnel psychology*, 62(1), 1-29.

Van Camp, J., & Braet, J. (2016). Taxonomizing performance measurement systems' failures. *International journal of productivity and performance management*.

Zsidó, K. E., & Fenyves, V. (2015). Application of “traditional” and “new” approach methods in business performance measurement. *Cross-Cultural Management Journal*, 17(1).

# LIST OF PUBLICATIONS



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## List of publications related to the dissertation

### Articles, studies (5)

1. **Owais, L. Q. A.:** The barriers to successful performance measurement systems (PMSS): a literature review.  
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2. **Owais, L. Q. A.,** Al, W. M. S. E. A., Kiss, J. T.: Managing water consumption per capita using performance indicators: a case study.  
*Desalination and Water Treatment.* 316, 769-778, 2023. ISSN: 1944-3994.  
DOI: <http://dx.doi.org/10.5004/dwt.2023.30217>  
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3. **Owais, L. Q. A.:** A brief overview of performance management systems.  
*SEA: Practical Application of Science.* 9 (25), 23-30, 2021. EISSN: 2360-2554.
4. **Owais, L. Q. A.,** Kiss, J. T.: The Effects Of Using Performance Measurement Systems (Pmss) On Organizations' Performance.  
*Cross-Cultural Management Journal.* 22 (2), 111-121, 2021. ISSN: 2286-0452.
5. **Owais, L. Q. A.,** Kiss, J. T.: Developing a Financial Sustainability Model of the Performance Indicators Applied by Jordan Water Company (Miyahuna).  
*International Journal of Engineering and Management Sciences.* 5 (3), 75-87, 2020. EISSN: 2498-700X.  
DOI: <http://dx.doi.org/10.21791/IJEMS.2020.3.8>





Conference presentations (1)

6. **Owais, L. Q. A.**, Kiss, J. T.: Performance Measurement Systems (PMSs) and Companies' Performance - The Mediating Role of Employees' Engagement and Empowerment.  
In: "New Trends and Challenges in Management" Conference "Kihívások és tanulságok a menedzsment területén" Konferencia: Abstract booklet = Absztraktfüzet, Debreceni Egyetem Műszaki Kar, Műszaki Menedzsment és Vállalkozási Tanszék, Debrecen, 1-2, 2023. ISBN: 9789634905127

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