Performance Measurement in the Public Universities in the Province of Ontario, Canada

by

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Abstract

The present thesis aimed to explore the use of performance measurement by the public universities in the Province of Ontario, Canada, primarily from institutional theory and, to a lesser degree, contingency theory perspectives. This examination was based on the most salient relationships identified in the conceptual framework developed by the researcher, which shows how organizational internal and external factors can promote the use of performance measurement by Ontario universities and what the entailed potential consequences are for those organizations.

An exploratory case study was conducted using an inductive interpretative approach and mainly qualitative research methods. The researcher utilized reflexive thematic analysis, developed by Braun and Clarke (2006), and he adopted a single case study method with a strategically selected group of 11 Ontario universities being treated as embedded units of analysis. The 43 respondents were targeted mainly at the senior managerial levels of universities, which have the potential to impact the utilization of performance information.

The study determined that the use of performance measurement in Ontario universities is significantly encouraged by political and regulatory factors, such as strategic mandate agreements, performance-based funding, and academic accreditation bodies. In addition, larger universities have more resources than the smaller ones to implement sophisticated performance measurement systems, while more complex organizations impose the use of performance measurement to a greater extent than the less complex ones. Furthermore, the use of performance measurement has an important

contribution in the process of organizational learning and development by using data to identify areas of strength and weakness in organizations.

By communicating them to the public, performance data can reveal the organizational contribution to the community and improve organizational accountability, transparency, and legitimacy. In addition, performance information is a main instrument used in comparisons and rankings of universities, which, in turn, impacts institutional public image. However, participants also unveiled some unintended consequences of using performance measurement. For instance, when organizational focus on performance measurement is only on some targeted domains or when performance indicators are poorly selected by universities or other interested organizations, the global improvement of organizational performance can be adversely affected.

To my maternal grandparents, Iordan and Zamfira

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List of Abbreviations

Abbreviation	Explanation	Abbreviation	Explanation
C	Comprehensive university; Comprehensive teaching and research university	NPM	New Public Management
CF	Conceptual framework	P&B	Pollitt and Bouckaert
COU	Council of Ontario Universities	PBF	Performance-based funding
CUDO	Common University Data Ontario	PMG	Performance Management
CUREB-A	Carleton University's Research Ethics Board A	PMGS	Performance Management System
EDI	Equity, diversity and inclusion	PMR	Performance Measurement
HE	Higher education	PMRS	Performance Measurement System
HEI	Higher education institution	PS	Public sector
HEQCO	Higher Education Quality Council of Ontario	R	Medical doctoral university; Medical-doctoral research-intensive university
HES	Higher education system	REB	Research Ethics Board
MC	Management Control	RQ	Research question
MCS	Management Control Systems	SMA	Strategic Mandate Agreement
MTCU	Ministry of Training, Colleges and Universities	U	Primarily undergraduate university; Liberal arts university

1 Introduction

Since the 1980s, along with the imposition of the New Public Management (NPM) doctrine over traditional public administration, performance measurement (PMR) has begun to be increasingly employed by public organizations (Hood, 1995; Nitzl et al., 2019), with the main goal of improving organizational performance (Behn, 2003). Environmental changes, which are characterized by high technological, political, social, and economic dynamics worldwide, influence the status and the role of academic institutions (Boyce, 2002; Tilling, 2002) and served as a motivation for this research. The higher educational (HE) environment has issues that produce internal and external pressures on the academic system, such as decreasing government funding and increasing regulation pressures. In the academic sector, the key features of the NPM are the improvement of the business-like elements, such as efficiency, cost-benefits, and accountability (Davies & Thomas, 2002). It is argued that nowadays universities create a "knowledge production" (Czarniawska & Genell, 2002, p. 456), which is a mix of research and teaching. Examples of the use of NPM to react to changes in the present climate are offered by the Australian Government, which encourages universities to use three strategies, namely rationalization, corporatization, and marketization. By reducing funding, implementing user-pays policies, privatizing, and commercializing higher education, they drive academic institutions closer to the business world (Guthrie & Neumann, 2007; Saravanamuthu & Tinker, 2002).

Much closer, the Province of Ontario offers another example. In the public budget for 2019, Ontario stated that for postsecondary education, the province "will become a national leader in outcomes-based funding by tying 60 per cent to performance by the

2024–25 academic year". Accordingly, it was intended to measure the performance of universities by using ten performance metrics that "align with the government's priorities in skills and job outcomes, and economic and community impact" (Fedeli, 2019, p. 187). Since then, PMR has become even more important at Ontario's public universities. Despite the fact that, in general, Ontario universities have two or three decades of experience collecting and analyzing performance data and that government performance-based funding (PBF) is now based on ten performance indicators that are the same from year to year, it is critical to gain a more in-depth understanding of the use and consequences of use of PMR by universities. These findings may have theoretical, methodological, and practical ramifications.

However, only a few significant empirical studies in the field of PMR examined the context of the Canadian public sector (PS) (Goh et al., 2015; Pollanen, 2005), and none of the known studies in this area were conducted in the sector of Canadian public universities, despite the fact that many studies in this domain were carried out in the PS worldwide (Brignall & Modell, 2000; Cavalluzzo & Ittner, 2004; Verbeeten & Speklé, 2015), including in public universities (Agyemang & Broadbent, 2015; Dobija et al., 2019; ter Bogt & Scapens, 2012). In addition, no research that is currently known has combined the institutional and contingency viewpoints, as the current study has done. Moreover, the majority of empirical studies in the literature only looked at PMR from a decision-making standpoint (Nitzl et al., 2019); in contrast, the current research took into account a wide range of viewpoints, including organizational learning and development or political and regulatory. This makes the research topic of the present study highly relevant.

This study aimed to reveal some aspects of PMR usage in Ontario's public university system, which is subject to unique operational and regulatory settings that have a substantial impact on the outcomes of PMR use. It specifically looked at how political and regulatory aspects, as well as contingent organizational elements like size and complexity, influence PMR adoption. It also covered how managers use PMR for political, regulatory, and compliance reporting, as well as for organizational learning and development. Finally, it carefully examined the influence of Ontario universities' usage of PMR on organizational performance, accountability, legitimacy, and organizational public image. The current research mostly employed qualitative research methods and an inductive interpretative approach with an exploratory focus. With a strategically chosen set of Ontario public universities serving as embedded units of analysis, from which the 43 respondents were primarily at the senior managerial levels, this study adopted a single case study method. Both the research methodology and the researcher's personal considerations determined the choice of qualitative case study design and strategy.

This thesis is organized into seven chapters. The following is the order of the upcoming chapters after the Introduction, which is the first chapter. The second chapter, Literature review, provides an outline of relevant literature to place the research within the current theoretical perspectives (institutional theory and contingency theory) in PS and identifies topics that need further investigation. These subjects are the concepts of PMR and performance management (PMG), which are emphasized from general to more specific. Historically, they were developed under the umbrella of management control systems (MCSs), which, in turn, have increased in importance since the beginning of the NPM period. The gap that had to be bridged by the current study was therefore made

clear by the survey of the literature on PMR. The third chapter, Conceptual framework and research questions, details the objectives of the thesis and was used for guiding data collection and analysis. With a focus on the scope and measures used, the fourth chapter, Methodology, explains and justifies the research methodology employed, including the research design and methods, data collection, and measurement and analysis techniques. The fifth chapter, Results, presents the findings, whereas their discussion, together with the study's implications and limitations and potential directions for future research, is covered by the sixth chapter, Discussion. The seventh chapter, which is the last, Conclusion, underlines the qualities and the limitations, and states the main theoretical and practical contributions of the current research.

2   Literature review

The topic of this research falls broadly in the domain of management accounting, more specifically within its sub-field of management control (MC), which is both interesting and challenging. It is interesting because it touches many different other research fields, such as economics, sociology, organizational management, or psychology, and it is challenging because it is very dynamic, with changes being observed very often, while its development is an ongoing activity (Chapman et al., 2006). For example, a study about the evolution of management accounting research articles published between 1981 and 2000 in ten of the most renown English-language journals showed that 28 percent of all accounting articles were related to management accounting, of which 70 percent are about MC. Moreover, the number of studies that address PMR and evaluation subcategories of MC increased from 10 percent out of all accounting articles during the decade 1981-1990 to 19 percent during the following decade, 1991-2000 (Hesford et al., 2006).

The main goal of the literature review in this study is to present theoretical and empirical aspects of PMR in PS. To show a picture of this topic, the literature review covers the notions of NPM, the themes of MCS, which, historically, is one of the older domains of management accounting, the field of PMG in PS, which is part of MCS, and the concept of PMR, which is included in PMG (Agyemang & Broadbent, 2015). This knowledge eventually led to the identification of a gap or omission in the literature, which aided in the formulation of the RQs. Before a detailed review of PMR studies in the PS in Section 2.4, important underlying principles and practices of NPM, MCS, and PMG are examined first in the next three subsections. The core literature review on PMR

in the PS, which represents a summary of PS performance models and performance measurement systems (PMRSs), is included in Section 2.4. This is followed by a thorough review of nearly 50 studies, the majority of which are empirical, on the application, effects, and influencing factors of the use of PMR, which are the main purposes of this study.

2.1 New public management in public sector

NPM emerged during the 1980s with the intention of improving PS efficiency, much like the private sector (Hood, 1995). In that decade, just like in the previous half of the century, the field of management accounting experienced stagnation (Kaplan & Johnson, 1987) or decline (Otley, 2001) in the evolution of research and practice. Thus, the relevance of management accounting diminished, and worse, it served as a catalyst for poor decision-making. As a result, management accounting started to lose popularity. It was the moment when management accounting shifted "from historic to forward-looking, from control to planning, from internal to external (customers, competitors, etc.), from cost to value, from production to marketing" (Otley, 2001, p. 244).

In this context, the last two decades of the 20th century witnessed the emergence of many innovations applicable not only in the private sector but also in PS. It was the period of replacement of the traditional public administration, which had been too bureaucratic and increasingly inefficient, with NPM, a doctrine that adopts the use of the private sector's methods of accountability in PS, such as performance targets for individuals and subunits, results-based management, or independent audits (Hood, 1995; Nitzl et al., 2019). Furthermore, Pollitt and Bouckaert (2017) argued that there were three distinct phases in the development of NPM theories. During the first of these phases,

which spanned the mid-1960s to the late 1970s, cost-benefit analysis and rational planning were prevalent. The second one, which spanned the late 1970s to the late 1990s, stood out by incorporating business-like practices. In the last one, new concepts like networks, transparency, and governance came into being between the late 1990s and the early 2010s.

NPM is a collection of theories and practices employed to improve the efficiency and the effectiveness of public organizations (Hyndman & Lapsley, 2016; Hyndman & Liguori, 2016). It has been largely supported by governments from many developed countries (Davies & Thomas, 2002; Hyndman et al., 2014), starting in the 1980s with those from New Zealand, Australia, and the UK (Broadbent & Guthrie, 2008; Pollitt & Bouckaert, 2017). Due to political, economic, or even official language concerns, NPM differs from nation to nation and has been evolving over time (Hood, 1995; Pollitt & Bouckaert, 2017). For example, the implementation of NPM had a significant impact on UK public services. As a result, NPM is now inextricably linked to the foundation of governmental institutions. This explains why NPM is still an ongoing, likely permanent, management practice.

The NPM reforms introduced accountability, which is one of the key components of PS. In literature, there is no consensus about the definition of accountability. Thus, accountability is considered either a mechanism or a result. "The dominant usage of accountability […] is as a social, political, or administrative mechanism. In this usage, accountability is conceptualized as an institutional relation or arrangement in which an agent can be held to account by another agent or institution" (Bovens et al., 2014, p. 8). Conversely, when it is perceived as a result, accountability "comes close to

'responsiveness', 'a sense of responsibility', or a willingness to act in a transparent, fair, compliant, and equitable way" (Bovens et al., 2014, p. 8). Another important characteristic of NPM is the use of output- or outcome-based control in PS management. This element of NPM underlines the importance of the employment of PMR, which should be based on clear organizational goals. In fact, "performance measurement is particularly associated with the NPM" (Pollitt & Bouckaert, 2017, p. 27). However, too often, the link between goals and performance indicators is missing (Modell, 2003; Pollitt & Bouckaert, 2017).

Therefore, NPM is actually far from perfect, as its implementation does not always yield the intended effects or outcomes. For instance, accountability is frequently centered on the goal achievement of individual managers and not on organizational effectiveness and outcomes. This focus can potentially result in a decline in overall accountability at the organizational level, rather than its improvement (Nasi & Steccolini, 2008). Although the tools used by private organizations could initially appear attractive for improving the PS accountability, they cannot be used in all given situations with satisfactory results. For example, the accrual accounting system cannot be properly used by public organizations because its target is to show the efficiency and the profit of an organization, whereas PS should focus on effectiveness and outcomes (Nasi & Steccolini, 2008). Although in many cases NPM has proved not to be well adapted to practical conditions, the fact that NPM is so widely adopted by universities offers a good opportunity for deeper research in the domain. As a result, in the concluding remark of their study about the colonization of NPM, Du and Lapsley (2019) claim that "the current position of UK universities … is one of NPM practice as embedded, irreversible, taken

for granted, and the natural order for the contemporary university, both in new (post-1992) universities and in traditional universities" (p. 478).

2.2 Management control systems in public sector

Chenhall (2006) claims that the terms management accounting, management accounting systems, management control systems (MCS), and organizational controls are not always clearly defined and are used in many situations interchangeably by scholars. For him, "[m]anagement accounting refers to a collection of practices such as budgeting or product costing, while management accounting systems refers to the systematic use of management accounting to achieve some goal". In addition, as a corollary, "[m]anagement control systems is a broader term that encompasses management accounting systems and also includes other controls" (pp. 164-165). Control in general has been defined either as domination (where commands are dictated by the person in control) or regulation (where the person in control or the system of control determines whether there is any difference between the results obtained and those that should be obtained and takes actions to reduce the potential gap) (Emmanuel et al., 1990). Four requirements must be fulfilled in order to design a comprehensive control process, as depicted in Figure 2-1. First, the controlled system must have goals. Second, the process's results ought to be quantifiable within the parameters that the objectives offer. Third, in order to ascertain the causes of process failure and the necessary steps for process enhancement, a predictive model of the controlled process must be established. Fourth, the ability to choose the steps that will enhance the control process should be granted to the controller (Otley & Berry, 1980).

Figure 2-1: *Conditions for a controlled process*
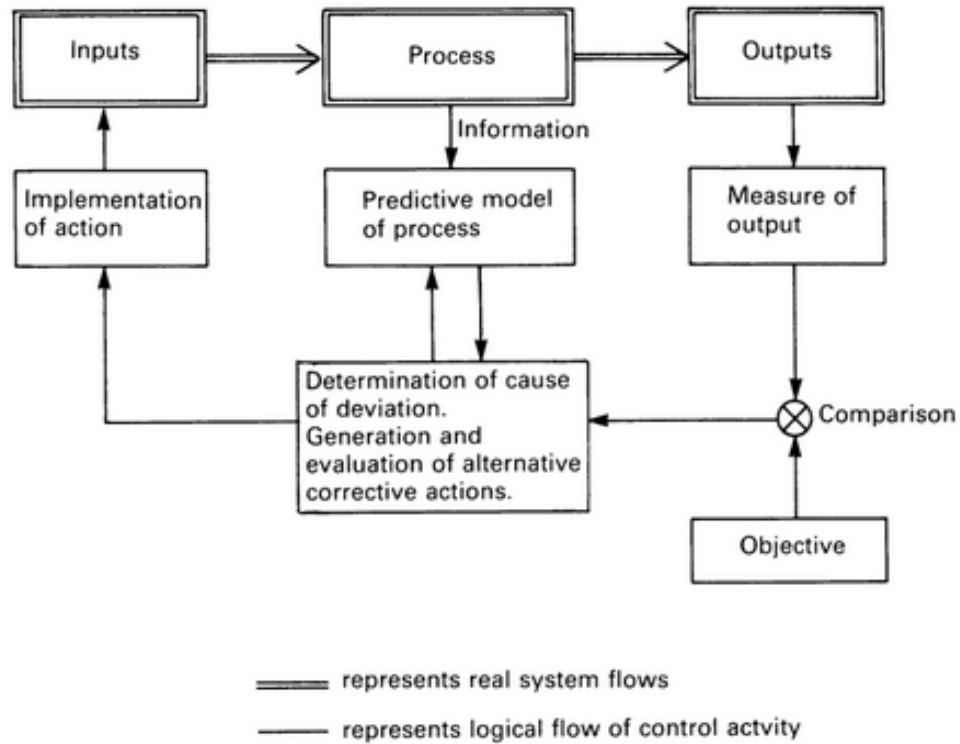
Note: From Emmanuel et al. (1990, p. 9)

The MC was first defined, in the seventh decade of the 20th century, as "the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives" (Anthony, 1965, p. 17). An effect of this early definition of MC was that this discipline started to be studied within an accounting-based framework (Berry et al., 2009). The imperfections of this first attempt, especially related to the fact that MC is not considered connected to planning and internal control, have been mitigated by new accepted definitions, which have become increasingly broader (Agyemang & Broadbent, 2015; Berry et al., 2009; Chenhall, 2003; Otley & Berry, 1980). Moreover, MC is "the most frequently appearing [research] topic" from all the papers published in the Journal of Management Accounting Research, one of the most renowned, between 1989 and 2013 (Guffey & Harp, 2017, p. 94).

Although many transformations took place in the last half century at the economic, technological, or environmental levels, the core of MC is still the same (Berry et al., 2009). This core deals with setting objectives, selecting the best strategies to achieve them, implementing those strategies, and ensuring that almost nothing fails (Merchant & Otley, 2006). Due to the initial application of the notion of MC in the 1960s, a decade later the concept of MCS was introduced as an organizational information system. The goal was to oversee organizational activities in order to achieve its overarching objectives and accurately assess employee performance (Otley & Berry, 1980). Over time, MCS has evolved from helping managers with internal information (formal and financial) to a system that uses external information (informal and nonfinancial) or to performance management systems (PMGSs), which include PMR (Agyemang & Broadbent, 2015; Chenhall, 2003). As such, PMGS and PMR are under the umbrella of MCS (Agyemang & Broadbent, 2015).

One of the most important changes that NPM has brought to PS is the increasing importance of MC in public institutions. For instance, public universities in the UK have increasingly used levers of control to manage uncertainties related to research funding (Agyemang & Broadbent, 2015) and have hired professional managers instead of managers selected from academics (ter Bogt & Scapens, 2012). Similarly, the UK government, following the Health Act of 1999, has focused on integrating the activities of separate departments into the public health domain by extending the use of MC (Kurunmäki & Miller, 2011), and in the same vein for childcare organizations (Cäker & Siverbo, 2011). Meanwhile, in other geographical regions, MC has become very important in improving the efficiency of public hospital networks with different levels of

clinical activity in Australia (Grafton et al., 2011) or of the intra- and inter-organizational elderly care public system in Sweden (Carlsson-Wall et al., 2011).

2.3 Performance management in public sector

"Performance management focuses organizations on results through the use of performance information in various decision-making venues" (Poister et al., 2014, p. 3). Hence, performance information is actively used to guide organizational activities, such as error correction. In addition, as mentioned earlier, PMG is under the umbrella of MCS (Agyemang & Broadbent, 2015). In this manner, a PMGS is a "set of management control mechanisms used by executives and employees with the overall purpose of facilitating the delivery of organizational goals by influencing people's behavior and performance" (Franco-Santos & Otley, 2018, p. 698). The minimal components that a PMGS should contain are "a planning element, which includes the goals that reflect stakeholders' expectations and thus defines performance; a measurement element, which includes the metrics used to operationalize performance; a review element, which refers to the evaluation and feedback of performance information; and a performance-related reward element, which can be extrinsic (e.g. bonuses) or intrinsic (e.g. a clear sense of achievement)" (Franco-Santos & Otley, 2018, p. 698).

PMG roots in the concepts of efficiency and effectiveness. A successful PMGS uses PMR information efficiently and effectively (Pollanen, 2005). The public and the private organizations essentially differ in the use of PMG. First, the decisions for the private sector are more flexible than those for PS, a factor that affects the use of PMR. Second, both should be concerned with efficiency and effectiveness, but in different proportions because of contextual constraints (i.e., focus on what is most relevant and

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possible). Thus, private organizations focus on efficiency, while public ones should focus on effectiveness. Third, the private organizations' aims are clear, whereas PS is covered by ambiguities, given by political reasons or by the antagonistic interests of stakeholders (Abdel-Maksoud et al., 2015). The main attribute of PMG processes is that managers should use PMR to improve the quality of decision-making (Folz et al., 2009).

Over time, PMG has been a central theme of management accounting (Otley, 2001). Relative to PMR, PMG covers the steps from measurement to management initiatives of using it, while PMR remains one of the elements of PMG (Folz et al., 2009; Otley, 2001; Pollanen, 2005). As such, PMR develops the measurement tools, and the collection, the analysis, and the explanation of the performance data. On the other hand, PMG assesses the gap between the actual and the expected outcomes, identifies the causes, and finds potential solutions to eliminate it (Melnyk et al., 2014). In this regard, Otley (2001) claims that the PMG "provides an umbrella under which we can study the more formal processes that organizations use in attempting to implement their strategic intent, and to adapt to the circumstances in which they have to operate" (p. 250).

The use of PMG in PS in developed countries has constantly increased, along with the importance of accountability, efficiency, and effectiveness (Christopher & Leung, 2015; Kloot & Martin, 2000; ter Bogt & Scapens, 2012; ter Bogt et al., 2015). These processes have been facilitated by reforms, such as the adoption of NPM or similar policies, in, for instance, Australia, New Zealand, or Europe. In this sense, Australia is a pioneer in developing PMGS in academic organizations. Its 37 public universities, which include around five million students, are an excellent research context for scholars interested in studying PMG. However, one of the most important observations is that the

adopted NPM rules are still a challenge in the Australian academic system after more than two decades of use (Christopher & Leung, 2015). Furthermore, development stages and the complexity level of PMGS used vary widely from region to region.

In Europe, Italy has started to use the NPM principles in academia after a reform implemented in 2009, using the experience of other European countries, such as the UK, France, and Spain (Busetti & Dente, 2014; Dal Molin et al., 2017). The PMGS implementation was similar for all PS fields. But differences exist even within the same field, such as the academic system. Thus, the results so far are, in many cases, different from what was expected. Besides, another important conclusion is that the size of the university, its managerial capacity, and its domain of education are the main aspects that must be considered when implementing a PMGS in a higher education (HE) organization (Busetti & Dente, 2014; Dal Molin et al., 2017). In addition, the implementation of PMGS should start with improving organizational efficiency and organizational control, including management competencies (Busetti & Dente, 2014).

2.4 Performance measurement in public sector

Measurement is defined as a "dimension ascertained by measuring; a magnitude, quantity, or extent calculated by the application of an instrument or device marked in standard units" or a "system of measuring or of measures" by the Oxford English Dictionary (n.d.). Performance is further defined by the same dictionary as "the quality of execution of such an action, operation, or process", "the competence or effectiveness of a person or thing in performing an action", or "the capabilities, productivity, or success of a machine, product, or person when measured against a standard". There are numerous definitions of performance in every field of study, especially sociology (Bouckaert &

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Halligan, 2008). Although measuring performance is of fundamental interest for any organization, scholars have yet to agree on a common definition in management accounting (Otley, 2001; Pollanen, 2005; ter Bogt et al., 2015). Furthermore, the meaning of performance may change as the context in which it is used evolves, making it controversial. Because performance is multidimensional, contextual, and ambiguous, many studies relied on self-reported perceptual measurements.

The complexity of the definition of performance also relates to the level of analysis at which this concept is assessed (Franco-Santos et al., 2014). Consequently, to avoid any confusion, the performance could be analyzed at "individual, organizational subunit, organization, or beyond-organization" (Luft & Shields, 2003, p. 171) levels. According to this perspective, Talbot (2005) asserted that, first, performance is most frequently focused on the organizational level, which is named "organizational performance" (p. 494). It is also possible to evaluate performance at any organizational component level. In PS, organizational performance might be used to compare organizations either horizontally (similar organizations at the same level of government) or vertically (at various levels of government). Second, the terms "activity performance", "program performance", and "policy performance" (p. 495) are used to assess the performance of programs in which several organizations are involved (the beyond-organization level). Despite the obvious advantages of such evaluations, the participation of various organizations and actors with different goals, targets, accountability policies, etc. could complicate the appraisal process. Third, the performance used to assess individual work represents "individual performance" (p. 495). Organizational performance is the main topic of this study.

2.4.1 Models of public sector performance

There are two widely recognized models of organizational performance in literature (Andersen et al., 2016). The first model, very much used by public organizations, is the 3 E's (Andersen et al., 2016; Brooks, 2005). The elements that build this model are effectiveness, efficiency, and economy (Otley, 2001). For instance, improving the efficiency and effectiveness of PS are among the goals of NPM (Micheli & Neely, 2010). Thus, first, effectiveness is assessed by outcomes, consequences, impacts, or effects. Second, efficiency is evaluated by dividing the quantity of outputs obtained by the quantity of inputs provided. Third, the economy imposes the disbursement for the inputs to be as inexpensive as possible (Otley, 2001). Put simply, "different aspects of performance encompass the production of outputs, the conversion of inputs into outputs, and the procurement of inputs" (Otley, 2001, p. 251). It implies the procurement of raw materials and their conversion into finished goods. Thus, the 3 E's could be easily pictured as financial representations, although the effectiveness provides more qualitative than quantitative information (Otley, 2001).

The second model of organizational performance is the inputs-outputs-outcome (IOO) model. This model is much more developed than the 3 E's, and it includes all the elements of the 3 E's. Accordingly, expenditure (or economy) is a component of inputs, efficiency is determined by the values of inputs and outputs, and effectiveness is impacted by outcomes (Andersen et al., 2016). Figure 2-2 presents a detailed performance framework, developed by Pollitt and Bouckaert (2017). According to this framework, the socio-economic context (1) establishes the needs (2) for PS. Then, the needs are filtered into the objectives (3) of the organization or program (16). Based on

objectives, the organization or program determines the inputs (4) to be allocated for the activities (5) that generate outputs (6). Then, outputs produce intermediate (13) and final outcomes (14) beyond the program or organization (van Dooren et al., 2015). In this succession, final outcomes represent the real goals of the organizations and programs (long-run goals), the ultimate effect of outputs, whereas intermediate outcomes are stages of outcomes on their way to the final outcomes (short-run goals) (Boyne & Law, 2005; Rajala et al., 2018). The definitions of the three most significant ratio indicators in PS are also provided in Figure 2-2, albeit very simply: efficiency is the ratio of inputs to outputs, effectiveness is the ratio of outputs to outcomes (intermediate or final), and cost effectiveness is the ratio of inputs to outcomes (intermediate or final).

In the IOO model, "outputs describe what the public sector does (…), whereas outcomes describe the effects that have been caused directly and indirectly by the outputs" (Rajala et al., 2018, p. 7). Although in PS it is more important to analyze the outcomes, usually the contingent arguments encourage output measurements instead of outcome measurements. First, outputs are generally easier to define and less costly and time-consuming to implement than outcomes. Second, outcomes cannot be accurately measured, and it is often difficult to agree on how they should be measured. Third, output information is more accurate and more easily obtained than outcome information, so it fits better in the control system. Fourth, while politicians have total control over outputs, they have less control over outcomes. However, outcome information could reveal more important errors and omissions in meeting objectives than output information and is thus more relevant in PS than output information (Otley, 2016; Rajala et al., 2018).

Figure 2-2: *Pollitt and Bouckaert's framework*
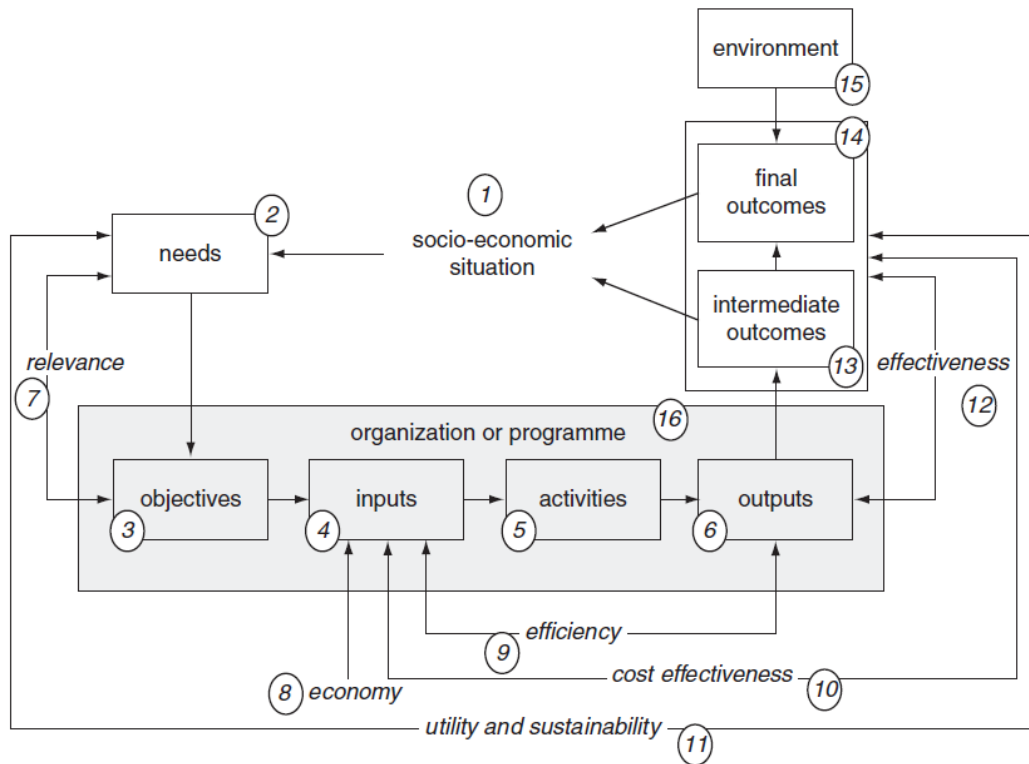
Note: From Pollitt and Bouckaert (2017, p. 15)

Within the framework of higher education institutions (HEI), outputs refer to the immediate results of universities in the fields of teaching, research, or third purpose, while outcomes are the universities' long-term results, which are associated with the development of an educated society (Melo et al., 2010). The use of the IOO model in HEI could have the following conditions and consequences: 1) outputs can be measured; 2) measurable characteristics are more visible than those that are not measurable; 3) proxies are used in the process of evaluation, but they do not always provide an accurate picture; 4) it fosters gaming behavior in order to accomplish objectives (Broadbent, 2007).

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2.4.2 Performance measurement systems in public sector

A synonym used in literature for performance measure is performance indicator (Bourne et al., 2014; de Lancer Julnes, 2008). The International Public Sector Accounting Standards Board (2015) defines performance indicators as quantitative measures (e.g., costs, dimensions), qualitative measures (e.g., ratings of goods or services), or qualitative descriptions (e.g., relevant and useful information about very complex services). Performance measures represent only indicators of performance and not performance per se (Bourne et al., 2014). It is questionable whether PMR employed by private organizations is applicable to PS. When the necessary performance indicators are either unavailable or impossible to produce, proxy indicators may be utilized in their place. As a result, academic organizations, for example, use the number of citations or the number of papers published in high-impact journals as a proxy for the quality of research in the absence of true performance indicators. Regrettably, the indicators that provide a true picture of the process being measured are frequently confused with the proxy indicators (Franco-Santos et al., 2014).

According to Saliterer and Korac (2013), performance information is "characterized as data and evidence that is produced, collected, and used to judge the performance of an organization" (p. 503), and it could be quantitative or qualitative. In addition, it is important for performance information to be described using two criteria that are connected to stakeholders' comprehension of it. The first is comparability with performance information from other similar organizations or with performance information from previous periods of the same organization. The second is related to the complexity of performance information, leading to ambiguity and difficulty in its

interpretation (Baekgaard & Serritzlew, 2016; Hatry, 2006). Among all the types of performance measures, quantitative performance measures are extensively used (Modell, 2003; ter Bogt & Scapens, 2012). As Hood (1995) pointed out as a "doctrinal component of new public management" (p. 96), the use of quantitative performance measures in the NPM era helps to increase accountability and efficiency. In contrast, qualitative performance measures had been used more frequently than quantitative ones prior to the NPM period.

A PMRS covers the process of defining the organizational goals by setting the performance measures and gathering, examining, and understanding the performance data with the aim "to quantify both the efficiency and effectiveness of actions" (Neely et al., 1995, p. 1229). Over time, PMRS has become "more *intensive* [emphasis added] because more management functions are included (not just monitoring but also decision-making, controlling, and even providing accountability)" (Bouckaert, 1996, p. 234). PMRS is also becoming "more *external* [emphasis added]", as it is increasingly used by politicians and by citizens (Bouckaert, 1996, p. 234). PMRS could be used where the targets of the governmental organizations, regardless of their level (federal, provincial, or local), are generally nonfinancial (Pollanen, 2005; Speklé & Verbeeten, 2014). Yet, PMRSs that include exclusively financial measures are not suitable for public organizations because these institutions do not seek financial profit, but their mission is to fulfill the citizens' needs (Modell, 2004; Pollanen et al., 2017).

However, PMRSs are not infallible. Some weaknesses are the four so-called paradoxes in PMR and PMG (van Dooren, 2011). First, effectiveness is based on outcomes, which are typically difficult or impossible to evaluate (ter Bogt et al., 2015;

van Dooren, 2011). Second, the professionalism of managers is not trusted, which is against the principles of NPM. Third, managers who are already overloaded by performance data would be rather reluctant to use additional performance information (van Dooren, 2011). Fourth, the collaborative activities involving multiple public organizations could be jeopardized by the individual organizational accountability implied by PMG (ter Bogt et al., 2015; van Dooren, 2011). These drawbacks could be counterbalanced by using an improved way of implementing PMG or by trying new instruments, such as more contextually adapted PMR, by aiming for a better fit to specific organizational circumstances (van Dooren, 2011), and by better understanding and consideration of the political factors (Kloot & Martin, 2000; van Dooren, 2011).

In the academic context, prior research has mostly concentrated on evaluating individual performance as opposed to organizational performance. For example, at the University of Groningen (the Netherlands), the goal of using PMR is to make faculties more research-oriented, whereas at the University of Manchester (UK), which has a strong research culture, the goal is to foster research spirit within individuals (ter Bogt & Scapens, 2012). However, the quality of research or the quality of teaching is difficult to evaluate. In addition, *safe* projects, i.e., with easily publishable findings, prospective outcomes, and further funding, are nowadays preferred by faculties. Although the two mentioned institutions try to assess the performance of their individuals as objectively as possible, it is still very difficult to avoid a certain amount of subjectivity in any PMRS (ter Bogt & Scapens, 2012). In addition, finding adequate instruments to measure performance is complex (de Bruijn & van Helden, 2006). However, in the Canadian

academic context studies on PMR are lacking. Contributing to filling that void is a major objective of the current study.

2.4.3 Factors affecting performance measures use in public sector

Table 2-1 summarizes some of the major studies, particularly empirical journal papers, published in the last two decades that examined the factors that help, hinder, or challenge adoption, implementation, or use of PMR in PS, addressed the purposes and effects of using PMR in PS, and scrutinized the potential consequences of PMR use in PS. As the current study employed both the institutional theory and the contingent theory perspectives, the mentioned topics were examined from both internal and external viewpoints. The taxonomy of managerial accounting research proposed by Shields (1997), who suggested that managerial accounting studies be categorized based on "their topics, settings, theories, research methods and results" (p. 4), is the basis for the classification of studies in Table 2-1. The adapted classification of the reviewed studies includes the following: 1) topic titles, 2) study categories, public organization categories, and locations for study settings, 3) theories and level of analysis for theories, 4) research methods, and 5) uses and effects of PMR and their contributing factors studied.

Table 2-1: *Summary of key studies on performance measurement in public sector*

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2000	Brignall & Modell	An institutional perspective on performance measurement and management in the 'new public sector'	MAR A*	E	-local government -health care -social care	- UK - Norway - Sweden	IT	Org	-Theoretical framework -Secondary sources (literature)	How organizational management uses performance information in relation to various groups of stakeholders	N/A	Legitimizing and institutionalizing of organization	The preference of management for organizational legitimacy is done at the cost of maximization of efficiency.
2001	de Lancer Julnes & Holzer	Promoting the utilization of performance measures in public organizations: An empirical study of factors affecting adoption and implementation	PAR A	E	-municipalities -county governments -state agencies or central government	USA	PMR use	-Org -B Org -Ind	Quantitative: -survey 513 respondents: -289 from municipalities -118 from county governments -101 from state agency or state government	Analysis of the factors that influence the use of PMRS	a) for adoption b) for implementation Positive: -Organizational size -Demand of stakeholders for performance information -Support of top management, elected officials, and citizens for implementation of PMRs -Maturity of the PMRS, which includes a development of performance culture Negative: -the uncertainty created by the risk that could be bring by the use of PMR -unionization of employees because of the tendency to avoid the use of performance and quality	-Planning -Resource allocation -Monitoring, evaluation, and reporting to internal management, elected officials, and citizens or the media	N/A
2003	Behn	Why measure performance? Different purposes require different measures	PAR A	C/T	PS	N/A	N/A	Org	Qualitative: -secondary sources	Reasons that public managers evaluate performance	N/A	-Evaluating -Controlling -Budgeting -Motivating -Promoting -Celebrating -Learning -Improving	N/A
2004	Cavalluzzo & Ittner	Implementing performance measurement innovations: Evidence from government	AOS A*	E	-US General Accounting Office	USA	-IT -OT	Org	Quantitative: -survey -380 middle and upper-level managers	Influencing elements of the development, the use, and the benefits of PMR in government activities	-Top management support -Training Negative factor: -Ambiguity of organizational goals -Selecting and interpreting performance information -Information not offered in a valid, reliable, timely, and cost-effective manner	N/A	N/A

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2004	ter Bogt	Politicians in search of performance information? Survey research on Dutch aldermen's use of performance information	FAM A	E	-165 municipalities with at least 20,000 inhabitants	The Netherlands	MIUT	-Org -Ind	Quantitative: -survey -262 aldermen (the political leaders of municipalities)	To analyze whether the use of performance information depends on the policy of the domain for which the aldermen are responsible	When the level of uncertainty increases the use of performances information increases as well	-Decision-making (PMRs are of very limited use by political decision-makers) -Planning -Control	N/A
2005	Melkers & Willoughby	Models of performance-measurement use in local governments: Understanding budgeting, communication, and lasting effects	PAR A	E	-168 city governments -47 county governments	USA	N/A	-Org -Ind	Quantitative: - national survey - 277 managers	Usefulness of performance measures in local governments	Maturity of PMRS: - Performance indicators that are selected considering organizational goals and users' requirements are more likely to be used. -Management experience is negatively related to the use of performance information.	-Planning and budgeting -Information communication	-Improvement of the quality of information communication within and across organizations -Learning about the results of organizational activities
2005	Moynihan	Goal-based learning and the future of performance management	PAR A	E	-3 state governments	-Virginia -Vermont -Alabama (USA)	LT	Org	Case studies -interviews -surveys -secondary sources	Examination of learning goal in PMGS	Organizational culture is an intermediary that could accept, reject, or adapt PMRS.	N/A	N/A
2005	Pollanen	Performance measurement in municipalities: Empirical evidence in Canadian context	IJPSM B	E	-334 municipalities with a median population of 28,000	Canada	N/A	Org	Quantitative: -survey -334 top managers	Analyzing the use of efficiency and effectiveness performance measures by municipalities	The level of clarity in defining performance indicators (discrepancies between expected use and actual use of PMRs, for performance indicators that are difficult to be defined, such as effectiveness)	More performance indicators related to efficiency are employed than those used for effectiveness	N/A
2005	Talbot	Performance Management	N/A	-BC -E -C/T	PS	N/S	N/A	Org	N/A	Elements of PMG	N/A	N/A	Positive effects: -Improving organizational performance -Improving accountability and transparency -Performance communication -Results, effectiveness, and "what works": shifting the focus of public organizations from inputs measures to outcomes -Creating public value Negative effects: -Incompleteness -Over-complexity of data - High costs - Unintended consequences
2006	Ho	Accounting for the value of performance measurement from the perspective of Midwestern mayors	JPART A	E	-253 municipalities	USA	N/A	-Org -Ind	Quantitative: -survey -253 responses	Analyzing the use of performance information by Midwestern mayors	-Acceptance by managers -Managers' ability to explain the officials how the use of performance information in political and administrative matters -Integration of PMRS on organizational strategy	N/A	N/A

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2007	Guthrie & Neumann	Economic and non-financial performance indicators in universities: The establishment of a performance-driven system for Australian higher education	PMR A	E	-36 public universities -3 private universities	Australia	N/A	Org	Qualitative -Secondary sources (literature)	Intended and unintended consequences of the academic PBF, with focus on PMR used and the performance information required	Political and regulatory	Political, regulatory, and compliance reporting: -governmental PBF	N/A
2007	Yang & Hsieh	Managerial effectiveness of government performance measurement: Testing a middle-range model	PAR A	E	Central and district governments	Taiwan	GPMR	-Org -B Org -Ind	Quantitative: -survey -684 responses	Testing a model to assess factors that influence the use of PMRs	-Political and regulatory (political support) -Organizational support (top and middle management) -Maturity of PMRS (training of specialists and managers)	N/A	N/A
2008	Ammons & Rivenbark	Factors influencing the use of performance data to improve municipal services: Evidence from the North Carolina benchmarking project	PAR A	E	15 municipalities	North Carolina, USA	N/A	Org	Mini-case studies Qualitative - survey - 15 municipalities	Why PMRs are used differently in some cities compared to others, and why the level of use is different?	Political and regulatory: -Performance indicators elected by officials, the willingness of officials to do comparisons, and the existence of a PMGS are the factors that convince the elected officials to use PMR.	Decision-making	Improvement of the quality of services
2008	Moynihan (2008a)	The dynamics of performance management: Constructing information and reform	N/A	B	State and federal governments	USA	N/A	Org	-Secondary documents	Describing the history of PMRS and the use of performance information	Institutional and political context	Decision-making	Improve the accountability and the quality of political decisions
2008	Verbeeten	Performance management practices in public sector organizations: Impact on performance	AAAJ A*	E	PS	The Netherlands	-BT -ET	-Org -Ind	Quantitative: - survey - 93 managers from PS	How the use of PMGS influences the performance in the public sector	Organizational size and complexity: -Standards or complexities of organizational sector could affect the implementation of PMRS. Clarity of organizational goals: -Legal characteristics of organizational sector influences the design of clear organizational goals, directly related with use and efficiency of PMRS.	-Learning and development -Political, regulatory, and compliance reporting	-Learning how to improve organizational performance (use of incentives) -Improving the message about the expenditure of the public money -PMR is basis for incentives and penalties of public organizations' officials
2009	Folz et al.	The adoption, use, and impacts of performance measures in medium-size cities	PPMR B	E	-280 mid-sized cities from all geographical regions	USA	N/A	Org	Quantitative: -mail survey -280 chief-executives	Understanding the challenges of the PMR adoption	Factors that are positively related to more use of PMRs: -larger cities -municipalities with appointed executives rather than elected -attitude of administrators or middle managers -experience Factors that could impede the use of PMRs: -employee unionization	-Decision-making -Budgeting -Accountability	N/A

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2009	Johansson & Siverbo	Explaining the utilization of relative performance evaluation in local government: A multi-theoretical study using data from Sweden	FAM A	E	216 municipalities	Sweden	-ET -IT	Org	Quantitative: -survey -290 respondents (216 local governments finance directors or equivalent) -secondary data (Statistics Sweden)	Reasons for the differentiated use of PMR by municipalities	-Management competency (high competencies implies both adoption and use of PMR) -Political factors (great level of political competitiveness implies only adoption of PMR) -Organizational culture -Fiscal factors	N/A	N/A
2009	Moynihan & Landuyt	How do public organizations learn? Bridging cultural and structural perspectives	PAR A	E	53 state agencies	Texas, USA	ST	-Org -Ind	Quantitative: -survey -34,668 employees	Improving the understanding of organizational learning	N/A	N/A	Mature PMRS positively influence organizational learning
2009	Taylor	Strengthening the link between performance measurement and decision making	PA	E	-7 public accountability authorities -12 public agencies	Australia	N/A	Org	Quantitative: -survey Qualitative: - semi-structured interviews -top managers	Assessing the efficiency of performance information for decision-making by internal (agencies) and external (accountability authorities) users	-Political and regulatory factors -Organizational constraints -Managerial culture	Decision-making	N/A
2010	Arnaboldi & Azzone	Constructing performance measurement in the public sector	CPA A	E	37 public universities	Italy	ANT	-Org -Ind	Qualitative: -interviews -secondary data	Analyzing the process of 11-year implementation of PMRS in Italian universities	-Adequate PMR to organization's particularities - Proper organizational goals leads to selecting appropriate PMR	N/A	N/A
2010	Micheli & Neely	Performance measurement in the public sector in England: Searching for the golden thread	PAR A	E	-Police force (Cambridgeshire) -Health care (West Suffolk Primary Care Trust)	England	PMM	Org	2 exploratory case studies -secondary data -unstructured interviews with key informants	Effects of a centralized PMRS over local public organizations	N/A	N/A	-Low consistency related to performance indicators used and the targets and priorities of local organizations -The growth of numbers of indicators imposed by central governments creates confusion
2010	Moynihan & Pandey	The big question for performance management: Why do managers use performance information?	JPART A	E	Local governments with populations over 50,00	USA	OBT	-Org -Ind	Quantitative: -survey -1,538 managers	Reasons for the use of performance information	-Organizational support (top management commitment) -Organizational culture	Decision-making	N/A
2010	Schatteman	The state of Ontario's municipal performance reports: A critical analysis	CaPA B	E	-136 municipalities from the Province of Ontario	Canada	N/A	-Org -Ind	Quantitative: -online survey -136 top managers -secondary sources	Assessing the quality of municipalities' performance reports rooted on elected officials' appreciations	Performance information comprehensible, relevant, timely sent to decision-makers	Decision-making	-Municipalities' performance reports are useful only to provincial government -Municipal managers do not focus on creating high quality performance reports
2011	Torres et al.	Performance measurement in Spanish local governments. A cross-case comparison study	PA	E	-7 biggest municipalities	Spain	-CT -IT	-Org -B Org	Case study: -cross-case comparison Qualitative: -interviews (7 top managers)	Use of PMRS by the biggest municipalities	-Maturity of PMRS related to the level of contingency of PMRS to the local government environmental context) -The symbolic or institutional image value of an organizational rational management, based on the trend of PMR use by PS	Decision-making	-Improving organizational legitimacy -Difficulties in comparing performance at inter-organizational level because performance indicators are adopted based on the context of each municipality
2011	Walker et al.	Management innovation and organizational performance: The mediating effect of performance management	JPART A	E	Local government (17 municipalities)	England	NPM	Org	Quantitative: -survey -136 managers	Analyzing the effects of management innovation and PMG on organizational performance	N/A	N/A	Management innovation improves organizational performance through the lens of PMR use

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2013	Hammerschmid et al.	Internal and external use of performance information in public organizations: Results from an international survey	PMM B	E	-Central governments -Local governments	-Estonia -France -Germany -Hungary -Italy -Norway	NPM	-Org -Ind	Quantitative: -survey -3,134 top managers	Use of performance information by public managers	-Policy field -Type of organizational sector (central or other levels)	-Planning -Management by results	N/A
2013	Poister et al.	Does performance management lead to better outcomes? Evidence from the US public transit industry	PAR A	E	Public transit industry (88 small and medium-sized local transit companies)	USA	PMG	Org	Quantitative: -survey -88 managers -secondary data (National Transit Database)	How the use of PMR affects organizational effectiveness	N/A	N/A	Improving organizational performance
2013	Saliterer & Korac	Performance information use by politicians and public managers for internal control and external accountability purposes	CPA A	E	Local governments	Austria	-CT -IT -ET	-Org -B Org -Ind	Quantitative: -survey -335 chief officials -274 mayors	Analysis of performance information use by politicians and public managers for internal management and external accountability	-Resource availability -Organizational size -Organizational culture	N/A	N/A
2014	Geiger & Aschenbrücker	Performance measurement and management in German universities	BC	E	Public university with 3 faculties	Germany	N/A	-Org -Ind	Case study -interviews -secondary data -researcher is participant	Requirements for implementation of PMR	-Adequate PMR to organization's particularities - Proper organizational goals leads to selecting appropriate PMR	N/A	N/A
2014	Hvidman & Andersen	Impact of performance management in public and private organizations	JPART A	E	School system: -561 public -122 private	Denmark	NPM	-Org -Ind	Quantitative: -survey -data from Statistics Denmark	How the use of PMG in public schools influences the student performance	N/A	Decision-making	Impacting organizational performance: -Improvement in the private sector -Not significantly ameliorate in PS
2014	Speklé & Verbeeten	The use of performance measurement systems in the public sector: Effects on performance	MAR A*	E	101 public organizations: 44% central government, 27% local government, 30% other organizations	The Netherlands	-BT -ET	Org	Quantitative: -survey -97 organization managers	Public organizational characteristics that influence the effectiveness of the use of PMRS	N/A	-Motivating, rewarding, and penalizing -Planning and budgeting -Monitoring and control -Decision-making -Goal and other information communication -Learning and development	Impacting organizational performance: -The level of organizational contractibility has a positive impact over organizational performance when using PMRS is incentive-oriented. -The exploratory use of PMRS positively impacts the organizational performance, regardless the level of organizational contractibility
2015	Agyemang & Broadbent	Management control systems and research management in universities: An empirical and conceptual exploration	AAAJ A*	E	Public universities	UK	Middle range thinking	-Org -Ind	Qualitative: -secondary data -researcher is participant	Reaction of MCS of universities at external regulations	N/A	-Political, regulatory, and compliance reporting -Monitoring and control	Comparing and ranking organizational performance:
2015	Arnaboldi et al.	Performance management in the public sector: The ultimate challenge	FAM A	E	National Health Service: -2 organizations	UK	CMT	Org	Qualitative: - secondary data	Understanding PMG in public services	Organizational size and complexity	N/A	N/A

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2015	Goh et al.	Performance management in Canadian public organizations: Findings of a multi-case study	IJPPM B	E	-4 federal organizations -1 provincial organization	Canada	CT	Org	Multiple case-study Qualitative: -secondary sources -17 semi-structured interviews	Examination of implementation of PMG in five organizations	-Organizational culture -Organizational size -Organizational complexity -Adequate resources, and expectations and outcomes included in PMRS -Measures available on timely basis and high quality	-Learning -Planning -Reporting	Improving organizational performance
2015	Kroll & Moynihan	Does training matter? Evidence from performance management reforms	PAR A	E	Federal governments	USA	OT	-Org -Ind	Quantitative: - surveys Qualitative: -interviews	Impact of users' training on the use of performance information	Maturity of PMRS: -Management competency, improved by training, directly related to the use of PMR	N/A	N/A
2015	Nielsen & Baekgaard	Performance information, blame avoidance, and politicians' attitudes to spending and reform: Evidence from an experiment	JPART A	E	Municipalities	Denmark	BAT	-Org -Ind	Quantitative: -survey -844 Danish city councilors	How spending attitudes of politicians are affected by the use of PMR	N/A	-Planning and budgeting	-High-quality performance data could influence the politicians to take into account rewarding high-performance programs or organizations
2015	van Dooren et al.	Performance management in the public sector	N/A	B	PS	N/A	-CT -IT -Others	-B Org -Org -Ind	-Secondary data	The use of performance information	N/A	-Learning and development -Monitoring and control -Accountability	-Learning what is good about the work done and what is not. -Deciding what should be changed to improve performance. -Ensuring organizational performance to be as planned -Justifying the claims about the value of the work done
2015	Verbeeten & Speklé	Management control, results-oriented culture and public sector performance: Empirical evidence on new public management	OS A*	E	96 public organizations	The Netherlands	NPM	Org	Quantitative: -survey -96 organization managers	To assess whether MC under NPM participates at improvement of organizational performance	N/A	-Political, regulatory, and compliance reporting (accountability) -Motivating, rewarding, and penalizing -Learning and development -Attention-focusing	Impacting organizational performance: -Only the use of PMR for attention-focusing improves performance -No support that the other PMR uses improves performance
2016	Bjørnholt et al.	Does fiscal austerity affect political decision-makers' use and perception of performance information?	PPMR B	E	-98 municipalities	Denmark	N/A	Org	Quantitative: -survey 1: 1,295 responses -survey 2: 1,033 responses	Effects of fiscal austerity over the use of performance information	-Fiscal austerity (better chances to be implemented in better fiscal conditions)	N/A	N/A
2016	Gerrish	The impact of performance management on performance in public organizations: A meta-analysis	PAR A	E	PS	Several countries	Meta-analysis	Org	Quantitative: -secondary sources (49 empirical studies)	Meta-analysis of the effects of the use of PMG on public organizations	N/A	N/A	Improving organizational performance, under specific conditions
2017	Dal Molin et al.	New public management reforms in the Italian universities: Managerial tools, accountability mechanisms or simply compliance?	IJPA B	E	-41 universities	Italy	Matrix	Org	Qualitative: -official secondary sources	Analysis the implementation of PMGSs in Italian universities	-University size -Management competency -Domain of university -Resistance to reforms of administrative personnel	N/A	N/A

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2018	Agostino & Arnaboldi	Performance measurement systems in public service networks. The what, who, and how of control	FAM A	E	Public transport network: - 26 public and private organizations of a local government, formed by a region with 11 provinces and 11 municipalities	Italy	IAT	-Org -B Org -Ind	Case study Qualitative: - secondary studies - interviews - 12 officials from municipalities - 16 managers from transport organizations - 3 members of consumer groups	How a PMRS is used in a public network	N/A	Monitoring and control	Affecting accountability and organizational legitimacy: -Increasing the accountability of public networks PMR is the basis of rewarding system
2019	Dimitrijevska-Markoski	The impact of performance measurement and performance information use on municipal and county performance	PAQ A	E	-29 municipal and county governments	Florida, USA	N/A	Org	Quantitative: -survey -124 administrators	Influence of PMR and performance information use over performance of local governments	-Organizational culture (encouragement of use of performance information) -Maturity of PMRS (development of adequate PMRS)	N/A	N/A
2019	Dimitrijevska-Markoski & French	Determinants of public administrators' use of performance information: Evidence from local governments in Florida	PAR A	E	-18 municipal governments -11 county governments	Florida, USA	-IPT -PBT	Org	Quantitative: -survey -124 administrators	Factors that affect the use of performance information by local governments	-Organizational culture (institutionalization of the use of PMRS) -Maturity of PMRS (development of adequate PMRS) -Organizational support does not have any contribution	N/A	N/A
2019	Dobija et al.	Rational and symbolic uses of performance measurement: Experiences from Polish universities	AAAJ A*	E	4 universities: -2 public universities -2 private universities	Poland	IT	-Org -Ind	4 case studies: Qualitative: - semi-structured interviews with 40 managers and faculties	Investigating the uses and users of PMRS in HE institutions	-External factors: external stakeholders, international accreditation of universities -Organizational factors: culture, leadership, organizational size, PMRS maturity -Impeding factors: unintended consequences, such as stress or decreasing job satisfaction, decreasing motivation, error measures, data manipulation	Political, regulatory, and compliance reporting:	N/A
2019	Nitzl et al.	Exploring the links between different performance information uses, NPM cultural orientation, and organizational performance in the public sector	PMR A	E	Municipalities	Italy	CT	Org	Quantitative: -survey -385 managers	Influence of the type of performance information and NPM cultural orientation over the relationship between PMR use and organizational performance	The design of PMRSs should always considers the circumstances. -Cultural particularities	-Decision-making -Monitoring and control -Legitimizing (when organizational performance does not improve)	-Monitoring and attention-focusing use of PMRs are directly linked to organizational performance.

Year	Author(s)	Study title	Journal (a) & rating (b)	Study category (c)	Public organization category	Public organization geography	Theory adopted (d)	Level of analysis (e)	Research method	Research questions / Purposes	Contributing factors	PMR use	Effects of PMR use
2020	Micheli & Pavlov	What is performance measurement for? Multiple uses of performance information within organizations	PAR A	E	-Initial, 9 public organizations -In-depth, 2 public organizations	England	PIU	-Org -Ind	-2 case studies Qualitative: -exploratory interviews with 9 managers from 9 public organizations - in-depth case studies for 2 public organizations - secondary sources	Relationship between the passive and purposeful use of PMR	N/A	-Information communication -Resource allocation -Political, regulatory, and compliance reporting -Internal decision-making	-Comparing and ranking organizational performance -Improving organizational performance

Note:

(a) Journal abbreviations

Abbreviation	Journal title	Abbreviation	Journal title
AAAJ	Accounting, Auditing and Accountability Journal	MAR	Management Accounting Research
AOS	Accounting, Organizations and Society	OS	Organization Studies
CaPA	Canadian Public Administration	PA	Public Administration
CPA	Critical Perspectives on Accounting	PAQ	Public Administration Quarterly
FAM	Financial Accountability and Management	PAR	Public Administration Review
IJPA	International Journal of Public Administration	PMM	Public Money and Management
IJPPM	International Journal of Productivity and Performance Management	PMR	Public Management Review
IJPSM	International Journal of Public Sector Management	PPMR	Public Performance and Management Review
JPART	Journal of Public Administration Research and Theory		

(b) Journal rating based on the 2019 Australian Business Deans Council (ABDC) Journal Quality List (https://abdc.edu.au/research/abdc-journal-quality-list/)

(c) Study category abbreviations

Abbreviation	Study category
B	Books
BC	Book chapters
C/T	Conceptual/theoretical review articles
E	Empirical review articles

(d) Theory adopted abbreviations

Abbreviation	Theory	Abbreviation	Theory
ANT	Actor-network theory	LT	Learning theory
BAT	Blame-avoidance theory	MIUT	Managers' information use theory
BT	Behavioral theory	NPM	New public management theory
CMT	Complexity theory	OBT	Organizational behavior theory
CT	Contingency theory	OT	Organizational theory
ET	Economic theory	PBT	Planned behavior theory
GPMR	Government performance measurement theory	PIU	Performance information use theory
IAT	Informal accountability theory	PMM	Performance measurement mapping
IPT	Information-processing theory	ST	Structuration theory (derived from OT)
IT	Institutional theory		

(e) Level of analysis abbreviations (Luft & Shields, 2003)

Abbreviation	Level of analysis
B Org	Beyond organizational
Ind	Individual
Org	Organizational

Examples of external environmental factors that have been mentioned in the literature include the resource availability for implementing PMRS, inter-organizational strategies, marketization of local service delivery, cooperative arrangements in local service delivery (Saliterer & Korac, 2013), advancement in technology for developing PMRS, or decreasing costs of hardware and software used in PMRS (Hatry, 2014). Fiscal factors can also influence the decision about the use of PMR (Johansson & Siverbo, 2009). For instance, PMRs are more likely to be used during lower fiscal austerity conditions than during greater fiscal austerity. So, PMR has greater chances of being implemented in better financial conditions (Bjørnholt et al., 2016). Furthermore, political and regulatory factors are external elements that constantly influence the implementation of PMRS (Moynihan, 2008a; van de Walle & van Dooren, 2010). It is important to underline that public organizations operate in a political context and that they have to comply with various laws or administrative regulations in the process of using PMR. Besides, the support of elected officials (and even of politicians in opposition, depending on their political ideology) and of citizens affects PMR use (de Lancer Julnes & Holzer, 2001). Particularities of each political system, including laws and regulations, influence the use of performance information. As a matter of fact, political and regulatory pressures are joined by social and professional pressures (Chenhall, 2003; DiMaggio & Powell, 1983; Oliver, 1992; Scott, 2014), a characteristic that is common for the organizational environment as well. To illustrate this fact, at the US municipal level, the requirement of elected officials to compare the results of their organizations with those of other similar organizations facilitated the adoption and use of PMR. Consequently, PMR is more likely to be used by municipalities when elected officials require benchmarking against similar

organizations and use performance information themselves (Ammons & Rivenbark, 2008).

Two organizational factors that influence the use of PMR are related to organizational size (de Lancer Julnes & Holzer, 2001; Verbeeten, 2008), and organizational complexity (Arnaboldi & Azzone, 2010; Cavalluzzo & Ittner, 2004). In this respect, first, smaller organizations are more likely to implement PMRS because they have fewer challenges, whereas larger organizations could compensate with strong leadership and clear organizational goals. The complexity of PS is a permanent source of issues for PMRS (Arnaboldi et al., 2015). Put simply, organizational complexity represents, in the view of Jablin (1987), "the number of separate parts within an organization as reflected by the division of labor and by the number of both hierarchical levels and departments". For him, organizational complexity is composed of both vertical and horizontal complexity. Accordingly, vertical complexity "is an indication of the number of different hierarchical levels in an organization relative to its size", whereas horizontal complexity "measures the number of department divisions in an organization" and "is typically assessed by determining the number of different occupational specialties or specialized sub-units at a given hierarchical level" (p. 400). In turn, Dewar and Hage (1978) claimed that organizational complexity underlines the "knowledge measured by the number of different occupational specialties, each specialty being seen as a distinct and separate kind of knowledge" (p. 113).

Defining performance indicators (Pollanen, 2005; Wiers-Jenssen et al., 2002), data collections (Goh et al., 2015; Tee, 2016), measurement issues (Hood, 2007), organizational goal clarity (Geiger & Aschenbrücker, 2014; Koppell, 2005; Speklé &

Verbeeten, 2014; Yang & Hsieh, 2007), union presence (de Lancer Julnes & Holzer, 2001; Folz et al., 2009), standardization of performance indicators (van de Walle & van Dooren, 2010), and the difficulty of measuring the outcomes (Modell, 2003; Pollanen, 2005) are some of the obstacles to adopting PMRSs. It is important to mention that Canadian universities, which are examined in the current study, are very complex organizations due to their legal authorities and structures, further details of which are included in Appendix A.

Organizational support (or top management support) is another influencing factor for the implementation of PMR (Moynihan & Pandey, 2010; Yang & Hsieh, 2007). Managers who are not convinced of the usefulness of PMRS would not focus on producing high-quality performance information (Schatteman, 2010). Accordingly, public organizations with top managers who possess the following characteristics are more likely to support the use of performance information: managers who believe in the potential benefits of the use of PMRS (Ammons & Rivenbark, 2008; Taylor, 2011), managers with an altruistic opinion about the benefits of the use of performance data, managers with autonomy to experiment with the outcomes of this activity (Moynihan & Pandey, 2010), managers who focus on results (Moynihan & Lavertu, 2012), or managers with a high level of competence (Hvidman & Andersen, 2014; Johansson & Siverbo, 2009; Yang & Hsieh, 2007).

The next influential factor discussed is the maturity of PMRS. Thus, a mature PMRS offers an important quantity of relevant data and performance information that corresponds to the needs of users (Ammons & Rivenbark, 2008; de Lancer Julnes & Holzer, 2001; Ho, 2006; Torres et al., 2011; Yang & Hsieh, 2007). In this sense, the

simple existence of performance data does not necessarily imply their use. Instead, to be used, performance data should answer to users' requests and needs and should be related to organizational goals (Moynihan & Landuyt, 2009; Moynihan et al., 2012). Based on prior research findings, some characteristics of a mature and, therefore, successful PMRS are the following: 1) pertinency of the performance measures selected (Hatry, 2008); 2) reliability of the data collected (Hatry, 2008); 3) timely reporting of performance information (Hatry, 2008; Schatteman, 2010); 4) performance reports that offer enough elements to assess whether the outcomes are good or poor, meet expectations and incorporate at least some unbiased analysis and comparisons (Goh et al., 2015; Hatry, 2008); 5) simplicity and ease of use of performance data (Chan, 2004; Hatry, 2008); 6) comprehensiveness and relevancy of performance information (Schatteman, 2010); 7) well-defined strategy and resources to implement the appropriate PMRS (Chan, 2004; Dimitrijevska-Markoski, 2019; Dimitrijevska-Markoski & French, 2019); 8) development of an organizational performance culture (de Lancer Julnes & Holzer, 2001); and 9) periodical training of top management users (Schatteman, 2010). Such characteristics indicate a rather sophisticated and mature system capable of a significant contribution to effective PMR use.

Empirical studies on factors affecting PMR use are still rare, particularly in the Canadian context. Therefore, further research on key contributing elements of a successful or unsuccessful implementation and use of PMR could improve the quality of performance information and enhance organizational processes and outcomes. In the domain of HEI, an example of political and regulatory factors that determine the use of PMR is offered by the laws and regulations of governmental funding, especially PBF

(Guthrie & Neumann, 2007), or by government expectations in the form of performance reports (Dobija et al., 2019). In fact, politicians usually decide what and why to measure (Gao, 2015), so law requirements enhance the use of PMRS by public organizations (Taylor, 2009). The adoption and implementation of PMR for HE in Italy and Poland are imposed by political factors and by citizens (Arnaboldi & Azzone, 2010; Dobija et al., 2017; Dobija et al., 2019). Thus, it could be inferred that the particularities of each political system influence the use of performance information (Pollitt, 2006), and PMR is used as a political tool (Gao, 2015). In addition, national and international funding agencies, or national and international accreditation bodies, also require and base their decisions on performance information (Dobija et al., 2019).

2.4.4   Use of performance measures in public sector

Table 2-1 offers us a general overview of the use of PMR in PS. While several studies mentioned in Table 2-1 yielded results that were nearly at odds with one another, it is important to remember that every study under examination had a unique context, which might include political, economic, social, geographical, or chronological elements. In one of the most widely cited theoretical PMR papers, Behn (2003) suggested a classification of the uses of performance information and indicated seven main purposes of the use of performance measures, namely evaluating, controlling, budgeting, motivating, promoting, celebrating, and learning (the eighth, improving performance, in fact being a consequence of PMR use). He also identified nine secondary purposes (planning, decision-making, modifying programs, setting performance targets, recognizing good performance, comparing performance, informing stakeholders, performance contracting, and promoting accountability). To illustrate, he claimed that

planning, decision-making, and modifying programs are sub-purposes of budgeting and improving performance. However, when he discussed the purposes of the use of performance measures, Behn (2003) mixed improving performance, which is a consequence of PMR use, with the other seven purposes. So, he is an example of a scholar who has confounded the interpretation of PMR terms. Therefore, it is important for scholars to separate the purposes, objectives, functions, instruments, tasks, etc., of PMR use from the consequences of PMR use.

However, there is no standard classification system for the various uses of performance measures. This variation might be attributed to the many perspectives the above scholars have proposed in their taxonomies related to organizational performance, organizational goals, organizational timeline, or political and administrative circumstances. While some uses are more prevalent than others, they might not be referred to by the same terms and not be considered within the same boundaries. Consequently, what Behn (2003) considered the use of PMR for controlling is found in the study of Hatry (2006) as being partially included in assisting in allocating resources and partially in improving efficiency. Likewise, what van Dooren et al. (2015) characterized as responding to accountability was described as promoting by Behn (2003), legitimizing by Henri (2006), or communicating performance information by Franco-Santos et al. (2007) and by Hatry (2006).

Performance data is used in political and regulatory reporting to make sure that workers or organizations meet expectations and to provide undisputed evidence for political assertions that will have the most positive effect (Moynihan, 2009). Pollitt (2006) provided an analysis of the elements that may contribute to the growing use of

performance information in political contexts within democratic societies. First, he claimed the timing of the performance data statement is important. For this reason, the sooner performance data is released during a political dispute, the greater the likelihood that it will be utilized. Second, the promptness of performance information is fundamental for decision-makers. Third, shorter performance reports would be more likely to be read by stakeholders who have an interest in them. Another noteworthy finding was that PMR is more frequently used in some areas than others, such as employment, justice, police, or security, presumably because outputs and outcomes are easier to identify and measure (Hammerschmid et al., 2013). Moreover, performance data can be used by local governments in the following ways: 1) politically, to demonstrate the high performance of their staff or organizations; 2) purposefully, to enhance organizational performance; 3) passively, by producing data with little effort and without using them; or 4) perversely, to manipulate or cheat (Micheli & Pavlov, 2020; Moynihan, 2009).

When PMR is used for learning, organizations identify what works and what does not, along with the reasons behind them (de Lancer Julnes, 2008; Franco-Santos et al., 2007; Hatry, 2006; Henri, 2006; Verbeeten, 2008). In this line, they could change the underperforming activities or confirm the good management practices (Behn, 2003; Franco-Santos et al., 2007; van Dooren et al., 2015). Accordingly, the use of PMR for learning may result in improving organizational performance, including efficiency and effectiveness (de Lancer Julnes, 2008; Moynihan, 2008b). This fact was confirmed in the Netherlands (Speklé & Verbeeten, 2014; Verbeeten, 2008), Estonia, France, Germany, Hungary, Italy, or Norway (Hammerschmid et al., 2013). Generally, the process of

learning could be undertaken by organizing learning forums (Moynihan, 2008b). For instance, diverse local governments or other public organizations from Germany, the Netherlands, the UK, Australia, or New Zealand created benchmarking groups (based on performance information) for learning purposes (van Dooren et al., 2015). On the other hand, the experience of the Dutch municipalities showed that the process of learning has no effect on organizational performance (Verbeeten & Speklé, 2015).

In general, corrective actions based on learning can be achieved through feedback or feedforward adjustments. Otley and Berry (1980) claimed that a process could be controlled only when "knowledge of outcomes is available" (p. 236) and an improvement of that process could be performed only based on feedback, i.e., the feedback control is based on error assessment. Thus, when a gap is discovered between the actual results and the goals, the control process should take the necessary actions to hopefully reduce this gap. Alternatively, feedforward control may be employed in place of feedback control. According to Emmanuel et al. (1990), feedforward control enables the reduction of gaps between anticipated and actual results by taking appropriate action prior to any deviation from the goal. An example of feedforward control provided by them is "the activity of planning" (p. 14). It is important to mention that when the corrective process needs a significant time lag, feedforward control could be preferred to feedback control. To forecast the predicted outputs or outcomes in such circumstances, "a reasonably accurate predictive model" (Emmanuel et al., 1990, p. 14) may be useful. Unfortunately, obtaining a model that is sufficiently predictive is practically unattainable. Therefore, feedforward control is different from feedback control in that it involves "the measurement of actual

process output is replaced by a prediction of expected output at some future time" (Emmanuel et al., 1990, p. 13).

Although some studies present a large spectrum of uses of PMR in PS, their definitions and applicability are highly specific to the study context, especially for complex domains such as HE. Public universities use performance indicators at individual, departmental or faculty, institutional, national, and international levels, as suggested by Burrows (2012). As such, the main uses are accountability reporting, teaching evaluation (individual, departmental, and university level) (Melo et al., 2010), research output evaluation (Osterloh, 2010), PBF (individual, departmental, university, national, and international level) (Guthrie & Neumann, 2007), or establishing HEI rankings (national and international level) (Adler & Harzing, 2009). A special use of PMR in public universities is governmental funding based on performance. The use of PBF is a consequence of the spread of NPM, which supports public HEI funding based on output/outcome performance mechanisms, and on accountability and transparency, which encourage competition. However, it is still rare to find research on uses that are most relevant and adaptable to the academic university context.

2.4.5 Consequences of use of performance measures in public sector

A summary of the potential consequences of PMR use in PS, depicted in a significant number of mostly empirical papers published in the last two decades, is also shown in Table 2-1. First, the most important consequence of the use of PMR is its impact on organizational performance (Ammons & Rivenbark, 2008; Behn, 2003; Gerrish, 2016; Henri, 2006; Micheli & Pavlov, 2020; Moynihan, 2009; Speklé & Verbeeten, 2014; Verbeeten, 2008; Verbeeten & Speklé, 2015; Walker et al., 2011).

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Public managers must be knowledgeable about performance indicators, their

measurement techniques, and data collection procedures in order to enhance

organizational performance (Behn, 2003). They could then decide what to modify to

improve the results by evaluating the data and discovering the reasons behind a given

performance (Behn, 2003; de Lancer Julnes, 2008; Franco-Santos et al., 2007; Moynihan,

2009). Pollitt et al. (2010) stated that organizational performance constantly increases

with the adoption of PMRS in an empirical study conducted in the national health

systems of England and the Netherlands. Following a study in a US public transportation

system, Poister et al. (2013) came to a similar conclusion. Furthermore, PMR has been

shown by Ammons and Rivenbark (2008) to enhance municipal services in North

Carolina, USA. In contrast, municipalities in the Province of Quebec, Canada, did not

demonstrate such a favorable trend. Despite the implementation of PMRSs, these towns

frequently fail to meet their goals (Charbonneau, 2011). However, the adoption of PMR

improves organizational performance, but only in certain circumstances, according to a

meta-analysis based on 2,188 effects collected from 49 studies (Gerrish, 2016).

Second, the use of PMR has an impact on the quality of decision-making and the

allocation of resources (Henri, 2006; Nielsen & Baekgaard, 2015; Speklé & Verbeeten,

2014). Besides, even less accurate performance information could improve the quality of

decision-making (Heinrich, 2002). The quality of decision-making could be enhanced by

employing historical performance data to plan future projects (Hatry, 2006; Henri, 2006;

Moynihan, 2008a). This demonstrates rational use of performance information (Agostino

& Arnaboldi, 2018). An example of rational use of performance data is offered by 280

mid-sized cities in the USA, where "[m]ost chief executives think that performance

measures are very helpful for improving the quality of decisions and decision capacity related to managing and evaluating programs" (Folz et al., 2009, p. 80). Other illustrations of how performance data are used for resource allocation are provided by English public organizations and municipalities in Denmark (Micheli & Pavlov, 2020; Nielsen & Baekgaard, 2015).

Third, the use of PMR affects the accountability of elected officials (de Bruijn, 2002; de Lancer Julnes, 2008; Hatry, 2006; Moynihan, 2008a; Verbeeten, 2008) and organizational legitimacy (Brignall & Modell, 2000). In this sense, the public should be informed not only about expenditures made but also about outcomes (Talbot, 2005). For instance, some municipalities in North Carolina (USA) developed PMRS to improve accountability (Ammons & Rivenbark, 2008). A counterexample is that small Quebec municipalities with fewer than 200 residents are unable to use PMRS due to technological issues, despite the program's intended use for enhancing accountability (Charbonneau, 2011). In the USA, another example of improving accountability is offered by 280 mid-sized municipalities that increasingly have used performance indicators for assessing outcomes or quality of public services (Folz et al., 2009), similar to findings for an Italian public transportation network (Agostino & Arnaboldi, 2018) or an English public university (Melo et al., 2010). However, placing a strong emphasis on accountability may result in more demands being placed on employees, such as those related to performance agreements and university rankings (van Dooren et al., 2015).

Fourth, the use of PMR can often lead to comparing and ranking organizational performance (Agyemang & Broadbent, 2015; Burrows, 2012; Franco-Santos et al., 2007; Melkers & Willoughby, 2005; Micheli & Pavlov, 2020; Moynihan, 2009). Comparing the

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performance of several organizations or subunits of the same organization cannot offer plausible conclusions if the measures are applied in circumstances that are particular to each entity (Behn, 2003). This conclusion is also applicable in academia due to differences in complexity, size, and regulatory environment (ter Bogt & Scapens, 2012). Moreover, the publication of national and international league tables based on performance data in the last two decades by the UK government has become common (Brooks, 2005). In addition, several other organizations also began producing world university rankings, such as the Academic Ranking of World Universities, QS World University Rankings, and Times Higher Education World University Rankings (Tee, 2016).

Fifth, the use of performance information may help validate claims about the success or failure of public organizations to meet their objectives (Micheli & Pavlov, 2020; Talbot, 2005). In addition, an accomplishment of high performance that is promoted or even celebrated encourages employees to perform better, promotes organizational performance to budget administrators, politicians, or communities, and brings the organization to the attention of future collaborations. Furthermore, a celebration conducted through seminars or conferences may result in learning and improvement (Behn, 2003). Effective communication of performance information to the public increases public trust. In this way, managers or officials should decide what performance information is to be followed, obtain comments from citizens about the quality of services offered, and inform citizens and auditors in a fair and transparent way (Hatry, 2006; Micheli & Pavlov, 2020). Performance information is communicated to compare the actual organizational performance with the planned performance or a

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benchmark (Franco-Santos et al., 2007; Speklé & Verbeeten, 2014; Talbot, 2005). The goals of PMRS use are not, unfortunately, always met, as demonstrated in some Canadian municipalities by Goh et al. (2015).

Literature offers numerous supplementary negative, perverse, undesirable, or unintended consequences of the use of PMRS (Smith, 1995). A definition of the concept of unintended consequences comes from sociology. Accordingly, based on the ideas of Merton (1936) and Elias (1997), one could imply that the adoption and use of PMR are built on "purposive social actions and that these actions will have both intended and unintended consequences" (Franco-Santos & Otley, 2018, p. 703). It is important to underline that the unintended consequences of any social action are unavoidable and that they could not only be "undesirable or dysfunctional" but also "desirable or beneficial" (Franco-Santos & Otley, 2018, p. 702). For instance, a study in Dutch hospitals shows unintended opportunistic managerial behaviors, while the same unintended consequences could improve health care by medical professionals (Kerpershoek et al., 2016). In one of the first claims about unintended consequences, Ridgway (1956) suggested that any PMR is "seen to have undesirable consequences for over-all organizational performance" (p. 247). Besides, Smith (1995) identified various unintended consequences, whereby a discrepancy between organizational goals and PMR leads to 1) tunnel vision (focusing only on domains measured by PMRS and not considering the others); 2) suboptimization (considering only the costs from the fields measured); and 3) myopia (not focusing on complex situations). An example of tunnel vision shows that in USA business schools, the studies that are most valued are published in 'A-level' journals and have many citations. Consequently, all other topics that do not fall into these categories are

marginalized (Merchant, 2010). Similarly, in HEI from Germany, faculties focus on fashionable research topics that are easily publishable (Frost & Brockmann, 2014). The preference of management for organizational legitimacy is done at the cost of maximization of efficiency (Brignall & Modell, 2000).

A very limited number of studies in the literature present the effects or outcomes of the use of PMR in PS, although assessing the outcomes should be one of the most important tasks of PS. In the context of the increasing upcoming regulatory use of PMR affecting Canadian HEI, such a study in the Canadian context would be important and timely. By examining the effects of PMR on organizational performance, universities can better navigate the changing landscape of HE in Canada.

2.4.6 Performance measurement in public universities

HE is a prominent and significant sector in today's society. It has transitioned from being a privilege for a select few to becoming an essential requirement for all of humanity. The importance of HE derives from two sources. First, the advancement of technology necessitates a permanent improvement of workers' competencies. Second, the growing proportion of elderly individuals requires a corresponding increase in the productivity of the working population to meet the needs of the entire population (Barr, 2004). Nowadays, the implementation of PMGS in public universities has led to a shift towards a more market-driven approach to HE activities. This transformation is exemplified by a study conducted by Czarniawska and Genell (2002) on academic organizations in Sweden and Poland. The implementation of PMGS has paved the way for the emergence of academic capitalism (Morrish & Sauntson, 2016) and has

empowered managers to play a more influential role in the governance of academic

organizations (Kallio et al., 2016). The NPM is the source of this tendency.

In the countries where NPM has been implemented, it is also utilized in academic

administration. It is important to note that NPM exhibits distinct characteristics in each

country, which have evolved over time (Pollitt & Bouckaert, 2017), and so have the

PMRS used in the higher education system (HES). Therefore, the internal and external

controls of universities have adapted to the new rules by employing management

methods from the private sector, improving the importance of accountability, and

including PMR in management decisions. As such, the enhancement of accountability is

due to external control by external stakeholders, especially the government, in order to

meet specific outcomes and, therefore, to legitimate the funding of universities

(Agyemang & Broadbent, 2015). In addition, the mainly qualitative proxies employed by

old management are now replaced by other more quantitative metrics. The research about

the use of performance management and measurement in universities around the world is

not covered evenly in the literature, especially because of the timing of the adoption of

NPM. Consequently, the most frequently referenced studies in this area are based on

research conducted in countries that were early adopters of NPM in PS, such as Australia,

New Zealand, the UK, Sweden, or the Netherlands (Broadbent & Guthrie, 2008; Du &

Lapsley, 2019; ter Bogt & Scapens, 2012), as opposed to the Southern European

countries, such as Italy, France, or Spain, which embraced NPM at a later stage (Hood &

Peters, 2004).

Under NPM, the role of managers in universities has become more important

because they observe and evaluate the indicators and targets and participate in decisions

related to the goals and strategies of universities. As such, it has developed one of the limitations of NPM in the HEI, i.e., enhancing the conflicts between managers and professors and even administrative staff, the last two groups previously having more independence in their activities. This finding is supported by studies in various countries, such as Australia (Kairuz et al., 2016), the UK (Franco-Santos & Doherty, 2017), Finland (Kallio et al., 2016), or Italy (Dal Molin et al., 2017). In addition, some particularities of HEI should be considered when studying PMRS in academia, such as the following: 1) public universities are not fully autonomous because of the resource dependency from the government; 2) faculties do not easily accept interference in their work; 3) activities of universities are very complex; 4) universities are expected to offer citizens performance information, including comparisons with each other; 5) academia is always financially dependent on external sources; and 6) any new regulation in this sector impedes academic freedom (Broadbent, 2007).

When compared to the private sector, in PS, four types of barriers prevent the use of PMR, as follows: institutional (suspicions about the quality of measurement), pragmatic (questionable usefulness), technical (not aligned with the accepted standards), and financial (unreasonable use of resources) (Pollanen, 2005). Specifically, in HEI, first, an institutional barrier, such as the lack of common definitions for performance measures used in different universities, could promote distrust in their performance comparisons (Arnaboldi & Azzone, 2010; Geiger & Aschenbrücker, 2014). Second, a pragmatic barrier could be the increasing quantity of research and the encouragement of scholars to "play safe" and to publish on easier publishable topics to the detriment of the quality of research and teaching (ter Bogt & Scapens, 2012). Third, a technical barrier could be the

confusion in using performance data for other purposes than those for which they were supposed to be used (for instance, using data intended for evaluating student satisfaction also for evaluating teaching quality) (Wiers-Jenssen et al., 2002). Fourth, a financial barrier could be obtaining resources through performance-based governmental funding programs based on sometimes questionable performance data (ter Bogt & Scapens, 2012). NPM influences also affect PMR use and its consequences. For example, one of the most used PMRs is the journal rankings. This tool, which could be very relevant when used in proper conditions, could entail frustration and affect researchers' research domain. As a consequence, research in domains largely accepted by the publishers would be encouraged, while studies in other domains of the individual researcher's interest or of national interest would be penalized (ter Bogt & Scapens, 2012).

In the Canadian context, the 96 Canadian public universities that offer 15,000 study programs (EduCanada.ca, n.d.) are spread across all Canadian provinces, following the population density. So, as expected, most universities are located in the provinces of Ontario and Quebec. They are placed, based on Canada's premier current affairs magazine, Maclean's, which provides annual rankings of Canadian universities since 1991, into three categories, as follows: 1) medical doctoral universities (R) (offering a wide variety of PhD programs and research, and each detaining medical schools), 2) comprehensive universities (C) (with a high level of research activity and many undergraduate and graduate programs), and 3) primarily undergraduate universities (U) (with very few graduate students and graduate programs) (Dwyer, 2021). Almost similarly, Shanahan (2015c) decided to divide them into four categories, as follows: 1) medical-doctoral research-intensive universities (R) (with a great number of doctoral PhD

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programs), 2) comprehensive teaching and research universities (C) (with many domains of research and programs), 3) liberal arts universities (U) (only undergraduate programs), and 4) special purpose universities. In general, R is the most complex, with more advanced programs, more research faculty, more external research funding, and presumably greater academic freedom and independence. Based on Statistics Canada (n.d.), the student population in Canada was 2.1 million of the total population of 37 million during the academic year 2017-2018. Therefore, it shows a great need for information about how HEIs perform. A study on 44 Canadian universities about voluntary disclosure of performance indicators based on universities' website analysis in 2006 revealed the use of a total of 123 nonfinancial performance indicators, divided into 18 categories. Out of the total, 24 are related to research, and 21 are related to finance (Maingot & Zeghal, 2008). An overview of the regulatory context affecting Canadian universities, particularly Ontario universities, is provided in Appendix A.

2.4.7 Research gap

A growing number of scholarly articles have explored diverse topics concerning the use of PMR at different levels (individual, departmental, organizational, and external organization). The review of literature shows an evolution of the use of performance measures, especially in public organizations, mostly under NPM, as well as a history of its precursor concept, MC. Although many important empirical studies from this domain were performed worldwide, especially in the last two decades, only a few of them examined the Canadian context, and no known studies were conducted in the Canadian public universities. Moreover, no known studies have integrated both institutional and contingency perspectives (discussed in the next section) as their theoretical foundations.

In addition, the current research debated several performance data uses by the management of HEI, whereas the most empirical studies from the literature examined only the use of PMR from a decision-making perspective (Nitzl et al., 2019). The current research attempted to contribute to filling this gap, more specifically in the context of public universities in the Province of Ontario, Canada.

2.5   Theoretical perspectives

"The word 'theory' derives from the Greek 'theoria', which has the same root as 'theatre', meaning 'to view' or 'to make a spectacle'. Thus, it might be said that a theory is primarily a form of *insight* [emphasis added], i.e., a way of looking at the world, and not a form of *knowledge* [emphasis added] of how the world is" (Bohm, 2002, p. 4). Whetten (1989) claimed that a complete theory consists of the following four elements: 1) what, 2) how, 3) why, and 4) a group of who, where, and when. In this manner, first, the 'what' elements help in deciding the variables, the constructs, or the concepts to be scrutinized. Second, the 'how' elements investigate the cause-effect links between the examined factors. Third, the 'why' elements contribute to explaining the relationships between the studied factors. Therefore, "What and How describe; only Why explains" (Whetten, 1989, p. 491).

The current study relied on institutional theory and contingency theory. In the Editorial of the 25th Anniversary Conference of the Management Accounting Research, which is one of the major journals in accounting, Bromwich and Scapens (2016) claimed that in the 2000s, the papers published in this journal have begun to widely use institutional theory and contingency theory, which were less employed before.

2.5.1 Institutional theory

From an ontological perspective, institutional theory mixes a social constructivist environment with a realistic one. In this case, any particular social picture has an inherent social hierarchy (Modell et al., 2017; Modell, 2021). Institutional theory suggests that "powerful organizations force their immediate relational network to adapt to their structures and relations" (Meyer & Rowan, 1977, p. 348), in this sense solidifying their position. However, scholars have not reached a consensus on a common and unique definition of an institution. As DiMaggio and Powell (1991) noted, "institutionalism purportedly represents a distinctive approach to the study of social, economic, and political phenomena", yet it has "disparate meanings in different disciplines" (p. 1). Institutionalization leads to the homogenization of organizations, a process best explained through the concept of isomorphism, which can manifest as coercive, mimetic, normative, or a combination of these forms. Accordingly, first, coercive isomorphism takes place when an organization accepts changes based on external pressures, such as governmental laws and regulations. Second, mimetic isomorphism is about organizations imitating the behaviors, strategies, or values of successful equivalents. Third, normative isomorphism originates from the imposition of values by key groups on organizations (DiMaggio & Powell, 1983).

In turn, Scott (2014) further elaborated on the concept of institution, determining that it is rooted on three interrelated symbolic systems or "pillars": 1) the regulative pillar, 2) the normative pillar, and 3) the cultural-cognitive pillar. They are the elements of a continuum from legally imposed by law (regulative) to widely accepted standards (cultural-cognitive). In this way, the regulative pillar is about constraining and

regularizing behavior. Specifically, "regulatory processes involve the capacity to establish rules, inspect others' conformity to them, and, as necessary, manipulate sanctions – rewards or punishments – in an attempt to influence future behavior" (Scott, 2014, p. 59), which can be the definition of the realm of authority. Thus, among the elements of the regulative pillar, one can find laws, force, sanctions, expedient responses, regulative rules, and coercive mechanisms. In addition, the normative pillar is based on values and norms that apply to institutions, such as social obligations, certification and accreditation, or normative mechanisms. Finally, the cultural-cognitive pillar focuses on the nature of the social reality of institutions, several of its elements being: shared understanding, isomorphism, or mimetic mechanisms. Oliver (1991) suggested a typology of strategic responses to institutional processes by combining institutional and resource dependence perspectives. In this regard, when faced with external pressures and expectations, organizations must navigate various interlinked environments to ensure their survival. Oliver identified five strategic responses ranging from "passivity to increasing active resistance: acquiescence, compromise, avoidance, defiance, and manipulation" (p. 151). Each of these strategies suggests various tactics, such as the mechanisms introduced by Scott (2014). For instance, acquiescence includes imitation, which is similar to mimetic isomorphism, and compliance, which is defined as "conscious obedience to or incorporation of values, norms, or institutional requirements" (Oliver, 1991, p. 152). In addition, acquiescence is often the preferred strategic response for achieving legitimacy (Oliver, 1991).

The homogenization of internal structures and activities of organizations is a natural response to environmental pressures, occurring in parallel with the pursuit of

legitimacy (Scott, 2014). As Suchman (1995) explained, legitimacy is a "generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" and "possessed objectively, yet created subjectively" (p. 574). Scott (2014) mentioned that the socially constructed systems represent institutional frameworks, and he also highlighted that "from a strong institutional perspective, legitimacy is not a commodity to be possessed or exchanged but a condition reflecting perceived consonance with relevant rules and laws or normative values, or alignment with cultural-cognitive frameworks" (p. 72).

2.5.2 Contingency theory

MC mechanisms can be understood through various theoretical lenses, such as contingency theory, agency theory, stewardship theory (Franco-Santos & Otley, 2018; van Helden & Uddin, 2016), or stakeholder theory (Länsiluoto et al., 2013; Mura et al., 2018; van Helden & Uddin, 2016). Numerous studies suggested that in management accounting research, the most effective approach depends on the specific contexts in which an organization operates (Otley, 1980). As Donaldson (2001) mentioned, "[t]he contingency theory of organizations is a subset of the contingency approach in science" (p. 5). Fundamentally, the contingency approach underlines that the influence of one variable, X, on another variable, Y, is contingent upon another variable, W, named moderator of the relationship between X and Y. In the real world, W is the sum of a multitude of variables. A contingency is defined as "any variable that moderates the effect of an organizational characteristic on organizational performance" (Donaldson, 2001, p. 7).

The contingency theory thus highlights the absence of a universal approach for tailoring organizational control systems. MCS, including PMR and PMG, are "dependent on and contingent to certain variables" (Bouckaert & Halligan, 2008, p. 65) related to the organizational environment, such as organizational size, governmental level, PS particularities, etc. The main assumption of the contingency approach is that organizational managers aim to continuously adapt their institutions to these contingencies to achieve optimal performance (Chenhall, 2003). Within this postpositivist approach, which is based on people's experiences and social influences (Chua, 1986), MCS provides managers with the authority to influence employees' activities (Chenhall, 2003).

Luft and Shields (2003) conducted a comprehensive review of management accounting research and identified four levels of analysis for contingency factors: the beyond-organization level, the organization level, the subunit level, and the individual level. Most of these studies have been conducted at the organizational and individual levels. Furthermore, when using the contingency theory, three directions should be followed: 1) identifying the specific aspects of the management accounting system, whether technical, environmental, or organizational; 2) describing the context; and 3) determining the appropriate alignment of MCS within that context (Otley, 2016). As it is not possible to study PMGS inside and across organizations by using a one-size-fits-all research design (Franco-Santos & Otley, 2018), it is important to recognize Chenhall's (2006) assertion that in this domain virtually all research is contingent.

In addition to the previously mentioned contingent variables, other similar variables include decision-making style or the complexity of the organization in relation

to the environment (Otley, 1980). Contextual variables, which represent the elements that describe well the context in which MCS is used (Chenhall, 2003), include organizational performance, history, structure, size, goals, external environment, technology, culture, and people (Agyemang & Broadbent, 2015; Ferreira & Otley, 2009). In addition, the performance of MCS can be assessed within an organization by analyzing its goals, strategy, and measures in relation to environmental, organizational, social, and historical circumstances (Berry et al., 2009).

However, contingency theory has its own limitations. The nature of the contingent variables is often unclear, discussions on organizational effectiveness are frequently absent, the theory itself is not properly developed, or the management accounting system cannot be easily segregated from the environment (Franco-Santos & Otley, 2018; Otley, 1980). Meanwhile, the structures of organizations, the business environment, or technological advancement are permanently changing, increasing the degree of environmental uncertainty and necessitating dynamic approaches in contingency research (Otley, 2016). Another criticism is the lack of interpretive and critical approaches, although integrating these two sociological perspectives could complicate an already very complex approach. This complexity of the contingency perspective implies that the accounting control system is just a part of a wider organizational control system. Unfortunately, this convolution represents a limitation for the studies performed in MCS because studies that do not consider the relationships between accounting controls and other organizational controls could provide false conclusions (Chenhall, 2003).

3 Conceptual framework and research questions

According to Maxwell (2022), the conceptual framework (CF) of a study refers to the researcher's collection of ideas, hypotheses, and beliefs regarding the topic being examined. In his view, CF plays an essential role in formulating research topics and techniques, as well as in detecting factors that may affect the validity of the conclusions. The current study's CF is visually depicted in Figure 3-1, illustrating the essential components, variables, or constructs, as well as their supposed interrelationships (Miles et al., 2014). It is based on the Pollitt and Bouckaert (P&B) framework (presented in Figure 2-2) and on the necessary conditions for a control process of Emmanuel et al. (1990, p. 9) and Otley and Berry (1980) (presented in Figure 2-1). The P&B framework, widely utilized by scholars (such as van Dooren et al., 2015), is an appropriate model for the current study since it provides a thorough representation of processes within and outside public organizations. Based on the P&B framework, organizational objectives determine the specific activities to be performed. These activities require inputs to be executed. Activities are finalized by generating outputs, which have distinct impacts beyond the organization. These effects are referred to as outcomes (Pollitt & Bouckaert, 2017). Figure 3-1 illustrates how performance measures, evaluated at different stages of organizational activities (inputs, outputs, and outcomes), can be utilized for both internal and external purposes. Moreover, the purposes and uses of these performance measures are influenced by various internal and external factors within the organization and can have multiple consequences. The three main boxes of CF contain items that pertain to: 1) the use of PMR; 2) factors that have the potential to influence PMR utilization (referred to as 'contributing factors' for convenience); and 3) the consequences of PMR use, which

are the primary constructs examined in this study. These items are thoroughly discussed in the rest of this section, and the definitions of the associated constructs are provided in Table 3-1.

In HEI, the primary activities focus on teaching and research, which convert various inputs into outputs. Common inputs include financial and human resources, such as educational expenditures per student, the number of students, faculties, and staff, the services of buildings and maintenance, or other resources (Weingarten et al., 2015). According to Pastor et al. (2015), universities generate three principal types of outputs: teaching outputs (graduates, postgraduates, etc.), research outputs (publications, patents, etc.), and knowledge transfer outputs (contracts with firms, technological assistance, etc.). The long-term outcomes of HEIs encompass graduate job opportunities, graduate satisfaction, discoveries and applications of research, and publication citations (Herbst, 2007), ultimately contributing to "a well-educated society" (Boland & Fowler, 2000, p. 420). In Ontario, the most critical outcomes are equitable access to education, high-quality education that equips students with necessary skills, and sustainable institutions (Weingarten & Hicks, 2018). Additionally, the consideration of research outcomes is vital in the long term (Weingarten & Hicks, 2018). It is essential to note that the cost of inputs supports all dimensions of performance outputs and outcomes (Weingarten et al., 2015).

Figure 3-1: *Conceptual framework*
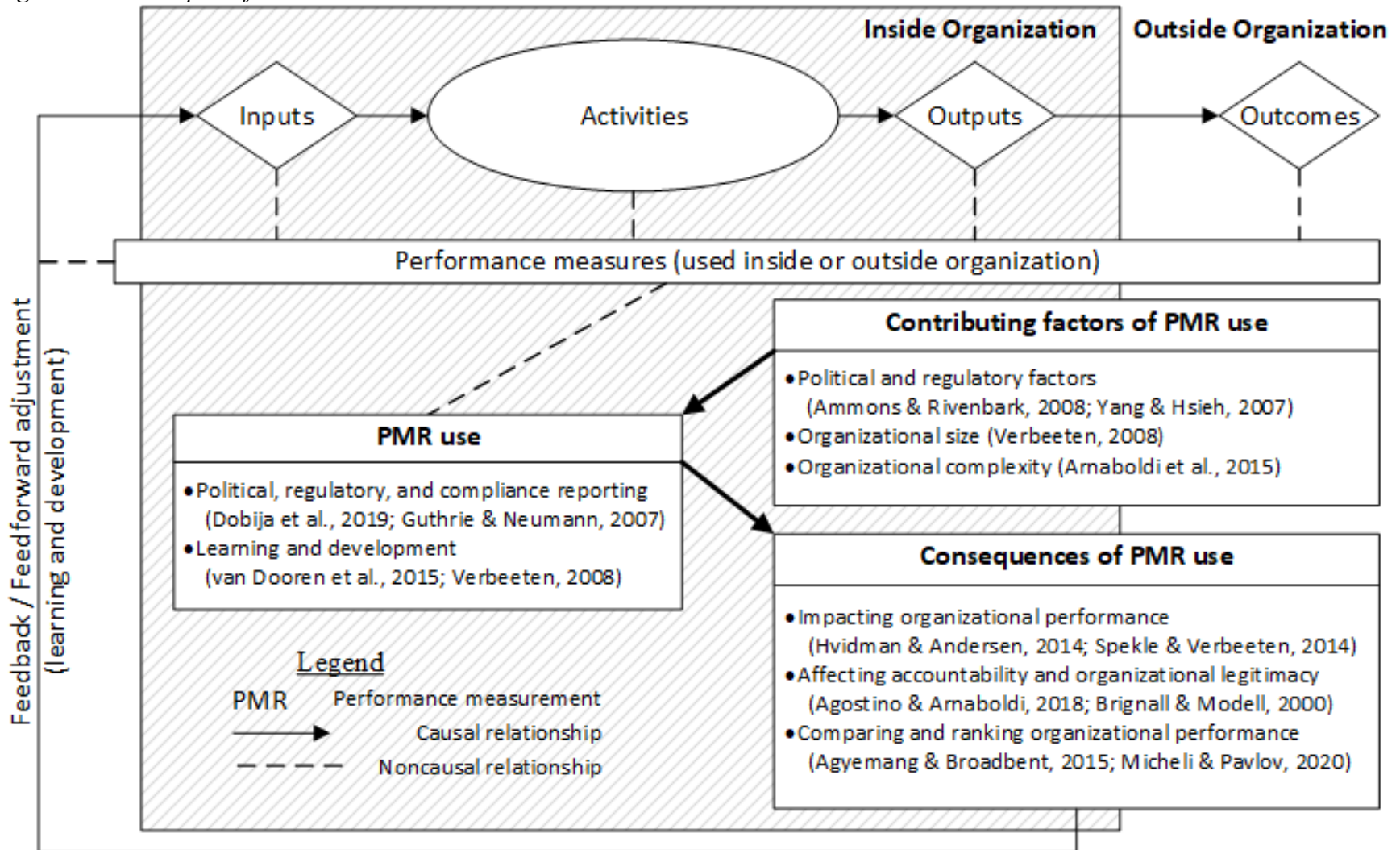
Note: Adapted from Emmanuel et al. (1990, p. 9), Otley and Berry (1980, p. 236), and Pollitt and Bouckaert (2017, p. 15).

Table 3-1: *Definitions of the concepts presented in the conceptual framework*

Construct	Definition	References
Input measures	Organizations and/or programs "acquire *inputs* (staff, buildings, resources)" (1) to be used in the activities performed for attending their objectives. "*Input measures* track program inputs such as staff time, budgetary resources and natural resources" (2).	(1) Pollitt & Bouckaert, 2017, pp 135-136 (2) Hoque & Adams, 2011, p. 308
Activity measures	"Processes [*activities*] are … those activities which take place inside institutions, in order to generate outputs. Processes would thus include, for example, teaching in a school or recording and labelling within a warehouse" (1). [*Activity*] *measures* reflect the efficiency of the use of resources (2; 3).	(1) Pollitt & Bouckaert, 2017, pp 135-136 (2) Hoque & Adams, 2011 (3) Pollanen, 2005
Output measures	"The *outputs* are the products of … processes [activities]—what the institution 'delivers' to the outside world (academic qualifications, school reports, or, in the warehouse case, issued stock)" (1). "Output measures track the number of people served, services provided, or units produced" (2) by organizations and/or programs.	(1) Pollitt & Bouckaert, 2017, pp 135-136 (2) Hoque & Adams, 2011, p. 308
Outcome measures	"The outputs … interact with the environment (especially with those individuals and groups at whom they are specifically aimed), leading to … *outcomes* (e.g. students getting jobs and achieving competence within them, or stock items being used by their purchasers). Ultimately the value of both the processes and the outputs rests on the outcomes" (1). "Outcome measures focus on whether the target population is any better off" (2).	(1) Pollitt & Bouckaert, 2017, pp 135-136 (2) Hoque & Adams, 2011, pp. 308-309
Political factors	Elected officials at any governmental level, influential politicians in opposition, civil society, effects of internal and international economic evolution (growth or downturn), and performance management from other national jurisdiction that may influence the shape and character of the system.	(1) de Lancer Julnes & Holzer, 2001 (2) Hawke, 2012
Regulatory factors	"[L]aw or administrative regulation" (1) that "are specific to a country and apply to all public bodies of a single country or jurisdiction" (2).	(1) de Lancer Julnes & Holzer, 2001, p. 696 (2) Hawke, 2012, p. 313
Organizational size	Organizational size is a multidimensional and constructed relative concept that reflects the level of organizational activity such as the number of students, or the number of instructional faculty.	(1) Melman, 1951 (2) Donaldson, 2001, p. 21

Construct	Definition	References
Organizational complexity	Organizational complexity reflects the number of hierarchical levels and of occupational specialties in an organization (1). "The rule of thumb is that the higher the level of average training, the greater the differentiation by branches of knowledge and thus the greater the complexity and the fewer personnel are substitutable without extensive re-education" (2).	(1) Jablin, 1987 (2) Dewar & Hage, 1978, p. 113
Political, regulatory, and compliance reporting	Satisfying political, regulatory, and other resource provider organizations demands.	(1) Micheli & Pavlov, 2020 (2) Parker, 2011
Learning and development	"Organizational learning means the process of improving actions through better knowledge and understanding" (1). "Organizational development is a set of behavioral science-based theories, values, strategies, and techniques aimed at the planned change of the organizational work setting for the purpose of enhancing individual development and improving organizational performance" (2). The feedback and the feedforward adjustments, which represent the corrective action of PMRS, are a part of the learning and development function (3). The feedback control is based on error assessment (3). The feedforward control compares the anticipated results with the actual results, and so the actions to reduce the gap can be taken before any deviation from objectives takes place (4).	(1) Fiol & Lyles, 1985, p. 803 (2) Porras & Robertson, 1992, p. 722 (3) Otley & Berry, 1980 (4) Emmanuel et al., 1990
Organizational performance	Organizational performance is a multidimensional and subjective construct. It includes financial results, quality of services, cost efficiency and cost effectiveness, customer satisfaction and democratic outcomes.	Pollanen et al., 2017
Organizational accountability	"Accountability is a relationship in which one party, the accountor, recognizes an obligation to explain and justify their conduct to another, the accountee". The 'accountee' can be held accountable for expected results or behaviours (1). "Organizational accountability … [entails asking] whether use of performance information increases with an increase in the level of clarity in the organization concerning who is accountable for results" (2)	(1) Pollitt, 2003, pp. 89-91 (2) Askim, 2009, p. 41
Organizational legitimacy	"The extent to which the array of established cultural accounts provides explanations for [an organization's] existence".	Suchman, 1995, p. 573

The CF is applied to the HE context by selecting items based on various studies at

the organizational level (Luft & Shields, 2003). These items are related to: 1)

contributing factors to PMR use; 2) PMR use; and 3) the consequences of PMR use, that

are considered most salient for HEI and constitute the variables included in this study. The criteria for selecting these items are the following: 1) they are not commonly studied; 2) they are most relevant or important for universities; 3) data availability for measurement through secondary data, interviews, or surveys; and 4) they are of particular interest to the researcher. The constructs represented in CF are based on the studies reviewed in Table 2-1. A brief description of each of the three main elements of the model (contributing factors, PMR use, and consequences of PMR use) and the related variables studied follows. It is important, however, to emphasize that this study was largely exploratory and that it also probed other factors important in the research context.

Contributing factors. The relationship model shows that the use of PMR by the organizational managerial functions is influenced, if not fully, at least partially, by various contributing factors. These factors help, hinder, or challenge the successful adoption, implementation, and use of PMR by organizations. Political and regulatory factors are important factors that could influence the use of PMR in PS, as are organizational size and complexity.

For instance, regulations in North Carolina, USA, encourage local governments to use performance information to compare their organizational efficiency (Ammons & Rivenbark, 2008). Similarly, in Taiwan, the success of PMR is largely dependent on the availability of sufficient managerial flexibility and political backing from both the federal and local governments (Yang & Hsieh, 2007). Furthermore, legal requirements enhance the use of PMRSs by PS managers in Australian public organizations (Taylor, 2009). This aspect is the most relevant contributing factor in this research, particularly in light of the PBF process and mandated performance reporting requirements for Ontario

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universities. It is also of specific interest to the researcher from both contingency and institutional perspectives. Pertinent data on this factor were obtained from interviews and secondary sources, as well as from university documents and archives, which provided valuable information about the regulatory factors affecting HEIs, such as their level of power or authority.

Furthermore, organizational size and organizational complexity are two other contingent factors that could influence the implementation of PMR. Although some authors considered organizational size a proxy for organizational complexity (Saliterer & Korac, 2013), in the current study, the level of organizational complexity (the hierarchical levels of universities and the number of teaching and research academic programs) was not necessarily influenced by organizational size (the total number of registered students from a university). Organizational complexity "is often indicated by size but is quite distinct from it." (Zelditch & Hopkins, 1961, p. 470).

For example, in the Netherlands, organizational size and organizational sector were found to affect the implementation of PMR in PS (Verbeeten, 2008). At the same time, the complexity of health care facilities in the UK hindered the adoption of PMR (Arnaboldi et al., 2015). Similarly, organizational complexity could negatively influence the definitions of performance indicators, particularly effectiveness indicators. This is why one could find discrepancies between the expected and the actual use of PMR in Canadian municipalities (Pollanen, 2005). Issues related to organizational complexity that could influence the use of PMR could also include appropriate definitions of performance indicators (Pollanen, 2005), difficulties in data collection (Goh et al., 2015),

or organizations' goal clarity (Geiger & Aschenbrücker, 2014), which have been studied

as separate variables.

An important example of organizational complexity was offered by the categories

into which Canadian HEIs can be divided. In the view of Maclean's magazine, they are

R, C, and U (Dwyer, 2021). Although organizational size and complexity could be

related, i.e., larger universities can also be more complex, this is not necessarily true for

HEIs. For example, a large technical university could have a limited number of programs

and, thus, low complexity, whereas a small university could have a relatively large

number of different programs and thus be more complex. Organizational size and

organizational complexity are not common items examined by the studies related to the

use of PMR. Moreover, the examination of these different categories of universities from

an organizational complexity perspective could yield interesting results. The data and

proxy measures are easily available from secondary sources, and it was not necessary to

obtain them from interviews.

PMR use. PMR is traditionally not only used more frequently in a rising number

of management functions (such as monitoring, decision-making, or controlling)

(Bouckaert, 1996), but it is also increasingly required for external political, regulatory,

and compliance reporting (Dobija et al., 2019; Guthrie & Neumann, 2007). This study

focused on two functions, one external and the other internal. The first function is

political, regulatory, and compliance reporting, which is exemplified by the highly

regulated Polish academic system (Dobija et al., 2019) and the governmental funding of

the Australian HEIs (Guthrie & Neumann, 2007). In universities, PBF programs, used by

several western countries, employ performance information. Among the performance

indicators currently used by the PBF programs worldwide, one could find the following: number of graduates (bachelor, masters, and PhD), duration of studies, and efficiency in research (Guthrie & Neumann, 2007). It is a key requirement for the use of PMR in HEIs and consistent with political and regulatory contributing factors. Interviews and secondary data will be sources for evaluating this function.

The second function is learning and development. PMR is used by organizations to learn what is good about the work done and what is not, and to decide what should be changed to improve organizational performance (van Dooren et al., 2015; Verbeeten, 2008). Feedback and feedforward adjustments, which represent the corrective action of PMRSs, are also part of the learning and development function. In this sense, the feedback control is based on error assessment (Otley & Berry, 1980), whereas the feedforward control compares the anticipated results with the actual results, and so the actions to reduce the gap are taken before any deviation from objectives takes place (Emmanuel et al., 1990). Learning can be defined as the process that occurs when there is alignment between intentions and outcomes or when errors, which are discrepancies between intentions and outcomes, are identified and corrected (Argyris, 1983). As such, to facilitate intentional organizational learning, it is essential to enhance the accuracy of feedback regarding the cause-and-effect links between organizational activities and outcomes and to ensure the systematic collection and analysis of this feedback (Huber, 1991). Moreover, feedback mechanisms are incorporated into effective organizations to enable people and groups to draw lessons from their own experiences (Beckhard, 2006). This PMR use has been very seldom studied in PS. It is very interesting and very important to evaluate the efficiency and the effectiveness of the corrective process based

on the data provided by PMRSs. Interview questions or secondary data were used for assessing this item.

    Consequences of PMR use. The first consequence of the use of PMR studied is its impact on organizational performance. As such, a study from Denmark concludes that PMRSs are contingent on the domains where they are implemented. Therefore, PMR does not significantly ameliorate organizational performance in PS, whereas in the private sector it does (Hvidman & Andersen, 2014). Conversely, a study conducted in the Netherlands inferred that the use of PMR improves organizational performance in PS (Speklé & Verbeeten, 2014). Improving organizational performance is the main goal of adopting PMRS (Behn, 2003); therefore, it should be relevant to evaluate whether in Ontario's HEIs the use of PMR improves the performance of universities. Second, the adoption of PMRS in public organizations influences accountability, as concluded by research done at the Italian public transportation network (Agostino & Arnaboldi, 2018), and organizational legitimacy, based on a study performed in the health systems of the UK, Norway, and Sweden (Brignall & Modell, 2000). Accountability and transparency suggested that "for democratic systems to work citizens need to be given information not just about what is spent on public activities but also what results are achieved" (Talbot, 2005, p. 496). At the same time, PMRS adoption can reflect institutional, social, and political legitimacy (Brignall & Modell, 2000). Answers to these interesting issues can be sought through indirect interview questions, as these topics could be considered sensitive by some interviewees.

    The last item this study focused on was comparing and ranking organizational performance. "Performance measurement using indicators is normally compulsory for

every university to report against and it is used for comparison" (Tee, 2016, p. 585). As such, university performance can influence the public funding and reputation of universities (Agyemang & Broadbent, 2015) or be used for comparing activities and their efficiency and effectiveness (Micheli & Pavlov, 2020). This item is increasingly used by the provincial government and accrediting organizations, as well as other private organizations providing global or country-specific university rankings. As previously discussed, it is important to recognize, however, that the use of PMR can imply either intended or unintended consequences. The unintended consequences of the use of PMR cannot be avoided. However, they could not only be negative or undesirable but also positive or desirable (Franco-Santos & Otley, 2018). In addition, not all unintended consequences are unanticipated or unexpected, regardless of their positive or negative aspects (de Zwart, 2015). Moreover, the intended consequences of the use of PMR could have not only desirable but also undesirable effects (Brignall & Modell, 2000). Like for performance, accountability, and legitimacy, answers to these issues were sought through indirect interview questions.

Research objectives and questions. Based on the most salient relationships identified in CF, the current study concentrated on the use of PMR by the public universities in the Province of Ontario, Canada. It specifically focused on three main themes, including eight items. The first theme covered the factors that contribute to the use of PMR by the management and regulators. Within this theme, three specific issues were studied: 1) political and regulatory factors, 2) organizational size, and 3) organizational complexity. The second theme, which addressed the universities' managerial and external functions that use PMR, included two particular items: 1)

political, regulatory, and compliance reporting, and 2) learning and development. The third main theme was related to the effects produced by the use of PMR. The specific three items studied were: 1) how organizational performance is impacted, 2) how accountability and organizational legitimacy are affected, and 3) the consequences of comparing and rankings of universities. In summary, the following general RQs, directly generated by the study's objectives and CF (Maxwell, 2022; Miles et al., 2014), were investigated in this study:

1) How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of Ontario universities?

2) To what extent is PMR used by Ontario universities for political, regulatory, and compliance reporting, and for learning and development?

3) To what extent does the use of PMR by Ontario universities impact organizational performance, affect accountability and organizational legitimacy, and lead to comparisons and rankings of academic institutions?

4   Methodology

Research methodology refers to the path to lead a study or the methods, procedures, and techniques used for a study, to achieve valid and reliable results and meet the research objectives. After evaluating different methods, the conclusion of the chapter is that a case study research method best serves the objectives of this study.

The choice of case study is largely determined by RQs. In this respect, case study research is more relevant when the study goal is about an explanation of a contemporary phenomenon or implies in-depth (intensive) research (Swanborn, 2010; Yin, 2018), which is available for the current study. Specifically, the RQs in the current study are about an in-depth understanding of a contemporary event over which the researcher has no control, a situation for which Yin (2018) claimed that the use of case study research has an important advantage. Literature offers many definitions of case study research because scholars have not yet arrived at a common perspective for explaining this method. Yet, Yin (2018), "who is probably the best-known author on case studies" (Lee & Saunders, 2017), offers a complex twofold definition of it. This definition includes two parts, as follows: 1) the scope of a case study, and 2) the features of a case study. Through the lens of scope, a case study is "an empirical method that investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 15). The features of a case help to draw a line between phenomenon and context. In summary, Yin's definition "shows how case study research comprises an all-encompassing mode of inquiry, with its own logic of design, data collection techniques, and specific approaches to data analysis" (Yin, 2018, p. 16).

It is important to recognize that Yin (2018) underlined the importance of distinguishing between three meanings of case study as stated in the following "foundational trilogy: 1) case study research (the mode of inquiry), 2) case studies (the method of inquiry, or research method used in doing case study research), and 3) case(s) (the usual unit of inquiry in a case study)" (preface, p. xx). In other words, in this chapter, one can find details about building a case study research design and about developing case study research methods.

"In case-based research … there is a distinction to be made between theory (what this research is about), ontology (the assumptions made about the nature of reality), epistemology (how knowledge is to be understood) and method (how research is to be conducted)" (Berry & Otley, 2004, p. 233). There is no unequivocal recipe for selecting the case study method, but it is linked to the fact that the intention of RQs is to explore or explain several related issues (Yin, 2018). Although other possible research approaches used in the present study are explained, this chapter does not detail all the research methods that are used in management research.

4.1 Research design and methods

The research design is the master plan for the process that could lead to answers to the RQs. It presents research objectives, sources and method(s) to collect data, method(s) to analyze them, and addresses the possible ethical issues that could happen (Berry & Otley, 2004; Cooper & Schindler, 2014; Saunders et al., 2023; Yin, 2018). To be able to answer research question(s) (RQ), researcher(s) should cross different regions on the research map during various stages of the research journey. These regions represent the "research onion" (Saunders et al., 2023, p. 131) layers. The ontological and

epistemological perspectives employed impose on the layers of this study the following characteristics: 1) the research philosophy: postpositivist, based on a mix of critical realism and interpretivism; 2) the approach to theory development: inductive; 3) the methodological choice: an exploratory qualitative method; 4) the research strategy (or strategies): case study, with data collection based on secondary sources and semi-structured interviews that also include three structured questions allowing some triangulation (Bryman, 2006); 5) the time dimension: cross-sectional time horizon; and 6) the techniques and procedures for data collection and data analysis: a data analysis of secondary text materials and interviews using a qualitative data analysis software.

Research philosophies, which form the first outer layer of the "research onion", represent a "system of beliefs and assumptions" (Saunders et al., 2023, p. 131) about the advancement of knowledge. The main philosophical assumptions of research are ontology and epistemology. Ontological assumptions are the researchers' beliefs about their study objects, such as organizations, individuals, or events (Saunders et al., 2023). Nicotera (2019) proposed some examples of ontological questions, as follows: 1) "What is the human relationship with social reality?" (p. 76); and 2) "Is human behavior predictable?" (p. 78). On the other hand, epistemological assumptions deal with the question of *what is* or *what should be* acceptable truth in a domain. Thus, they provide a large spectrum of ways to study research objects (Saunders et al., 2023). Nicotera (2019) also offered the following examples of epistemological questions: 1) "Is knowledge objective or subjective?" (p. 78); and 2) "Does knowledge exist before human experience?" (p. 78).

Positivism is a research philosophy used in the natural sciences. For positivism, from an ontological perspective, reality is unique, external, and independent from researchers. Epistemologically, positivism uses the methods of the natural sciences to explain the social world (Bryman et al., 2011; Saunders et al., 2023). Any new research philosophy has been considered to represent a critique of positivism (Bryman et al., 2011) and to be part of postpositivism (Prasad, 2005). "Evidence-based guidelines reinforce support for postpositivist discourse, leading some to even call for a strategic positivism" (Denzin & Lincoln, 2018, p. 2). Positivism has a close ontological relationship with critical realism (Saunders et al., 2023), and they share the ontological approach, which is both external and objective (Bryman et al., 2011). The adepts of critical realism argue that reality could be shaped by the sensations and events that are first mentally recorded and later processed by the brain, resulting in an understanding of reality. However, by recording only a small part of the picture of reality, one cannot be sure that, in the end, reality can be completely understood. From an epistemological perspective, critical realism knowledge is historically influenced, and social facts are social constructions and not independent entities. Therefore, this research philosophy accepts the use of many methods and data types (Saunders et al., 2023). On the other hand, interpretivism is a bit further from positivism than critical realism. Ontologically, for interpretivism, reality is socially constructed, and epistemologically, social reality cannot be studied with the same tools as the physical world, with humanity being a mix of cultures and histories where a universal law is not applicable. The interpretivist research has the aim "to create new, richer understandings and interpretations of social worlds and contexts. For business and management researchers, this means looking at

organisations from the perspectives of different groups of people" (Saunders et al., 2023, p. 150). Thus, the interpretivist paradigm is suitable for management research. In addition, the interpretivist approach offers an important advantage in examining a phenomenon through a process of exploration (Belotto, 2018). In this study, the researcher adopted an empathetic attitude to understand the social world of the current study actors from their perspectives. This attitude meets the concepts of interpretivism and subjectivity (Blair, 2015). Consequently, if critical realism is rather objectivist, interpretivism is closer to subjectivism (Saunders et al., 2023).

The second layer of the "research onion" is related to approaches to theory development. The main approaches are the deductive or theory-testing approach and the inductive or theory-building approach (Saunders et al., 2023). Specifically, for instance, the inductive approach is the basis for providing a new theory or modifying or expanding an old theory to new dimensions (Berry & Otley, 2004), on the same basis that defines the case studies employing interpretivism (Scapens, 2004). Generally, the management case study approach is inductive theory-building (Eisenhardt, 1989), developing theories through analytical generalizations (Yin, 2018).

The next "research onion" layer, following approaches to theory development, is the methodological choice of research design. Methodological assumptions show suitable research designs for obtaining proper evidence (Chua, 1986). The possible research design choices are quantitative, qualitative, or mixed methods. The link between the research philosophy and the methods to collect and analyze data (the layer of "research onion" that follows methodological choice) is represented by the research strategy or research method, and it is influenced by the methodological choice (Cooper & Schindler,

2014; Saunders et al., 2023). Any of these methodological directions is applicable to case study methods (Berry & Otley, 2004). In this regard, quantitative research design is generally used for positivist studies based on a theoretical deductive approach. Also, the main research method employed within positivism is the survey. However, postpositivist philosophies utilize the survey method as well, especially interpretivism and critical realism, although to a lesser extent (Saunders et al., 2023). On the other hand, qualitative research design is usually associated with more subjective postpositivist studies, such as interpretivist studies (Denzin & Lincoln, 2018). Critical realist studies use qualitative strategies as well, although to a lesser degree than the interpretivist ones. The main theoretical methods of qualitative studies are inductive, such as case studies, yet the deductive approach is not totally alien to them (Saunders et al., 2023; Yin, 2018). Finally, mixed methods research design implies the use of multiple research methods, which can include both quantitative and qualitative data collection and analysis (Creswell & Creswell, 2018; Saunders et al., 2023).

Within research strategy, two approaches are proposed by Lee and Saunders (2017), namely orthodox and emergent. In this respect, the orthodox approach is a linear path, including, chronologically, the following steps: 1) reading literature and defining the RQ(s); 2) determining the research design; 3) preparing the study and collecting data; 4) analyzing the data; and 5) writing the findings. On the other hand, the emergent approach does not have a definite path, usually starting with an event. The current study employed the orthodox approach, which is more classical and easier to follow.

Although traditionally researchers do not always include formal designs in case study research, to improve their quality, Yin (2018) proposed a 2 x 2 matrix of design

that includes two dimensions, as follows: 1) number of cases: single or multiple, and 2) number of units of analysis: holistic (one unit) or embedded (at least two units). Thus, the four types of designs are the following: 1) holistic single case design (Type 1), 2) embedded single case design (Type 2), 3) holistic multiple case design (Type 3), and 4) embedded multiple case design (Type 4). In this description, case(s) represented the case to be analyzed, whereas unit(s) of analysis refered to the level at which the examination occurs (Lee & Saunders, 2017).

As already presented, the current case study research was performed at the organizational level of analysis, and the RQs emphasized several similar organizations from a specific sector, namely several universities from the HE public sector in the Province of Ontario, Canada. For the case studies performed based on an orthodox approach (as in the current study) at the organizational level of analysis, the analysis could be conducted for a holistic single case or for an embedded single case (Lee & Saunders, 2017). Such analysis could be related to several contexts of those universities, such as 1) organizational size; and 2) organizational complexity. Therefore, the research strategy used in the current study was the embedded single case.

A research design could be categorized, based on its purposes, into exploratory, descriptive, explanatory, illustrative, experimental, or some combination (Cooper & Schindler, 2014; Saunders et al., 2023; Scapens, 2004; Yin, 2018). First, an important goal of an exploratory study is to understand the research object or to clarify its issue(s). Thus, it produces "deep and rich understandings of the social nature of accounting practices" (Scapens, 2004, p. 261), which is indispensable for the topics that are based on rather scarce literature. The *what* or *how* RQs are specific to exploratory studies. The

main advantage of an exploratory study is that it is easily adaptable to any change during the research process, especially when the researcher is not aware of what to expect, and it could be seen as a preliminary examination of a phenomenon to be studied deeper later (Cooper & Schindler, 2014; Saunders et al., 2023; Scapens, 2004; Yin, 2018). Thus, a case study research design is unlikely to remain unchanged during the research process, and it can be adjusted based on preliminary findings. However, because of resource limitations (financial, time, or humans), it should keep a balance between data collection costs and the amount of insight gained (Berry & Otley, 2004).

Among the characteristics of the other categories, one can find, first, that descriptive studies describe the research object(s), and they can be used for answering who, what, where, when, or how RQs. A descriptive study could be considered an extension of an exploratory study. Second, cause and effects links between variables could be explained by explanatory studies, for which *why* and *how* RQs are frequently used. Third, illustrative case studies that overlap with some characteristics of descriptive studies are used to unveil practical organizational innovations, which are assumed to be superior to prior practices. Fourth, management accounting scholars can use experimental studies for evaluating the new accounting procedures they propose to be employed in practice (Cooper & Schindler, 2014; Saunders et al., 2023; Scapens, 2004; Yin, 2018).

This study was primarily exploratory, used an inductive interpretative approach, and employed mainly qualitative research methods. Based on the review of the strengths and weaknesses of different theoretical approaches and research methods, this study adopted a single case study method, with a strategically selected group of Ontario public universities being treated as the embedded units of analysis in this study. Both the

research methodology and the researcher's personal considerations can influence the choice of qualitative case study design and strategy.

4.2 Reliability and validity

It is fundamental that scholars and other readers have confidence in the results of any research. Thereby, rigor should be at the base of any study to gain confidence, in addition to other attributes, such as transparency of methods, credibility, or ethical considerations. However, there is no consent among scholars related to assessing reliability and validity criteria (Maxwell, 2022; Merriam & Tisdell, 2015; Tracy, 2020). A study is reliable if it could be replicated by other researcher(s), who can obtain the same results. In addition, a study is valid if its procedures measure faithfully what they are supposed to measure and the findings are accurately obtained (Saunders et al., 2023). In a study, the quality of the research design influences the quality of the conclusions. Thus, it is important to test the quality of the research design (Yin, 2018). It is at this stage that the philosophical foundations of quantitative and qualitative research designs frequently diverge. Positivist thinkers, for instance, evaluate the quality of research using the "canons of scientific inquiry" pertaining to validity and reliability, whereas interpretivists modify or reject these words as unsuitable (Saunders et al., 2023, p. 215). In fact, an important number of qualitative researchers adopted other terms instead of research validity, such as trustworthiness, credibility (Lincoln & Guba, 1985; Maxwell, 2022; Merriam & Tisdell, 2015), or rigor (Golafshani, 2003; Merriam & Tisdell, 2015) of qualitative research.

The reliability of a study could be internal, which is related to maintaining consistency while performing it, or external, which is concerned with the repeatability of

the study's results (Saunders et al., 2023). Validity criteria are about "the integrity of the conclusions" (Bryman et al., 2011, p. 77). Research studies usually employ several tests of validity. For the quantitative studies, they are the following: construct validity, internal validity, and external validity. At the same time, qualitative studies based on interpretive assumptions are more adapted to some alternative criteria for assessing the quality of research design. For instance, the adaptation of the concepts of validity and reliability, or parallel versions to criteria of quantitative studies were first defined by Lincoln and Guba (1985) by introducing the following criteria: dependability (reliability), credibility (internal validity), and transferability (external validity) (Creswell, 2015; Lee & Saunders, 2017; Saunders et al., 2023).

First, dependability/reliability permits a qualitative study to be repeated by using "overlapping methods and in-depth methodological descriptions of the procedures" (Creswell, 2015, p. 258). However, an important fraction of studies from the management accounting domain, including the current, cannot be repeated for various reasons related to organizations and people participating in those studies. Thus, their results cannot be replicated (Berry & Otley, 2004), or it is not necessary that replication would produce the same findings. Yet, this is not a sign of the erroneous results of the original study, given the fact that the same qualitative data could be interpreted in various forms. Moreover, in qualitative studies it is pivotal that the findings be aligned with the collected data. In other words, the results of the replication study should make sense given the collected data. Thus, the results are "consistent and dependable" (Merriam & Tisdell, 2015, p. 251). To give other scholars the chance to repeat the study, the researcher should document all the steps followed (Berry & Otley, 2004; Bryman et al., 2011; Yin, 2018).

Despite this conclusion, the researcher should try to minimize the errors that could occur during a replication. Thus, it is important to thoroughly document all the steps from the study, like in a process that could be audited later on (Yin, 2018).

Several threats to dependability/reliability are mentioned by Saunders et al. (2023). They are related to errors or biases of either participant or researcher. First, an example of participant error is that some answers could be badly influenced by approaching the end of the time elapsed for the interview if the participant has other commitments and obligations. In the current study, the researcher eliminated this risk by well managing the time allowed for interviews by, for instance, reconfirming at the beginning of each interview the exact time the interviewee could spend. Second, an example of participant bias is given by a less convenient interview environment, in which the participant could be less sincere because of the risk of being overheard. The researcher prevented this risk by conducting interviews over the secured online platform Zoom. Third, the researcher avoided possible research errors by being prepared and in good shape before each interview. In fact, he never scheduled more than three interviews in a week or one interview on the same day. Fourth, researcher bias was prevented by accurately recording all interviews, well preparing for all interviews, and paying attention to the way to ask questions. In addition, many participants agreed to review the transcripts of interviews. Finally, the researcher evaluated the consistency of his interview and coding processes by writing notes. In this respect, the present study carefully addressed the dependability/reliability issues, as suggested by Miles et al. (2014), including the following: 1) RQs properly stated; 2) ontological and epistemological assumptions clearly specified and pursued; 3) data quality investigated;

and 4) evolution of research focus during the research process noted. Second, the credibility/internal validity process is used to evaluate the validity or credibility of research information and research analysis (Saunders et al., 2023). Creswell and Miller (2000) developed a matrix of validity procedures for qualitative studies. As such, the validity procedures suggested by them within the postpositivist paradigm, which is employed by the current study, are the following: 1) through the lens of the researcher – triangulation; 2) through the lens of participants – participant checking; and 3) through the lens of outsiders of the study – audit trail.

One technique for validation is triangulation. In the process of triangulation, the results of a study obtained by using one research method are verified against the results obtained by using another research method (Bryman et al., 2011; Creswell, 2015). By employing this process, researchers could use more than one set of independent measures that support (or, at least, do not contest) their findings. In this way, triangulation helps improve the quality of research. "Good research practice obligates the researcher to triangulate, that is, to use multiple methods, data sources, and researchers to enhance the validity of research findings" (Mathison, 1988, p. 13). Besides, "it is necessary to use multiple methods and sources of data in the execution of a study in order to withstand critique by colleagues" (Mathison, 1988, p. 13). In the present study, triangulation is accomplished by collecting information through semi-structured interviews and three structured interview questions and by analyzing secondary documents.

In addition, participant validation was used in the present study by reviewing transcripts by participants and analyzing positive and negative opinions alike (Saunders et al., 2023). Third, the audit trail prepared by the researcher offered readers the rationale

behind the decisions taken during the study and the evolution and versions of data analysis (Nowell et al., 2017). Put simply, the audit trail is "a record of how the analysis developed over the course of a study" (King & Brooks, 2018, p. 224).

Another aspect of improving data quality by researcher was the periodic evaluation of interviewing practice (Saunders et al., 2023). His strategy included watching the video recordings of the interview in the same week to discover the flaws, evaluate them, and compare them with respect to the previous one. In this respect, during the first four interviews, he discovered a question that needed to be clarified. However, the most important gain from following this strategy was learning how to properly manage time.

4.3 Data collection

Data collection represents the core of the "research onion" (Saunders et al., 2023). The data collection represents, in the vision of Creswell and Poth (2018), the activities in which the researchers are involved to get the research data. For them, the first data collection activity is to decide the boundaries of the system to be examined. In the current study, the system examined was represented by public universities, and the boundaries were the frontiers of the Province of Ontario. The second step was to select the universities to be studied. The third stage was to get access to sites and individuals. The fourth step was related to choosing the forms of the collected data, such as interviews, written documents, or archival records. The fifth phase was to decide how to record information by designing the interview protocol. The sixth step was to anticipate the possible data collection issues, such as interviewing issues or access to documents issues. The seventh stage was to decide how to store data, especially the computer files used

during the study. In addition, the researcher "faces many ethical issues that surface during data collection in the field and in analysis and dissemination of qualitative reports" (Creswell & Poth, 2018, pp. 149-151) that need to be addressed. The data collected could be primary (new) data and/or secondary data. The researcher has an important role during data collection, to remain impartial and avoid influencing the data and results. In this perspective, the roles a scholar could take in collecting data are the following: outsider, visitor, facilitator, participant, and actor (Scapens, 2004). The researcher in the present study assumed the roles of outsider and visitor. An outsider collects data from secondary sources and does not have any connections with the organizations studied, and a visitor does not interfere with the phenomenon studied. Yet, especially in the classical capacity of interviewer, the researcher was still involved in the selection and interpretation of the evidence, and he could affect the answers of the persons questioned (Scapens, 2004).

During data collection, three issues can arise: "what to collect, how much to collect, and how to ensure the accuracy of what is collected" (Marginson, 2004, p. 330). The answer to the first issue (what to collect) was relatively straightforward, being given by the RQ(s). Second, the problem about how much to collect was rather related to how little to collect. The literature shows that data collection could be stopped when apparently nothing new could arrive. Third, the accuracy of the information collected could be reasonably proved by using triangulation (Marginson, 2004). In the present study, the researcher used several methods to collect data, as follows: 1) semi-structured interviews (which include three short supporting structured questions), and 2) secondary data.

4.3.1 Selecting case universities and respondents

When the case (or the cases) to be studied are to be selected from a pool of numerous other cases, it would be helpful for researchers to find a way to select one or more cases that are representative of the pool. However, case study research is not based on sampling but on understanding that specific case (Stake, 1995). The researchers play an important role in selecting the units of analysis for the case. Usually, of greater importance for researchers is the "opportunity to learn" (Stake, 2006, p. 26), or maximization of "what [they] … can learn" (Stake, 1995, p. 4), or "what cases they could learn the most from" (Patton, 2002, p. 233). The units of analysis for the present study (an embedded single case) were selected from the list of public universities in the Province of Ontario. This list is published on the website of the Council of Ontario Universities (COU, n.d.). The objective of COU is to facilitate cooperation among the public universities in Ontario, as well as between these universities and the Ontario government, with the aim of promoting the well-being and success of students, communities, and the Province of Ontario (COU, n.d.).

Table 4-1 provides details about the complexity, size, and geographic location of the 19 public universities in Ontario, from which the participating universities were selected. From the point of view of complexity, the 21 public universities in Ontario (COU, n.d.) are divided into the three categories defined by Maclean's (Dwyer, 2021) or the four categories explained by Shanahan (2015c). However, the pool of public universities in Ontario from which the universities were selected includes 19 universities divided into three categories (Shanahan, 2015c), because the fourth category, namely special purpose universities is not covered by this study. The three complexity categories

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are the following: 1) medical-doctoral research-intensive universities (R) (Dwyer, 2021; Shanahan, 2015c); 2) comprehensive teaching and research universities (C) (Dwyer, 2021; Shanahan, 2015c); and 3) undergraduate liberal arts universities (U) (Dwyer, 2021; Shanahan, 2015c).

In addition, university size and university geographic location are two other perspectives on the selection of universities participating in this study. Thus, university size is based on the number of students registered, being divided into small (S) (less than 10,000 students), medium (M) (between 10,001 and 40,000 students), and large (L) (more than 40,000 students). The information related to the number of students registered was acquired from a partner of COU, specifically the enrolment webpage of Ontario Universities' website (https://ontariouniversities.ca/resources/data/multi-year-data/enrolment). Moreover, the Province of Ontario is divided, in this study, into the following geographical areas: 1) Eastern Ontario (E), 2) Greater Toronto Area (GTA), 3) Southwestern Ontario (SW), and 4) Northern and Northwestern Ontario (N&NW).

An important stage of preparing for the interviews is selecting respondents. It is critical to underline in qualitative research the necessity to use the term selecting and not sampling, which is specific to statistical generalization and consequently to quantitative studies. "The real purpose of qualitative research is not counting opinions or people but rather exploring the range of opinions, the different representations of the issue" (Gaskell, 2000). After receiving permission for conducting the study from Carleton University's Research Ethics Board A (see 4.3.3 Ethical considerations) on February 16, 2022, the researcher started to select the participants from each university. The main way of recruiting was by emailing messages (Marland & Esselment, 2019; Roulston & Choi,

2018), whereby the researcher sent a letter of invitation to participate in the current study.

It was important to include in the letter of invitation the benefits of cooperating at

research, especially when the results of research could help the participants in their work

and that they be among the first to get those results (Beyers et al., 2014).

Table 4-1: *Characteristics of Ontario universities from which target universities were selected*

	University	Complexity	Size	Geographic location
1	University of Toronto	R	L	GTA
2	McMaster University, in Hamilton	R	M	SW
3	Queen's University, in Kingston	R	M	E
4	University of Ottawa	R	L	E
5	Western University, in London	R	L	SW
6	Carleton University, in Ottawa	C	M	E
7	Toronto Metropolitan University	C	L	GTA
8	University of Guelph	C	M	SW
9	University of Waterloo	C	L	SW
10	York University, in Toronto	C	L	GTA
11	Brock University	C	M	SW
12	University of Windsor	C	M	SW
13	Wilfrid Laurier University, in Waterloo	C	M	SW
14	Algoma University, in Sault Ste. Marie	U	S	N&NW
15	Lakehead University, in Thunder Bay	U	S	N&NW
16	Laurentian University, in Sudbury	U	S	N&NW
17	Nipissing University, in North Bay	U	S	N&NW
18	Ontario Tech University, in Oshawa	U	M	E
19	Trent University, in Peterborough	U	M	E

The respondents were targeted at the senior managerial levels of universities,

typically the director and dean levels or higher. They were in positions that could

influence the use of performance information, and so they could provide pertinent

information to answer the RQs (Lee & Saunders, 2017). At each selected university to

participate in the current study, the following offices received invitations to interview: the

president office, the vice-president (academic) office, the vice-president (research) office,

the vice-president (administrative) office, and the offices of all deans. The main target

persons from these offices were their heads. Therefore, they were the addressees of the first letter of invitation. Although the presence on the list of the presidents, vice-presidents, and deans is obvious, representatives of second-tier management could bring a possible different perspective in responses and offer valuable answers during an interview. As a result, the associate vice-presidents, and the vice-deans were of second interest targets. It is noteworthy the participation of many institutional research and planning offices heads in this study.

Literature does not provide many studies about the expected response rate for acceptance to participate in unstructured interviews. In one of them, Baruch and Holtom (2008), analyzing the response rates of 117 studies using questionnaires at the organizational level, published in 17 refereed journals in the years 2000 and 2005, concluded that the minimum rate was 13.6% in 2000 and 10% in 2005, whereas the mean was 36.2% in 2000 and 35% in 2005. Although this research was about the response rate for questionnaire surveys, it could be used by the current study as a benchmark to evaluate the number of invitations to be sent in order to get sufficient acceptances. As presented in Table 4-2, out of 211 invitations sent, 43 were accepted, for a response rate of 20% of the contacted persons, which is well within average published response rates.

4.3.2 Interviews

"Getting in the door is important, but what you do next is even more important" (Aberbach & Rockman, 2002, p. 674). Selecting a type of interview compatible with senior officials' personalities is a determinant for obtaining high-quality data. Researchers should be aware that using open-ended questions allows respondents to structure their answers according to their own perspectives. This enhances the validity of

the responses and is particularly suitable for conducting exploratory and in-depth research. Elites, particularly those with high levels of education, dislike being constrained by closed-ended questions. They prefer to express their opinions and provide explanations for their beliefs (Aberbach & Rockman, 2002). However, a combination of open-ended and closed-ended questions can also yield favorable outcomes (Rivera et al., 2002).

Interviewing is a well-known professional or research activity, and it is one of the "general methods of measurement" (Pedhazur & Schmelkin, 1991, p. 61). Specifically, it is a "technique or method for establishing or discovering that there are perspectives or viewpoints on events other than those of the person initiating the interview" (Farr, 1982, p. 151). A research interview is an arranged conversation between the interviewer(s), who establishes a set of unambiguous questions related to research objectives, and the interviewee(s), who accepts to answer (Saunders et al., 2023). An interview provides the respondents with an opportunity to present their point of view about the issues that are being studied. The interview process is composed of two stages. The first stage is about creating the interview methodology or the interview guide. An interview guide represents the list of "the questions or issues that are to be explored in the course of an interview," and it is "prepared to ensure that the same basic lines of inquiry are pursued with each person interviewed" (Patton, 2002, p. 343). Depending on the complexity of the study, the interview guide could provide more or less information (Patton, 2002). The interview guide for the current study is presented in Appendix B. The second stage is about the interview itself.

For interviews, it was helpful to adopt a strategy to be able to end them with good data. In this sense, first, the interviewer stated clearly to interviewees that there is no theory to be proved and no good or bad answers. Second, the respondents were encouraged to present examples of what they described. Third, the interviewees were asked to explain how they could prove what they claimed. Fourth, when the information received was inconsistent with that from an earlier interview, the respondents were asked to provide some more details to help the researcher better understand that issue. Fifth, the interviewer checked whether he had a good understanding of what he was told by asking the respondents to assess the interviewer's rephrasing of the information received during the interview (Marginson, 2004).

Three types of interviews are commonly used. First, the structured interviews (or standardized interviews) are based on predetermined questionnaires and are not designed to gather additional information. Second, the semi-structured interviews are based on some key themes or questions to be considered. These interviews are more flexible, allowing for additional questions based on the flow of discussions. Third, the unstructured or in-depth interviews are based only on predetermined themes. In this way, interviews could freely present the respondents' perspective on the phenomenon studied. The semi-structured and the unstructured interviews form the non-standardized interviews, or the qualitative interviews (Saunders et al., 2023). Semi-structured interviews are advisable to be used during exploratory studies to help the researcher understand the circumstances of the studied phenomenon at a deep level (Saunders et al., 2023). It is significant to start the design of the questions of the semi-structured interviews with clarification of the concepts that the researcher wants to explore, which

are based on the RQs. Besides, the question stem (the words that comprise the question) and the possible additional instructions have an important role in the respondents' understanding of the meaning of the question (Dillman et al., 2014). Dillman et al. (2014) provided a set of such rules for selecting suitable phrases when creating structured questions. The guidelines are as follows: 1) selecting the suitable question format; 2) ensuring that the question is relevant to the respondent; 3) posing one question at a time; 4) verifying that the question is technically precise; 5) utilizing uncomplicated and commonly understood vocabulary; 6) employing precise and tangible words to explicitly define the concepts; 7) minimizing the number of words used to formulate the question; 8) constructing complete sentences that are in the form of a question, using straightforward sentence structures; 9) ensuring that 'yes' signifies an affirmative response and 'no' signifies a negative response; and 10) arranging the questions in a manner that facilitates the respondents' comprehension of the task at hand.

In addition, based on the number of interviewees, interviews may be conducted either individually or on a group basis. Gaskell (2000) claimed that face-to-face individual interviews are more appropriate for case studies. The interviews could be conducted by telephone as well, although the interviewer has less control over the process (Christmann, 2009). However, videoconferencing platforms, such as Zoom (Zoom Video Communications Inc., 2016), have been increasingly used lately, especially during the pandemic time. The Zoom platform has many advantages as a research interviewing tool, such as visual rapport (which it lacks at telephone interviews), convenience (related to access, time effectiveness, and cost effectiveness), simplicity, and user-friendliness. Besides, Zoom has its own security technology, which is very important for protecting

sensitive data (Archibald et al., 2019; Lobe et al., 2020). Moreover, to follow the

provincial government instructions about the meetings during the actual COVID-19

pandemic period, the use of Zoom was the best way to organize the interviews in this

study. "Online interviews are associated with both semi-structured and unstructured

interviews and can be conducted in on-to-one, one-to-many and two-to-many modes"

(Saunders et al., 2023, p. 449). Therefore, in this study, all 43 interviews were individual,

semi-structured, and performed online on the Zoom platform.

At the end of the semi-structured interviews, a set of three structured questions

was also administered. The role of the structured questions is to obtain an informational

backup, and they are created to be used in the process of validation and to be analyzed

using descriptive statistics. A short, structured set of questions could be more easily

accepted by managers when presented as an integrated part of the interview, especially

when they participate in a study that, for them, is interesting and helpful for their job

(Saunders et al., 2023). They were developed by using five-point Likert scales. From this

perspective, the extent to which provincial governmental requirements affect the

university's decision to implement PMRSs and the extent to which the university uses

PMR for some given purposes were anchored as follows: hardly at all, slightly,

moderately, very, and great. At the same time, the assessment of some possible

consequences of the use of PMR at the university was anchored as follows: mostly

negative, slightly negative, neutral, slightly positive, and mostly positive. The set of the

three structured questions for the current study is presented in Appendix C.

The invitations to targeted participants were sent between May 3rd and November

26th, 2022. Meanwhile, the interviews were performed between May 9th, 2022, and

January 31st, 2023. During this time, the researcher developed a systematic way of contacting the prospective participants and scheduling the interview meetings with the people who had given their acceptance to participate (Tracy, 2020). The time management of interviews is very important (Saunders et al., 2023). A researcher cannot conduct too many interviews in a short period of time. For the present study, the researcher decided to schedule no more than one interview on one specific day. In addition, an important particularity of the study is that the targeted participants are very busy people. Accordingly, the researcher decided to send only a limited number of invitations during a week.

The first part of every interview, usually around 10 minutes, was dedicated to introducing the researcher, presenting briefly the research with a focus on the CF of the study, explaining how the information provided will be used, and discussing the informed consent form, which was signed by all participants. The informed consent form was particularly important because it included the acceptance of participants being video recorded. Moreover, although the participants were informed during the previous correspondence that the length of the interview was around one hour, the researcher asked at the beginning of each interview what length of time they could use for study. It was a good decision, because a few participants had to cut the time previously scheduled for the interview. Thus, the researcher managed to perform those interviews, even though they were shorter than expected. However, in the same way, he found that a few participants had allocated a longer time, and so those interviews provided more information.

To improve the study's transparency, every invitation included the interview guide. In this sense, the potential participants were aware of the questions they would be asked. Moreover, many of the participants prepared their answers before the interviews based on the interview guide. Consequently, the quality of those interviews improved. "A good way to close the interview is by expressing gratitude and reassuring the respondent of confidentiality. This is also the time to remind participants that their data will be kept safe and confidential" (Tracy, 2020, p. 170). This advice was followed by the researcher at the end of each interview. In addition, he offered to "send participants a transcript of their interview" (Tracy, 2020, p. 185) for review, before starting the data analysis. Most participants accepted this task, although a few of them said that they are confident that the transcript will be well done and that they do not need to spend additional time with it. By sending the transcripts for review, the researcher got back much helpful feedback and, sometimes, supplementary information. Although it is not mandatory in the research process, transcribing audio-video recorded data helps the researcher convert the audio-video information into a written one, which is easier to examine (Saunders et al., 2023; Tracy, 2020).

The researcher video-recorded the semi-structured interviews, including the answers to structured questions. However, to be ethical, the researcher asked for permission from each respondent. In addition, the respondent had the possibility to stop the recording at any moment during the interview (Saunders et al., 2023), in which case the researcher was ready to take notes manually. For the present study, the video-recorded semi-structured interviews, including the three structured questions, helped the researcher get relevant information without interruptions, together with supplementary

explanations. However, after the data were verified, transcribed, and de-identified, all video recordings were deleted for ethical considerations.

4.3.3 Ethical considerations

Any study should be planned and performed by undertaking "all anticipated and emergent ethical issues" (Creswell & Poth, 2018, p. 151). For instance, the credibility of data collection and data analysis is directly linked to "the trustworthiness of those who collect and analyze the data" (Patton, 2015, p. 706). Therefore, "the validity and reliability of a study depend upon the ethics of the investigator" (Merriam & Tisdell, 2015, p. 260).

Ethical research is led by the following three principles: "respect for persons (i.e., privacy and consent), concern for welfare (i.e., minimize harm and augment reciprocity), and justice (i.e., equitable treatment and enhance inclusivity)" (Canadian Institutes of Health Research et al., 2018, p. 6; Creswell & Poth, 2018, p. 151). Following these principles, the participants should be able to participate in a study anonymously, and they should be asked for consent based on the explanations about the study and their role in it. In Canada, ethical standards in research are promoted and imposed by three federal research agencies, namely the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council of Canada, and the Social Sciences and Humanities Research Council, the last of which is applicable to this study. The ethical standard policy with which any researcher should comply is comprised of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS) (Canadian Institutes of Health Research et al., 2018). At the university level, Research Ethics

Boards (REBs) are responsible for the application of ethical standards in the studies performed by faculties and students.

At Carleton University, Carleton University's Research Ethics Board A (CUREB-A) supervises the application of ethical policies and guidelines at Sprott School of Business, including the current study. Therefore, with the exception of the use of anonymous secondary information, any research involving human subjects needs ethical clearance from CUREB-A (Carleton University, n.d.). The first step in getting clearance is the completion by the researcher of TCPS 2 training, for which the certificate was obtained on July 6, 2021. The current study was considered a very low-risk research project. CUREB-A criteria for assessing a research project as low-risk are the following: 1) very low risk for participants, 2) no physical involvement, 3) participants have the ability to accept their involvement in the study, 4) no harm risk to participants in case of accidental or intentional disclosure, 5) no third party is involved in the study, 6) the study does not presuppose deception or eluding information to participants, and 7) the study does not assume the participation of Indigenous peoples or communities (Carleton University, n.d.).

The ethical principle of respect for persons, which is the most discussed in management research, is covered in the present study by the use of the informed consent concept. First, this concept underlines the fact that any potential participant in the study should freely offer consent, which could be withdrawn at any moment. Second, when the potential participants are asked to participate in the study, they should receive all the information needed to make an informed decision.

The recruitment stage was commenced by sending by email formal requests to the REBs of all targeted universities, asking whether they required REB ethics clearance to allow this study to be conducted at those universities. Out of the 11 targeted universities, four REBs answered positively. The other seven REBs did not require ethics clearance certification because of the low risk associated with participation in this study and because the universities were not involved in contacting the targeted participants. Thus, the first ethics clearance certification was received on February 16th, 2022, whereas the last one (the fourth) was received on October 12th, 2022. This process was time-consuming because, only on May 3rd, 2022, the researcher had the right to send the first invitations to potential participants.

The invitations sent included a letter of invitation (Appendix D) to potential participants. The process of research cannot start before the participants give their consent, by signing the consent forms (Appendix E). Also, before starting the interviews, the participants should be notified about the use of recording equipment (Bryman et al., 2011; Canadian Institutes of Health Research et al., 2018). Finally, in an effort to improve the study's perceived legitimacy and the potential participants' willingness to participate, a letter of introduction from the thesis supervisor was provided (Appendix F).

4.3.4 Secondary data

Public institutions gather a mix of data about their activities, such as how they are organized, their results, etc. These data can be stored either in physical format, such as paper, or digitally. Fortunately, large amounts of such data could be accessed electronically, on the internet, even from outside of organizations, and are free to be accessed by the public. They constitute secondary data sources, which are divided into

text (books, journals, reports) or non-text documents (audio and video recordings), survey-based data (data collected using survey techniques, such as questionnaires), and multiple-source data (a mix of document and survey data) (Saunders et al., 2023).

The use of secondary sources has significant advantages. The most important is the saving of time and money for data collection (Cooper & Schindler, 2014). Moreover, secondary data could be used to validate primary data findings (triangulation) (Johnson & Christensen, 2014). Among the disadvantages of using secondary sources is the fact that they are not produced for the study's purpose. Thus, only a slight shift in the purpose of the secondary data originally collected from the study's goal could alter the conclusions of the study. Second, access to some specialized commercial databases could be very costly and often not available. Third, the secondary data already processed could employ different definitions of concepts than those used in the study. Fourth, although the data offered by public institutions are practically endorsed by governments, their quality should be treated carefully (Saunders et al., 2023). However, any secondary source could be assessed for its possibility of offering answers to the RQ(s).

COU has developed the Common University Data Ontario (CUDO, n.d.), a database that could be easily accessed by any external stakeholders. Today, it is part of Ontario's Universities website (Ontario's Universities, n.d.), which is another partner of COU. This database is the main resource for secondary documents used in the present study. Other secondary data used in this study are the following: 1) universities' official annual reports, 2) universities' official websites, 3) provincial governmental databases, and 4) Statistics Canada. The data from such secondary sources are used as main data

sources for measuring contingent variables, and as supplementary sources for triangulating results and constructing a profile of responding universities.

4.3.5 Descriptive participant characteristics

The typology of universities selected for the current study is summarized in Table 4-1. Based on Dwyer (2021) and Shanahan (2015c), universities could be set up based on the following characteristics: a) complexity and proportionality to the population of Ontario universities; b) university size and proportionality to the population of Ontario universities; and c) overall regional representation and proportionality to the population of Ontario universities. In this regard, first, complexity is represented by three categories of universities (Dwyer, 2021; Shanahan, 2015c): medical-doctoral research-intensive universities, labeled R; comprehensive teaching-research universities, labeled C; and undergraduate liberal-arts universities, labeled U. The proportions to population of the 19 Ontario universities are 26% for R universities (5 R universities out of a total of 19), 42% for C universities (8 C universities out of 19), and 32% for U universities (6 U universities out of 19). Second, university size is based on the number of students registered, being divided into small (S) (less than 10,000 students), medium (M) (between 10,001 and 40,000 students), and large (L) (more than 40,000 students). The proportions to population of the 19 Ontario universities are 32% for L universities (6 L universities out of a total of 19), 47% for M universities (9 M universities out of 19), and 21% for S universities (4 S universities out of 19). Third, overall regional representation corresponds to geographical distribution, being separated into the following geographical areas: 1) Eastern Ontario, 2) Greater Toronto Area, 3) Southwestern Ontario, and 4) Northern and Northwestern Ontario. The proportions to population of the 19 Ontario

universities are 26% for Eastern Ontario universities (5 universities out of a total of 19), 16% for Greater Toronto Area universities (3 universities out of 19), 37% for Southwestern Ontario universities (7 universities out of 19), and 21% for Northern and Northwestern Ontario universities (4 universities out of 19).

Selecting universities with all categories of characteristics is important, as they are expected to differ in size and complexity – two contributing factors studied. In this perspective, first, based on their complexity, the 19 universities are divided into the following three groups: 5 R, 8 C, and 6 U. The ratio of the number of R universities to the number of C universities to the number of U universities is 5:8:6 (26%:42%:32%). Thus, to maintain the proportionality to the population of Ontario universities, the present study includes three R universities, five C universities, and three U universities. So, the actual ratio of participating universities is 3:5:3 (27%:45%:27%), which is almost the same as the ratio of the entire population of universities.

Second, based on their size, the 19 universities are divided into the following three groups: 6 L, 9 M, and 4 S. Thus, the ratio of the number of L universities to the number of M universities to the number of S universities is 6:9:4 (32%:47%:21%). As a result, to maintain the proportionality to the population of Ontario universities, the present study includes four L universities, five M universities, and two U universities. So, the actual ratio of participating universities is 4:5:2 (36%:45%:18%), which is very close to the ratio of the entire population of universities.

Third, the ratio of the number of Eastern Ontario universities to the number of Greater Toronto Area universities to the number of Southwestern Ontario universities to the number of Northern and Northwestern Ontario universities is 5:3:7:4

(26%:16%:37%:21%). Therefore, to have a good geographical distribution, the present study includes four Eastern Ontario universities, two Greater Toronto Area universities, three Southwestern Ontario universities, and two Northern and Northwestern Ontario universities. So, the actual ratio of participating universities is 4:2:3:2 (36%:18%:27%:18%), which is very close to the ratio of the entire population of universities.

The total number of selected universities for participation in the study, 11, represents 58% of the population of 19 Ontario universities. First, based on their complexity, the numbers of universities that participated in the study are the following: 3 R out of a total of 5 (60%), 5 C out of a total of 8 (63%), and 3 U out of a total of 6 (50%). Second, based on their size, 4 L universities out of a total of 6 (67%), 5 M universities out of a total of 9 (56%), and 2 S universities out of a total of 4 (50%) participated in this study. Third, based on their overall regional representation, Eastern Ontario is represented by 4 universities out of a total of 5 (80%), Greater Toronto Area by 2 universities out of 3 (67%), Southwestern Ontario by 3 universities out of 7 (43%), and Northern and Northwestern Ontario by 2 universities out of 4 (50%).

As summarized in Table 4-2, a total of 211 invitations were sent to the 11 universities, for an average of 19.2 invitations sent per university. Out of the 211 invitations sent, 43 were accepted, for a total accepted rate of 20%. A total of 168 invitations were declined or not answered. Two reminder invitations were sent by email to those who did not respond to previous invitations after approximately two weeks. First, based on the complexity of universities, 10 invitations were accepted (average of 3.3 per university) out of 65 sent to R universities (average of 21.7 per university), for an

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accepted rate of 15%; 24 invitations were accepted (average of 4.8 per university) out of 108 sent to C universities (average of 21.6 per university), for an accepted rate of 22%; and 9 invitations were accepted (average of 3.0 per university) out of 38 sent to U universities (average of 12.7 per university), for an accepted rate of 24%.

Second, based on the size of universities, 18 invitations were accepted (average of 4.5 per university) out of 85 sent to L universities (average of 21.3 per university), for an accepted rate of 21%; 19 invitations were accepted (average of 3.8 per university) out of 100 sent to M universities (average of 20.0 per university), for an accepted rate of 19%; and 6 invitations were accepted (average of 3.0 per university) out of 26 sent to S universities (average of 13.0 per university), for an accepted rate of 23%.

Third, based on their overall regional representation, 17 invitations were accepted (average of 4.3 per university) out of 81 sent to universities from Eastern Ontario (average of 20.3 per university), for an accepted rate of 21%; 11 invitations were accepted (average of 5.5 per university) out of 44 sent to universities from Greater Toronto Area (average of 22.0 per university), for an accepted rate of 25%; 9 invitations were accepted (average of 3.0 per university) out of 60 sent to universities from Southwestern Ontario (average of 20.0 per university), for an accepted rate of 15%; and 6 invitations were accepted (average of 3.0 per university) out of 26 sent to universities from Northern and Northwestern Ontario (average of 13.0 per university), for an accepted rate of 23%. These proportions are considered to be adequately representative of the key characteristics of interest in this study.

Table 4-2: *Participant characteristics*

Characteristics of universities	Number of all existing universities in Ontario	Universities with that specific characteristic from the total universities	Number of participating universities	Participating universities with that specific characteristic from the total participating universities	Participating universities from all universities with the same characteristic	Number of participants (accepted invitations)	Average of participants per university	Number of invitations sent	Average of invitations sent per university	Number of invitations declined or not answered	Accepted invitations
A	B	C	D	E	F	G	H	I	J	K	L
		$B/19 \times 100\%$		$D/11 \times 100\%$	$D/B \times 100\%$		G/D		I/D	$I - G$	$G/I \times 100\%$
Medical-doctoral research-intensive	5	26%	3	27%	60%	10	3.3	65	21.7	55	15%
Comprehensive teaching and research	8	42%	5	46%	63%	24	4.8	108	21.6	84	22%
Undergraduate / liberal arts	6	32%	3	27%	50%	9	3.0	38	12.7	29	24%
Total	*19*	*100%*	*11*	*100%*	*58%*	*43*	*3.9*	*211*	*19.2*	*168*	*20%*
Large	6	32%	4	36%	67%	18	4.5	85	21.3	67	21%
Medium	9	47%	5	46%	56%	19	3.8	100	20.0	81	19%
Small	4	21%	2	18%	50%	6	3.0	26	13.0	20	23%
Total	*19*	*100%*	*11*	*100%*	*58%*	*43*	*3.9*	*211*	*19.2*	*168*	*20%*
Eastern Ontario	5	26%	4	36%	80%	17	4.3	81	20.3	64	21%
Greater Toronto Area	3	16%	2	18%	67%	11	5.5	44	22.0	33	25%
Southwestern Ontario	7	37%	3	27%	43%	9	3.0	60	20.0	51	15%
Northern and Northwestern Ontario	4	21%	2	18%	50%	6	3.0	26	13.0	20	23%
Total	*19*	*100%*	*11*	*100%*	*58%*	*43*	*3.9*	*211*	*19.2*	*168*	*20%*

4.4 Measurement and analysis methods

The measurement's validity and reliability are two important aspects of the research design. Measurement validity relates to the relevance of the measures employed, whereas reliability refers to consistency and accuracy in performing the study. As already discussed in Section 4.2, in semi-structured interviews, measurement validity improves when researchers use well-explained questions, constructs are clarified by providing examples, and answers are deeply explored (Axinn & Pearce, 2006; Saunders et al., 2023). Participant error, participant bias, researcher error, and researcher bias are some of the threats to reliability, and the researcher should show how these specific threats will be avoided (Saunders et al., 2023). In any study, the theoretical ideas or the RQs should be used to define more specific constructs to "design reliable and valid measures" (Axinn & Pearce, 2006, p. 38). Specifically, "general theoretical constructs must be translated into a setting and study specific definition[s]", and "measures must be designed to match the setting specific definitions as closely as possible. The more clear, precise and setting specific the theoretical definitions, the easier it is to design closely matching measures" (Axinn & Pearce, 2006, pp. 38-39).

4.4.1 Construct measurement

A construct "is formulated so it can be measured" (Gioia et al., 2013, p. 16). The measurement of the constructs presented in CF and reflected in the three general RQs is summarized in Table 4-3. For each construct, it shows the measures used, their exact data sources, and the authors of related studies who have used the same or similar measures. In addition, this table is a useful tool in assessing the empirical connection between the

research design components and the RQs, or how the research design components might help the researcher in answering the RQs (Maxwell, 2013).

For RQ 1, interview questions S1a and S1b from the semi-structured interviews (Appendix B) and question Q1a from the supplementary structured questions (Appendix C) were used to learn whether universities studied measure more performance indicators than the number imposed by the provincial government. Second, based on the study of Verbeeten (2008), the answers to the question Q1b from the supplementary structured questions and the data from CUDO (n.d.) were the main research methods for measuring whether larger universities might have more issues in establishing PMR than the smaller ones. Third, following Arnaboldi et al. (2015), the 3-category constructed measure based on Shanahan's (2015c) categories of universities and the question Q1c from the supplementary structured questions were used to investigate how the adoption of PMR is influenced by the level of complexity of academic organizations. Fourth, guided by Guthrie & Neumann (2007), the use of PMR by universities for political, regulatory, and compliance reporting, especially for PBF reporting, was measured by the question S2a from the interviews and the question Q2a from the supplementary structured questions. Besides, secondary documents were used to categorize the mandatory PMR required by the provincial government into the four P&B framework (Pollitt & Bouckaert, 2017) categories (input, activity, output, and outcome). Fifth, the questions S2b from the interviews and Q2b from the supplementary structured questions provided the basis for studying how PMR is used to learn what is good about the work done and what is not and to decide what should be changed to improve organizational performance and how to implement those changes, based on Verbeeten (2008). Sixth, how the use of PMR helps

to improve universities' performance was assessed by using the question S3a from the interviews and the question Q3a from the supplementary structured questions, such as in the paper of Speklé & Verbeeten (2014). Seventh, the questions S3b from the interviews and Q3b from the supplementary structured questions were used to demonstrate how the accountability (Agostino & Arnaboldi, 2018) and legitimacy (Brignall & Modell, 2000) of universities can increase with the use of PMR. In order to simplify the measures, a proxy measure was used. For that reason, public perception was used to reflect accountability and legitimacy, as these constructs can be deemed ambiguous and sensitive by the respondents. Finally, eighth, following the judgment of Micheli and Pavlov (2020), the questions S3c from the interviews and Q3c from the supplementary structured questions were used to measure the perceived importance of PMR as a tool used internally or externally to compare universities. As organizational performance, accountability, legitimacy, and comparisons for universities are multi-dimensional constructs subject to interpretation and debate, some examples were provided for Q3a-Q3c.

Table 4-3: *Measurement of the constructs presented in the conceptual framework*

Research question	Constructs	Measures	Data sources	Related studies
1) How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of universities in Ontario, Canada?	a) Political and regulatory factors[1]	- Perceived extent of political and regulatory influence	a) Interview (Appendix B, questions S1a and S1b) b) Supplementary structured questions (Appendix C, question Q1a)	- Ammons & Rivenbark, 2008 - Yang & Hsieh, 2007
	b) Organizational size	- Number of students[2] - Number of instructional faculty members[3]	a) Secondary data: - Ontario's Universities (n.d.) - CUDO (n.d.) b) Supplementary structured questions (Appendix C, question Q1b)	- Verbeeten, 2008
	c) Organizational complexity	Categories of universities[4]: - R[5] – Medical-doctoral research-intensive - C[6] – Comprehensive teaching and research - U[7] – Primarily undergraduate	a) Secondary/primary data: - 3-category measure constructed by categorizing participating universities based on Maclean's magazine (Dwyer, 2021) and Shanahan (2015c) b) Supplementary structured questions (Appendix C, question Q1c)	- Arnaboldi et al., 2015
2) To what extent is PMR used by universities in Ontario, Canada, for political, regulatory, and compliance reporting, and for learning and development?	a) Political, regulatory, and compliance reporting	- Mandatory PMR category and number of measures in each -input -activity -output -outcome - Extent of PMR use for political, regulatory, and compliance reporting	a) Secondary data: 4-category measure constructed using Pollitt and Bouckaert (2017) framework to categorize mandatory PMR based on MTCU (2020) b) Interview (Appendix B, question S2a) c) Supplementary structured questions (Appendix C, question Q2a)	- Guthrie & Neumann, 2007 - Pollitt & Bouckaert, 2017
	b) Learning and development	Number of times the following mentioned in the interview: - Identification of problems - Finding of solutions - Implementing of solutions	a) Interview (Appendix B, question S2b) b) Supplementary structured questions (Appendix C, question Q2b)	- Verbeeten, 2008

Research question	Constructs	Measures	Data sources	Related studies
3) To what extent does the use of PMR by public universities in Ontario, Canada, impact organizational performance, affect accountability and organizational legitimacy, and lead to comparisons and rankings of academic institutions?	a) Organizational performance	- Perceived effect of PMR use on university performance	a) Interview (Appendix B, question S3a) b) Supplementary structured questions (Appendix C, question Q3a)	- Speklé & Verbeeten, 2014
	b) Accountability and organizational legitimacy	- Perceived effect of PMR on university's public perception and image[8]	a) Interview (Appendix B, question S3b) b) Supplementary structured questions (Appendix C, question Q3b)	- Agostino & Arnaboldi, 2018 - Brignall & Modell, 2000
	c) Comparison with other universities	- Perceived effect of PMR use on university comparisons	a) Interviews (Appendix B, question S3c) b) Supplementary structured questions (Appendix C, question Q3c)	- Agyemang & Broadbent, 2015 - Micheli & Pavlov, 2020

Note:

[1] Political and regulatory environment is a controlled variable. Within the Province of Ontario, every public university is subject to the same regulations.

[2] Number of students is the total number of full-time and part-time students (i.e., headcount) that universities reported to the Ontario Ministry of Colleges and Universities in the Fall term of academic year 2020-2021 (Ontario's Universities, n.d.).

[3] Number of instructional faculty members is the number of total full-time instructional faculty (excluding clinicians) in 2018 (CUDO, n.d.).

[4] Maclean's magazine suggests that university categories represent classification of universities, based on their "differences in types of institutions, levels of research funding, diversity of offerings, and breadth and depth of graduate and professional programs" (Dwyer, 2021, para. 2).

[5] R – Medical-doctoral research-intensive universities offer a wide variety of PhD programs and research, each of them having a medical school (Dwyer, 2021; Shanahan, 2015c).

[6] C – Comprehensive teaching and research universities have high level of research activity and many undergraduate and graduate programs) (Dwyer, 2021; Shanahan, 2015c).

[7] U – Primarily undergraduate universities are based on undergraduate programs, with very few graduate students and graduate programs (Dwyer, 2021; Shanahan, 2015c).

[8] This is an indirect measure of accountability and legitimacy which some could find too sensitive to answer directly.

4.4.2 Data analysis and characteristics

Thematic analysis is "possibly the most widely used qualitative method of data analysis" (Braun & Clarke, 2013, p. 175). It is a method used not only for summarizing the data content but also (mainly) for "identifying, analyzing, organizing, describing, and reporting themes" (Nowell et al., 2017, p. 2) (patterns) in qualitative data (Braun & Clarke, 2022b; Clarke & Braun, 2017; Maguire & Delahunt, 2017). It can also be used "to analyze large and small data-sets from case study research", for "inductive (data-driven) … analyses", and for capturing "both manifest (explicit) and latent (underlying) meaning" (Clarke & Braun, 2017, p. 298). More specifically, the current study used the reflexive thematic analysis method, developed by Braun and Clarke (2006; 2013; 2022b), because this method is the most appropriate for analyzing semi-structured interviews using an inductive approach. The word *reflexivity* from the method's name involves a "disciplined practice of critically interrogating what we do, how and why we do it, and the impacts and influences of this on our research" (Braun & Clarke, 2022b, p. 5). Thus, researcher reflexivity is the basis of how the researcher's personal, social, and cultural values participate in the process of research. In addition, Braun and Clarke (2022b) saw the inherent researcher's subjectivity as a primary tool and the first core assumption of reflexive thematic analysis, and considered it as a resource, and not an impediment in the process of data analysis.

An important advantage of reflexive thematic analysis is its flexibility. As such, it can be undertaken with "quite different guiding theories (albeit constrained by qualitative paradigmatic and epistemological assumptions about meaningful knowledge and knowledge production), and using quite different orientations to data, coding practices

and theme development" (Braun & Clarke, 2021, p. 331). Therefore, this method is not linked to any specific epistemological or theoretical approach (Maguire & Delahunt, 2017), and it does not imply rigid rules. The following reflexive thematic analysis's six phases represented the guide for the researcher in the process of data analysis: 1) researcher's data familiarization; 2) data code generation; 3) initial theme generation; 4) themes developing and reviewing; 5) refining, defining, and naming themes; and 6) writing up (Braun & Clarke, 2022b).

Data familiarization. During the first stage, data familiarization, the researcher transcribed the interviews. Transcribing refers to converting the audio and video recordings to word-processed documents (Creswell, 2015; Saunders et al., 2023). Transcription is the best way for the researchers to immerse themselves in the data, and it is the starting point for "searching for meanings, patterns and so on" (Braun & Clarke, 2006, p. 87). It is important to underline that the researcher's analytic sensibility skill, which "relates to taking an inquiring and interpretative position on data" (Braun & Clarke, 2013, p. 204), can help improve the quality of data analysis, starting with this data familiarization step. Each interview was transcribed by the researcher as soon as possible after it was performed. At the end of it, the researcher examined the transcript for accuracy and corrected any errors. After that, the researcher sent a copy of the final version of the transcript to the participant to check if that person had accepted, during the interview, to do it. By viewing and hearing the audio-video records during the transcribing process and by reading the transcripts several times until obtaining accurate final versions of them, the researcher started to become familiar and even critically engaged with the data (by taking notes), as suggested by Braun and Clarke (2022b). In

fact, the researcher's reflexivity related to data allowed him to use analytical reasoning both before and, especially, during data collection.

Data code generation. The second phase followed by the researcher was code generation. In qualitative research, a code "is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2016, p. 4). When using the inductive approach in a case study, like in the current research, Saunders et al. (2023) suggested Gioia's methodology for the inductive approach (Gioia et al., 2013), "to code all your data, as you explore all possible meanings to guide the direction of your research" (p. 668), and that RQs could help the researcher "select which data to code" (p. 670). Consequently, the researcher followed the advice of Gioia et al. (2013) and Saunders et al. (2023) to code all data to explore all the possible research directions. He also paid attention to coding the text directly related to RQs. "Coding is a cyclical act" (Saldaña, 2016, p. 9), composed of two, three, or even more cycles, because it is a dynamic process. As a datum coded could evolve during the coding process (Miles et al., 2014; Saldaña, 2016), the researcher used the recommendation of Braun and Clarke (2022b) to code based on what is best for each situation.

In the current study, the researcher improved the coding by going through three cycles, and by systematically going back and forth several times to review and refine it. Moreover, the researcher used several coding methods. Thus, based on suggestions of Miles et al. (2014) and Saldaña (2016), during the manual coding cycles, the researcher used the following coding methods: process coding (to underline the emerging ideas), values coding (to highlight the attitudes or perspectives of interviewees), evaluation

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coding (to systematically assess the data), holistic coding (to summarize large units of data), simultaneous coding (to apply more than one code to the same unit of data), subcoding (to increase the level of detail of primary codes), and creating codes (based on RQs and interview questions).

Although some scholars have proposed to improve the validity of coding by having another person code at least partially the data, it is questionable how much a study performed by one individual could benefit from using another coder. "Each person approaching the data will do so with their own goals and perspective, and so each will see and code differently. Coding is designed to support analysis – it is not an end in itself" (Bazeley & Jackson, 2013, p. 93). In addition, in a reflexive thematic analysis, because of each researcher's subjectivity, it is recommended that only the researcher do the coding. However, the researcher used NVivo (QSR International Pty Ltd., 2020a) autocoding as a proxy for the additional coder. More than that, automatically generated codes could serve "as a proxy for an additional rater" (Pathak et al., 2023, p. 85). In addition, he improved the dependability/reliability by checking coding consistency over time, as proposed by Richards (2015). Thus, he coded more than once himself and compared and resolved differences. The researcher's reflexivity helped him to improve the coding, by adding, changing, or removing various codes. Meanwhile, the rigor imposed by this method allowed refining all codes systematically and thoroughly. As no scholar has proposed a test validation for coding quality, refining the codes at least twice could imply improved quality (Braun & Clarke, 2022b).

In the current study, the researcher started the data analysis in NVivo by using autocoding, based on paragraphs, to generate automatic codes for all 43 transcripts. As

such, NVivo generated a code for each paragraph. The automatic codes and their

subcomponents can be found in Appendix G. The automatic codes were then used as a

skeleton for additional manual coding. The autocoding skeleton is validated by the

NVivo system algorithm itself (QSR International Pty Ltd., 2020b). In fact, the

employment of any computer-aided qualitative data analysis software can improve the

validity of research (Feng & Behar-Horenstein, 2019). During the manual coding process,

the researcher coded each idea found in transcripts and started to organize them

hierarchically, in parent or child codes.

Initial theme generation. The third stage involved generating initial themes,

where the focus moved from exploring micro-details (the generation of codes) to macro-

details (the generation of themes). However, this stage is only the beginning of the theme

development process (Braun & Clarke, 2022b). Boyatzis (1998) claimed that "a theme is

a pattern found in the information that at the minimum describes and organizes possible

observations or at the maximum interprets aspects of the phenomenon" (p. vii). The

themes derive from codes, but they are not something that is "coded" (Saldaña, 2016, p.

15). Put simply, they "are similar codes aggregated together to form a major idea"

(Creswell, 2015, p. 247). In addition, a theme could enclose subthemes, which share the

central organizing concept (key concept) with the theme but relate to smaller, specific

patterns (Braun & Clarke, 2022b). At these stages, the researcher had to determine the

potential themes to continue the analysis (Saunders et al., 2023). The researcher reflected

on the theme-evaluation questions that Braun and Clarke (2022b) proposed: "Does this

provisional theme capture something meaningful? Is it coherent, with a central idea that

meshes the data and codes together? Does it have clear boundaries?" (p.84).

Themes development and review. In the fourth stage, the researcher developed "provisional or candidate themes into final themes" (Herzog et al., 2019, p. 395) and checked them for validity (Braun & Clarke, 2006). He discovered, for instance, that several themes were not supported by evidence as much as the others (Nowell et al., 2017). As a consequence, those themes collapsed into other themes or became subthemes of others. However, the frequency of a theme is less important than its salience and addressing the RQs (Braun & Clarke, 2022b). During the theme development and review process, the researcher subjectively considered answers to questions, such as the following: Do the themes make sense? Is it clear what the theme includes and excludes? Is there enough data to support a specific theme? Or is there too much? If themes overlap, are they really separate themes? Are the data from some themes lacking coherence? Is the information conveyed by some themes more important in the context of the study than others? (Braun & Clarke, 2022b; Maguire & Delahunt, 2017). After the review, the researcher renamed some of the themes and subthemes to better provide information about their coded data.

Refining, defining, and naming themes. In the fifth phase, the researcher reorganized coded data and checked whether the themes were coherent to continue the analysis (Saunders et al., 2023). At this stage, the researcher performed detailed analysis of the themes by naming them, developing stories behind them, providing short definitions of them, and also defining the final version of the themes. The revised thematic coding structure, containing ten main themes/codes is presented in Table 4-4. For each item, it shows the number of participants who discussed it and whether it was also captured by autocoding. The themes are elaborated on in Chapter 5, where the results

are presented. It is the sixth and final phase in reflective thematic analysis (Braun &

Clarke, 2022b).

Table 4-4: *The thematic coding structure*

Themes	Auto-coded	No. of participants
1. Considerations of PMR in Ontario universities	Yes	43
2. Influential political and regulatory factors to using PMR	Yes	43
3. Influences of organizational size and organizational complexity over adoption of PMR		33
4. PMR use imposed by governments and by regulatory factors	Yes	42
5. PMR indicators	Yes	35
6. Use of PMR information for learning and development		36
7. Other purposes of using PMR		16
8. Consequences of using PMR over organizational performance		28
9. Consequences of using PMR for accountability, transparency, and legitimacy	Yes	41
10. Consequences of using PMR information over audience and public image	Yes	40

5 Results

The write-up of the thematic analysis was conducted in the sixth phase and provided "a concise, coherent, logical, non-repetitive and interesting account of the story the data tell – within and across themes" (Braun & Clarke, 2006, p. 93). Writing the report is an essential component of the analytical process, and it represents a final opportunity for refining (Braun & Clarke, 2022a, 2022b). Within this stage, the researcher discussed and developed the narratives of each theme, incorporating all findings, even those that deviate from the expected patterns, to improve their validity and credibility. Extensive use of quotations was used to illustrate the points (Nowell et al., 2017). He analyzed and interpreted the data mostly in connection with RQs, using many examples to prove his claims. The report provides a comprehensive view of the current case study, and how its research objectives were met.

For the analytic story, the researcher adhered to the guideline outlined by Braun and Clarke (2022b). He began the results chapter by presenting a table of the themes analyzed, including the descriptions of the central organizing concepts and boundaries of each theme. Using a data-driven (inductive) approach, he balanced equally both data extracts and analytic narratives. The selection of data extracts was done to effectively support the analytical claims. In doing so, the researcher prioritized the following strategy to select data extracts: 1) choosing the most suitable example; 2) selecting examples from multiple interviews, but limiting it to one per interview; 3) using clear and concise data; 4) including quotations for each theme, with priority given to the one that highlights the central organizing concept of the theme; 5) avoiding repetition of examples across

themes; 6) including only the relevant portions of the data; and 7) providing explanations and contextualization for the data.

The analysis of themes is performed under the umbrella of the three RQs of the current study. Although the coding structure was created using an inductive approach, the themes that resulted have a natural lead to answering specific RQs. Table 5-1 was developed to show how the themes are related to the eight items of the following RQs:

1) How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of universities in Ontario, Canada?

2) To what extent is PMR used by universities in Ontario, Canada, for political, regulatory, and compliance reporting, and for learning and development?

3) To what extent does the use of PMR by public universities in Ontario, Canada, impact organizational performance, affect accountability and organizational legitimacy, and lead to comparisons and rankings of academic institutions?

Table 5-1: *The links between themes and research questions*

Research question	Item	Related themes
1. How do […item…] influence the use of performance information by the management and regulators of universities in Ontario, Canada?	Political and regulatory factors	1. Considerations of PMR in Ontario universities
		2. Influential political and regulatory factors to using PMR
	Organizational size and organizational complexity	3. Influences of organizational size and organizational complexity over adoption of PMR
2. To what extent is PMR used by universities in Ontario, Canada, for […item…]?	Political, regulatory, and compliance reporting	4. PMR use imposed by governments and by regulatory factors
		5. PMR indicators
	Learning and development	6. Use of PMR information for organizational learning and development
	Other uses	7. Other purposes of using PMR
3. To what extent does the use of PMR by public universities in Ontario, Canada, […item…]?	Impacting organizational performance	8. Consequences of using PMR over organizational performance
	Affecting accountability and organizational legitimacy	9. Consequences of using PMR information for accountability, transparency, and legitimacy
	Leading to comparisons and rankings of academic institutions	10. Consequences of using PMR information over audience and public image

It is important to remember that the analysis of the current study followed the attributes of institutional theory and contingency theory. The analysis of themes was performed by presenting "data extracts and analytic narrative", using the researcher's "interpretation of the data and their meaning" (Braun & Clarke, 2022b, p. 131). Besides, as mentioned, in the present study, triangulation was accomplished by analyzing the additional (to the semi-structured interviews) three structured interview questions, and secondary documents. Thus, whenever possible, the analysis included some descriptive statistics of the supplementary structured interview questions (Appendix H), and information extracted from secondary documents. However, the present study being qualitative, it does not include counting responses. Braun and Clarke (2013) claimed that "because interviews are fluid and flexible data collection tools, and interview questions are responsive to the participants' developing account, it's not the case that every

participant in an interview study discusses exactly the same issues" (p. 261). Put simply, if a participant did not elaborate on a certain issue, this does not imply that the participant did not think about it. In addition, each university represented in the study has its own particularities, and the participants from the same university came from various positions with specific issues (for instance, the vice-president research vs the dean of the faculty of education). The references to descriptive statistics did not enclose actual numbers but rather estimative expressions, as following: 1) *a significant number* was used to occurrences greater than 67%, 2) *a moderate number* was used to occurrences between 33 and 67%, and 3) *a low number* was used to occurrences lower than 33%.

In the following analysis, the researcher selected, generally, up to three extracts of data to illustrate each of his points. In this analysis, one could find extracts from all interviews. Although the researcher wanted to present data extracts as concise as possible, as expected, many data extracts are complex, referring to a mix of ideas. However, the researcher privileged the extracts containing thoughts briefly and concisely presented. The analysis was conducted not only to unveil patterns but also to interpret the societal value of the use of PMR in universities. In order to protect the anonymity of the individual participants, they are referred to only as P01 – P43 in the following analyses.

5.1 Research question 1

How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of universities in Ontario, Canada?

Three themes are related to this RQ, namely: 1) Considerations of PMR in Ontario universities, 2) Influential political and regulatory factors to using PMR, and 3) Influences of organizational size and organizational complexity over adoption of PMR. Regardless of the answers obtained, "some performance measures are always going to be collected" (P12). An analysis of the themes and the subthemes related to this RQ is presented below.

5.1.1 Considerations of performance measurement in Ontario universities

The concept of performance is vast, as well as that of PMR. Within their academic missions, universities use various measures, mandated or not by government, to assess the progress towards their goals (P41). The measurements are usually performed formally, either for internal users, such as the top management, or for external users, like provincial or federal government, accreditation bodies, quality councils, or peer reviews (P27; P35). However, historically, compared to other Western countries, Canada has had its academic environment relatively free from performance measures required by governments (P36).

Almost all participants praised the researcher for the topic selected for his study, because "there's lots of work that could be done in that regard" (P16). They underlined that for universities it is an important and timely subject to be examined "because

performance metrics of various sorts are becoming a very popular way to run our institutions" (P16). Besides, "performance measurement is used on a very strong and very high level in all areas whatsoever, always with the goal of maximizing your funding and reporting on compliance" (P10). In this sense, universities represent "a very nuanced sector with challenges around, setting and achieving performance goals" (P09). They mentioned that not just any performance indicator is helping either for university managements or for other stakeholders. Thus, identifying the most pertinent performance metrics to be employed by Ontario universities should be an important topic of future studies. Despite the benefits of using PMR, universities are just at the starting point of the process of developing pertinent performance metrics. A participant mentioned that universities "are too new in space to even know what good performance would look like in that space" (P23). Once determined, the information provided by these measurements has the potential to improve academic endeavors, but also to determine "unintended consequences" (P09). In addition, over time a pertinent and mature PMRS can contribute to helping academic managers to select what performance indicators to measure, how to measure them, and how to collect the data.

Performance has various meanings in the perception of participants, depending on circumstances. From this perspective, sometimes "performance is just to get the job done. But sometimes performance is how well you did the job. So, there would be compliance around ethics, would be compliance around funding, compliance around number of students trained" (P10). In a broader manner, another participant defined academic performance as the extent to which a university fulfills its academic objective. Thus, "performance measurement is a process of understanding student success, understanding

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the successes of our academic mission. We rely on different structures to carefully monitor and evaluate institutional successes as well as identify our challenges" (P35). However, the current understanding of performance in HE is unrealistic and reductionist, and today university performance is more related to succeeding graduate students in the job market than to building responsible members of society (P35).

The PMR process is highly challenging. Some participants questioned the methodologies adopted to measure performance. They stressed that performance should be described not only quantitatively but also qualitatively, as long as a figure cannot adequately convey information about such a subject (P01; P15). In this connection, "to have a lot more context, you can still provide a number, but the number itself is not enough. You need to have a number and a lot of explanations behind them" (P15). For instance, how is the success of the Equity, Diversity and Inclusion (EDI) program's policy adoption measured? One participant claimed that the actual outcomes should include both quantitative and qualitative arguments. For instance, assessing the inclusive environment at a university cannot be measured by numbers, but rather by the sense of inclusion experienced by its people (P15).

The aim of measuring performance is not always clear. For example, are (or should) universities be held accountable for the money they receive? Or for improving the quality of our society? In this sense, there is an ongoing debate regarding the definitions of societal good and of value. Despite this, in terms of PMR, universities have to adhere to the definitions set by the government, while also considering their own definitions, which may differ from those of government. Therefore, universities have the delicate mission to balance between the two (P26).

Some participants reported that PMR started to be used in Ontario universities long before the first version of SMA, especially for public accountability matters. For instance, one of them underlined that the university has "a rich history of performance measurement that long predates the current version of the performance metrics with the government", and that "performance measures from the government have gone back since 1990s" (P05). In fact, the history of using PMR, including the use of data analysis by organizational management, is longer than that of SMAs (P23).

The advancement in data collection, analytics, and technology helped the evolution of PMR practices. To illustrate, "if you want to collect institution wide data, you have to use appropriate systems. The university has an institutional research unit. It collects data, including financial data. And there's been a lot of work, in fact, to provide better information at unit level, at faculty level" (P02). In addition, academic accountability played a significant influence in developing PMR in the 1990s. The government, the COU, and individual universities all responded to this. The Broadhurst Report (Task Force on University Accountability, 1993), which highlighted accountability measures and their systematic collection, was an example of this. During that specific decade, advancements in IT and data processing made it easier to collect and analyze data, leading to the creation of various indicators for different purposes. Consequently, government measures are just a fraction of the available data obtained by universities (P07).

Historically, SMAs were introduced in Ontario in the early 2000s by the provincial government with the aim of creating a more varied and specialized post-secondary education system. Ontario government often said that "we don't want every

university to be the same. We don't want them to all try to be doing the same things, pursuing the same goals. People should focus on their areas of strength and should differentiate according to that" (P39). PMRs were used increasingly from one version of SMA to another. Consequently, "there is staff who become experts in working on these documents and providing the data and assessing the data, and there's a whole institutional function dedicated to managing that and making decisions about how we weight these metrics, how do we decide metrics that we want to use" (P39).

However, even today, if we look globally to HE, "the Canadian sector is … relatively free from performance measures. So, if we look at U.K. or Australia, or in some cases, in certain jurisdictions in the US, Canada has had its environment relatively free from performance measures, government accountability" (P36). It is noteworthy that the landscape of HE is continually evolving, with the shift from elite to mass education. The use of PMR in Ontario universities is likely to adapt to emerging trends and to evolving needs of the HE sector due to the increased expenses and the need for accountability (P39). In addition, the lately extensive use of PMR at university level has led to creating institutional planning and analysis offices within each university. Within COU they form The Council on University Planning and Analysis (COU, n.d.).

5.1.2 Influential political and regulatory factors to using performance measurement

This theme captured various political and regulatory elements that influence the adoption or the implementation of PMR by Ontario universities. PMR is influenced, in parallel, by factors that are internal and by factors that are external to universities. Among the major external factors one can find various sets of political and regulatory factors. In

this sense, universities deal with sets of bureaucratic long-term accountable government regulations, which is a characteristic of the academic environment. As one participant pointed out, "as a publicly funded/aided university, we are accountable to the larger public. There are government regulations that universities have to strictly follow" (P35). However, not all participants understand why the government imposes the use of PMR for determining various outcomes, except for public accountability. Usually, government regulations and the use of PMR are best suited when "you're trying to solve a particular problem. … I fear, here is just an overextension of a bureaucracy. Therefore, it makes up ways and means to try and influence others and to try and legitimize their own existence through that" (P18). Universities also deal with sets of political governmental regulations, which are temporary and easily changeable, being influenced by the government's political color (P26).

Political and regulatory factors have an unquestionable impact over the use of PMR and over the way universities plan their future (P01). Universities deal permanently with several types of government regulations. The regulations "born of political parties" (P40) represent such an example. For instance, the liberal governments encourage a "diversified education" (P37), so at least one university in Ontario offers any education needed. By contrast, the conservative governments want to make sure that "there is a particular set of skills, and everybody is going to teach it. So, we need to make sure that people get employed for what is in demand now" (P37). In fact, "a conservative government believes that the government should behave like business" and it really pays attention to performance indicators (P40). Besides, "we vacillate from liberal to conservative to liberal every eight years. So, we're always constantly on this pendulum"

(P13). Therefore, governments' doctrines, which are radically different from each other, influence the ways universities are assessed (P37). And "it's extremely complicated. It's extremely messy" (P13). In fact, "each government has their own sort of take on what the role of the university should be. And it slightly changes the performance measurement a little bit on how they collect it or define it" (P27). Actually, "for political reasons, a lot of times the performance metrics have goals. Sometimes it's access to universities, sometimes it's really employment related outcomes" (P27).

However, "from the point of view of our reporting to the government and what we do, we take the government-imposed performance metrics very, very seriously, and we monitor them, and we watch how we're doing in that regard" (P16). Universities "follow the rule and follow the law. They are law abiding institutions" (P18). To address governmental regulation, Ontario universities use proactive measures and strategies, including strategies of using PMR, as indicated by one interviewee:

> How did those government regulations affect or influence the use of performance measures? We knew we had to do it. We figured out, we analyzed best case, worst case, middle case scenario, struck committees in our university to establish how we would create our measurements for reporting. There was a little bit of statistical assessment and working with some mathematicians at the university to figure out the most advantageous way to measure and report within the confines of the government regulations, so that we were not unintentionally hurting ourselves. And once we wrapped our minds around it, the anxieties didn't go away, but it was mitigated. Let me put it that way. (P26)

Provincial laws and regulations require universities to be transparent, and to disclose financial information and other performance data. From this perspective, "performance measurement could be seen as part of accountability" (P39), and "performance indicators and accountability are hand-in-hand. And the easiest way to prove this accountability is to show some performance data" (P13). Moreover, "the big driver for performance accountability frameworks and metrics is the desire of the public to make sure that institutions are accountable" (P24). Simply informing the large public, or only the community, is a sensible source of adopting the habit of using PMR. This process is driven by the desire to provide transparency and accountability (P23).

Ontario universities are simply "publicly accountable institutions" (P30). "It is important for us to be transparent about our operations and report on how we are utilizing the resources that we have and to measure the outputs of our operations" (P41). Universities always should consider that "taxpayers contribute to the salaries and to the operations of an institution" (P24). Internally, one participant pointed out that the university uses PMR mainly because the management is accountable in the first place to university's board and senate, although performance data are shared with other bodies as well (P05; P06). On the other hand, externally, the government and the general public are the main targets. It is always important to remember that "often government will be persuaded by the public's desire for something to happen within the context of a university" (P29). Moreover, universities are accountable to their local, provincial, federal, and even global communities for active support. For instance, "the performance of a university on questions of GHG [greenhouse gas] emissions and the like are very important. And so, it should be seen to be a leader, contributing to the Sustainable

Development Goals of United Nations" (P29). Thus, universities are expected to gather performance indicators on those measures as well.

The main political factors that influence the use of PMR by Ontario universities are the PBF and the SMA, as agreed by several participants (P01; P08; P09). In fact, "the strongest example of that is the SMA" (P12), by which the government "is definitely imposing the use of performance measurement on the university as a whole" (P01). In the last decade, the role of governmental regulations increased steadily, especially through SMAs. In fact, universities "are obligated to satisfy the conditions of the agreement. It is an imposition because the government was the one that came up and said that we should have this strategic mandate agreement" (P15). The SMA, "with performance measurements built-in, incentivizes the institution to try to reach those outcomes that are our targets in each of the metrics. That's the most direct way in which a government policy can influence behavior at the university" (P22). In practice, "the imposition of the SMA required us to develop a whole bunch of metrics and systems and processes that we needed to put in place to measure those" (P09). In addition, the university has "to monitor those things, report to the government on those things and then they [the government] post our performance online. They have a dashboard that they created" (P12). SMAs are "government regulations that universities have to strictly follow" (P35).

From April 1, 2020, the Government of Ontario implemented SMA3, which includes the last PBF model of the provincial government. Under the SMA3, the Ontario government requires the reporting of ten performance indicators for PBF purposes (Government of Ontario, n.d.). It appears that the PBF mechanism is one the most significant government regulations, if not the most important, by linking performance

indicators to funding algorithms and formulas (P01; P05; P08; P17; P22; P29). In addition, the provincial government uses performance information as business indicators to "restructure" the universities as an entity that "knows what's best for the sector" (P40). Some participants also mentioned the Tri-Council (Canadian Institutes of Health Research et al., 2018) as an important Canadian funding organization for HE, that requires increasingly performance information (P01). It is "a real focus now for us, because improving the number of grants we get and increasing the dollar value of the research funding" (P26).

Although not a political factor per se, the major internal "political" factor that influences the adoption of PMR in Ontario universities is their Boards of Governors. They require reports on specific metrics, which are permanently monitored, to ensure that universities are not exposed to unnecessary financial risks (P04; P12), or that the "students succeed, and the purpose of their academic mission is achieved" (P35). In many situations, the Board requires "another set of performance measures" (P16) than the government seeks, often used in connection with university's strategic plan. "In addition to what the government is doing, we use performance metrics … to measure progress towards goals that we established through something like our strategic plan" (P23).

In the same sense, the top management is another internal "political" factor that has a great influence over the use of PMR by Ontario universities. For example, one participant mentioned how the management of university used PMR to increase the retention rate percentage, which dropped significantly during the pandemic. In this respect, the management committed a great deal of time for "researching, analyzing, talking to students who dropped out, figuring out what the factors were. We're running

and measuring, using performance measurement, our retention rates. … I believe we just had a 14 percent increase in retention because of our efforts" (P40). In a comparable manner, another university has "an integrated planning and budgeting framework that we use to guide our decision making and also our reporting and our accountability reporting within our university" (P30). Similarly, at a "very much evidence-based decision making" university, the management is "constantly trying to figure out what metrics would inform the decisions that have to be made" (P27). Consequently, any evidence-based decision-making university uses PMR extensively (P01).

Through accreditation processes and standards of governmental and other external accreditation bodies, universities and their programs are subject to rigorous periodic evaluation of academic quality. For example, the Ontario quality assurance framework includes program reviews and institutional audits, in which performance information is extensively used (Ontario Universities Council on Quality Assurance, n.d.). Universities with the most fields that require accreditation are the most influenced by regulatory factors, and they underlined the use of PMR in the process of quality assurance (P05; P08; P12; P23; P26). Thus, "every seven years when each program goes through the quality assurance process, suddenly those performance indicators have a huge amount of importance and then they're often forgotten about for the next seven years. It is a primary audience" (P01). The performance information required by accreditation bodies is very important for professional schools, such as business, engineering, or law schools. In this way, external accreditation bodies, like the Association to Advance Collegiate Schools of Business and bar associations, use performance data to assess the education quality of faculty (P40).

In addition, a specific evaluation of Ontario universities is provided by the credit rating agencies. They assess the financial health and risk of universities because academic institutions often borrow funds for financing various organizational projects, such as infrastructures. In so doing, universities must provide them with pertinent information, including performance data (P12). "Performance measurement is tied to funding and the cost of future borrowing. If you don't actually monitor and manage the performance measures, your lending rating agency will rate you as a poorly managed organization and the cost to borrow money will be more" (P17). A higher credit rating improves the confidence of the public, borrowing structures, donors in the financial stability of university, and helps to decrease the cost of borrowing (P12; P16). In addition, although not directly linked to influencing the use of PMR by universities, the fiscal factors could be related to austerity periods. For example, the fiscal austerity could increase the need of public accountability processes, that contain a great use of performance information, as illustrated by the public academic contexts from UK, Australia, or New Zealand (P35).

The answers to the supplementary structured question Q1a, which was *To what extent did the provincial governmental requirements affect your university's decision to implement PMRS, from 1 (hardly at all) to 5 (a great extent)?*, confirm what participants claimed in their semi-structured interviews. More specifically, a significant number of participants out of the 37 who answered Q1a reported that their universities' decision to implement PMRS is very affected or affected to a great extent by the provincial governmental requirements. Conversely, the participants who reported that their universities' decision to implement PMRS is less than affected to a great extent by the

provincial governmental requirements considered that their universities were involved in PMR long before the governmental and other regulatory impositions. They represent a moderate number out of the 37 participants who responded.

5.1.3 Influences of organizational size and organizational complexity over adoption of performance measurement

The researcher examined how various contexts, such as organizational size or organizational complexity, could influence the use of PMR in universities. Although the researcher provided the definitions and explained the differences between the concepts of organizational size and organizational complexity, not all participants took them into consideration during the interviews. Consequently, apparently some of participants used these terms in their answers interchangeably. However, organizational size and organizational complexity are distinct, although they can also be related. They refer to different aspects of an organization's structure, operations, and characteristics. The size of university refers to the scale of organization, that includes the number of students, employees, faculty, or physical facilities. In the current study, Ontario universities are divided into three sizes, namely large, medium, and small. Alternatively, the complexity of university refers to the breadth and diversity of departments, processes, activities, and relationships. In the present research, university complexity is categorized into medical-doctoral research-intensive, comprehensive teaching and research, and primarily undergraduate. Depending on their structures, both the larger and smaller universities could be either relatively simple or highly complex in their structures, although larger ones tend to be more complex than smaller ones. All medical-doctoral research-intensive universities and comprehensive teaching and research universities in Ontario are only

large or medium in size (none of them being small), whereas all primarily undergraduate universities are small (with one exception, which is medium). Therefore, in Ontario the larger a university, the more complex it is. Consequently, it is understandable that there is an apparent confusion between university size and university complexity in the participants' perspective.

For a moderate number of participants in the current study, the organizational size plays a critical role in the level of use of PMR. An interviewee from a large university pointed out that without a PMRS, "we would easily be chaotic" (P40). Generally, the larger universities have "more resources that can be pointed at doing any individual thing, which includes implementation of a performance measurement system" (P29) than the smaller ones. Therefore, the existence of financial and human resources to adopt and to use a PMRS represents an important challenge for the small universities, which have limited budgets (P41). Considering this, some participants from small universities expressed their frustration for being penalized to not participate in some studies they are interested in. For example, "to get alumni satisfaction, the cost to participate in that study is fairly prohibitive… We've not participated in STARS [Sustainability Tracking, Assessment & Rating System], which is an external ranking of sustainability (P09).

The 32 answers received to the supplementary structured question Q1b, which was *To what extent did the size of university affect your university's decision to implement PMRS, from 1 (hardly at all) to 5 (a great extent)?*, confirm what the above mentioned participants claimed in their semi-structured interviews. In this respect, the participants who answered pointed out almost evenly the following three categories: 1) hardly at all, 2) slightly and moderately, and 3) very and to a great extent. Moreover, the

same trend is offered by answers when they are broken down by size or complexity of universities.

In relation to how organizational complexity determines the level of using PMR, a common point of view of a significant number of participants is that more complex organizations impose the use of PMR to a greater extent than the less complex organizations. Therefore, "more complex universities might have more measures because of their wider span of control and the distance between the senior level and all of their divisions. The only way they can assess performance, perhaps, is by reviewing the metrics" (P09). However, it is difficult to assess the results of a complex organization without a sound PMRS. For instance, in a medical-doctoral research-intensive university there is "a variety of different ways to measure performance, but we don't have one size fits all because our faculties are so vastly different. If you consider Health Science, what it has to offer …It cannot be the same for the Faculty of Business, for example" (P36). In addition, another participant, from a comprehensive teaching and research university, highlighted that "the more complex the institution, more likely you have to have performance metric systems, just because it's harder to track outcomes. And it's a tool for being able to ensure that the output of whatever you're doing is reaching whatever your objectives are" (P22).

On the other hand, "a smaller university that is very cohesive administratively, we know when things are going well or are not going well, and we don't necessarily need reports" (P09). In this sense, a participant from an undergraduate liberal arts university, which is the least complex type of university, confirmed that this kind of organization asks for less performance information in the process of management than others. For

instance, its current president is an action-oriented person who "does not want to see very complicated plans. He wants to be nimble and opportunistic. And he believes success is evident by looking around. So, he was not himself predisposed to lead with big focus on performance metrics" (P09). Thus, this environment does not lend itself to the utilization of PMR.

The 32 answers received to the supplementary structured question Q1c, which was *To what extent did the complexity of university affect your university's decision to implement PMRS, from 1 (hardly at all) to 5 (to a great extent)?*, confirm what participants claimed in their semi-structured interviews. From this perspective, 16 participants reported that their universities' decision to implement PMRS is very or to a great extent affected by the universities' complexity.

Although, based on the participants' answers to the supplementary structured questions Q1b and Q1c, apparently the organizational complexity has a slightly more influence than organizational size, it must be considered that the two concepts, organizational size and organizational complexity, were for many of respondents confounded. Therefore, the current study cannot conclusively show that the contingent factors of organization size and complexity impact the use or implementation of PMRSs by public universities in Ontario.

The answers to the supplementary structured question Q1d, which was *What other factors and to what extent did they affect your university's decision to implement PMRS, from 1 (hardly at all) to 5 (to a great extent)?*, show that at least four out of 43 participants mentioned that the following factors affected at least moderately their universities' decision to implement PMRS: decision-making, student experience,

employee performance, external reporting requirements, public accountability, comparability with other universities, environmental factors, organizational culture, financial stability, and the internal accountability.

5.2 Research question 2

To what extent is PMR used by universities in Ontario, Canada, for political, regulatory, and compliance reporting, and for learning and development?

Four themes are related to this RQ, namely: 1) PMR use imposed by governments and by regulatory factors, 2) PMR indicators, 3) Use of PMR information for learning and development, and 4) Other purposes of using PMR. An analysis of the themes related to this RQ is presented below.

5.2.1 Performance measurement use imposed by governments and by regulatory factors

"We're trying to collect that information. And the larger question now is 'and now that you've got it, what are you going to do with it?'" (P23). From a political perspective, universities are required to report to the Ministry of Colleges and Universities on a range of domains, including Indigenous Education funding, mental health funding, and more. Government regulations can be long-term, bureaucratic, or politically driven. Long-term regulations ensure academic standards, by assessing, for instance, degree programs and tuition, and they are not frequently changed. In this sense, universities are heavily involved in compliance reporting (P30; P43). Bureaucratic regulations are more organizational administrative rules, with a rate of change between long-term and politically driven regulations. Finally, politically driven regulations are

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influenced by priorities of the government in power, and, obviously, they are subject to frequent changes. For example, in times of crisis, such as COVID, these regulations can be quickly adopted (P40).

SMAs and the politically driven regulations are distinct, although interconnected elements of the governance of Ontario universities. Generally, participants stated that PMR is a key component of SMA assessment. For instance, throughout the duration of the SMA, PMR is used to monitor progress toward designated targets and to identify areas that may require adjustments (P04). The provincial government selects and defines the performance metrics to be used in SMAs. The list of the selected indicators "was a clear message [of government] to institutions to say this is the new approach", and universities sought an "understanding the direction that the government was exploring, trying to shape that direction, trying to inform that direction, trying to stay connected to it, and to ensure the best possible outcomes" (P23). As these indicators cover important domains, such as academic excellence, student satisfaction, or research outcomes, they should be meaningful. "We just want to understand the definitions that were being proposed, the sources of data that were going to be used, to ensure that we would have confidence that was a realistic and reasonable measure of our performance" (P23).

Within the same perspective, other participants challenged the measurement system used by SMA. In fact, the actual SMA seems to be too simplistic to measure and to compare universities with various features related to size, complexity, geographic region, or program specializations (P03). This is why it seems "the biggest difficulty with performance-based funding is choosing the right metrics that cut across and are applicable to the entire sector" (P24). However, other participants questioned whether the

selected metrics really measure what they are intended to (P29; P39). Many interviewees assessed this tool moderately negative or even very negative towards the utility of the use by academic institutions, and they questioned the efficiency of this regulation. In this connection, the governmental bureaucracy is accused of inventing ways and means to validate its own existence. By following SMA, universities are "law abiding institutions" (P18).

Moreover, organizational survival represents a critical factor that influences the use of PMR by Ontario universities (P40). The process of selecting the performance metrics to be measured was disclosed by the participant:

> We have to choose and report in the most risk averse possible way to ensure our survival. And that was a process of educating all of the administrators within the university. How do we game the system to survive? And it took about a year to be indoctrinated with 'no, the most important thing when dealing with government regulatory environment is not to introduce risk to your survival'. (P40)

One of the topics of SMAs the participants raised was PBF. PBF is an element of SMA, and it refers to a funding model based on universities' performance data. The use of performance information for public funding, including through SMA, determined various points of view among participants, although the balance is more negative than positive. Among the positive aspects of using performance information, one can find that performance metrics are good drivers for accountability, and they can help institutions to deliver qualitative education to students (P24). Another positive opinion is that funding tied to performance is beneficial, although not all universities are the same. So, the government should focus on regional mandates, such as supporting indigenous students

(P28). With a rather neutral opinion, other participants claimed that not all performance metrics on which performance funding is based through SMA are in control of universities, such as the "one that compares the size of the institution to the size of the city that it's in… To make sense, measures have to be something that is within your control" (P12).

Many respondents mentioned also that the PBF is not always really tied to performance. For SMA3, the government selected the indicators "very poorly", and, in particular, indicators "that universities could not influence. And there is no point in tying funding to indicators that cannot be influenced by the university, that just makes them susceptible to chance" (P01). Moreover, PBF is rather tied to arbitrary measures that are unrelated to performance. The objection is not about dislike for use of PMR, but rather the lack of it (P21). From the same perspective, other respondents stated that the outputs of funding formula from PBF are unfair, especially to the small and remote universities.

Both SMAs and PBF, and consequently PMR, are presumed to contribute to increasing accountability and transparency of universities. The general perspective of interviewees is that "a publicly funded/aided university [is] accountable to the larger public" (P35). "As a public university, we have brought accountability to all taxpayers. It's important for us to be transparent about our operations and report on how we're utilizing the resources that we have and to measure the outputs of our operations" (P41). As "there is absolutely a need for accountability and transparency" (P30), "performance measurement could be seen as part of accountability" (P39). And this opinion is shared by most of the participants. Moreover, "performance indicators and accountability are hand-in-hand. And the easiest way to prove this accountability is to show some

performance data" (P13). As a matter of fact, the "performance measures are often used as proxies to show what we are doing, how we are doing it, how we compare to our peers, how we are improving, and, in general, to communicate to a variety of audiences" (P23). In general, participants claimed that their universities use PMR for informing internal governance, communities, external audiences, other stakeholders, with all their interests and demands, including accountability, in addition to any other provincial or federal regulatory and compliance reporting (P05; P07).

Besides SMA and PBF, imposed by Ontario government, other regulatory factors impact the way universities measure their performance in various areas. PMR is used "on a very strong and very high level in all areas whatsoever, always with the goals of maximizing your funding and reporting on compliance" (P10). The participants mentioned that universities have many obligations about reporting on research and innovation, or procurement. Compliance reporting is also important, with compliance around ethics, funding, compliance reporting with industry, the number of students trained, or the sexual assault policy (P10; P19; P27; P30; P42; P43). Universities are also required to report on the quality of the accredited programs (P40; P43).

The answers to the supplementary structured question Q2a, which was *To what extent does your university use performance measures for political, regulatory, and compliance reporting, from 1 (hardly at all) to 5 (to a great extent)?*, confirm what participants claimed in their semi-structured interviews. Thus, all 36 participants who answered the question Q2a reported that their universities use performance measures for political, regulatory, and compliance to at least a moderate extent.

5.2.2 Performance measurement indicators

PMR indicators are used by Ontario universities for various goals, such as academic, research, or management performance. These specific metrics are imposed either internally, through strategic plans, or externally, by funding or accreditation organizations. However, the ten metrics included in the government imposed SMA are common to all Ontario universities. It is important to underline that before being included into SMAs, performance indicators were used by all Ontario universities "for decades" (P42), some being "covered off in a variety of different fashions", while others "may not necessarily have been formalized indicators" (P07). PMR was just part of universities' "operating practice to look at different measures, different data", and "certainly to use data to understand how the institution was functioning, and to identify problem areas, and to inform actions" (P23).

The measurement of performance indicators should ensure a reasonable level of accuracy. However, this process faces several challenges and issues. The most common issues unveiled by participants are the definitions of performance indicators, their causal or non-causal relationships, and the context of measurement. First, all participants who discussed this subject agreed that the definitions of performance metrics must be clear, consistent, aligned with university's mission, and they must avoid interpretation. For instance, it is difficult to compare the performance of different universities "because the definitions [of performance metrics] need to be the same" (P05). "There is the spike certainly around having standard definitions as much as possible" (P07). The definition of a performance indicator is a permanent challenge and a subject of negotiation for universities to ensure consistency across them for PMR (P27). In addition, certain

technicalities of PMR definitions could have consequences for the quality of education. For example, let's consider the metric "graduation rates (on time)". "Nobody is asking whether 'on time' is properly defined. Nobody is asking whether 'time to completion' makes a difference to quality of knowledge or performance skill level. … It doesn't really matter whether they're graduating well. It just matters to the graduating on time" (P26). Thus, the focus on ensuring students graduate on time is not always an improvement.

Second, establishing a cause-and-effect relationship of performance metrics can influence their interpretation. For instance, "the actual use of those metrics is only as good as the quality of the metrics, you had to call it causal and non-causal" (P19). Moreover, performance proxies may not always accurately capture the intended outcomes, leading to questions about the validity of the indicator. Thus, one of participants was "not sure that there's been enough study of the relationship between the definition of the proxy that underlines the metric and the actual outcome that you're looking for" (P29). At the same time, performance metrics should be used as tools for decision-making and not as determinants of success. In this sense, one participant remarked that "the metric is not improving the quality of the university or the students experience. It's improving performance according to the metric, which then secures our budget" (P26). For some performance metrics it is questionable whether they are good measures of performance. Performance could be measured by value added. The universities that admit students with the lowest averages "are actually adding a greater increment between the entrance and the graduation averages than universities that admit students with 95 percent averages. It doesn't matter if they all graduate with 100 percent averages. Your value add is constrained because of the kind of elite circles you're

operating in" (P21). While this is a reasonable idea, it would be different from current PMR methods, focusing on the difference between academic performance and job prospects (P21).

Third, the contexts in which universities perform vary. The present study considers particularly the size and the complexity of organization the main contextual issues. Other important contextual issues highlighted by participants include the geographic location of universities, the economic conditions, the impact of universities on their communities, and the characteristics of student populations. The majority of participants agreed that "things need to be seen into context" (P05; P07; P24; P27). Undoubtedly, context plays an important role in accurately assessing performance data. Thus, the absence of context can introduce several issues in this process, which can be addressed by incorporating the contextual factors into assessments. For example, the growth of the number of startups in a learning entrepreneurial program during the pandemic improved performance information related to it. The increase is attributed to the lack of opportunities and increased time spent on startups. But "when it comes back down is that a negative thing? The province would actually see anything that moves in a negative direction as being bad. But if it came down to something that was more regular before the pandemic, they might be more normal" (P05). Performance information can be influenced by the context of student demographic also. In this way, the comparison of performance of a university with "most of students [being] first-generation, most of them are commuting, many have dependents, most are working" with a university "that is more based in a downtown area and attracts a different student body" is likely to be huge impacted by the student demographic context (P24).

Other issues are posed by the performance indicators that are beyond the direct control of universities. For instance, one of performance indicators imposed by provincial government through SMA, namely community/local impact, which is defined as "institutional enrolment share in the population of the city (cities)/town(s) in which the institution is located" (MTCU, 2020), is presented by many participants as completely outside the control of universities (P12; P15; P21). Participants offered similar perspectives for other SMA performance indicators, such as the graduate employment rate in a related field (P15), or the graduate employment earnings (P39).

Among the performance indicators included in SMAs, the participants primarily talked about few. First, one indicator is graduation rate, which represents the "[p]roportion of all new, full-time, year one undergraduate university students (domestic and international) of bachelors (first-entry), or first professional (second entry) degree programs who commenced their study in a given fall term and graduated from the same institution within 7 years" (MTCU, 2020). It is a tool used to provide accountability for the use of public funds and the quality of education, or to compare academic institutions. However, only a few participants acknowledged that graduation rate provides helpful information. To illustrate, "graduation rate is a helpful performance indicator, although it is not necessarily in line with the philosophy of many faculties, which is 'our job is not to get people jobs, our job is to build an informed society, compassionate, socially minded society'" (P29). Generally, this performance indicator is seen as one of the metrics that are out of the control of universities (P38). Besides, demographic factors, or socioeconomic circumstances, or quality of students (related to their prior academic preparation), have an important role in affecting the quality of the graduate rate indicator

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(P24). External factors, such as economic conditions and job markets, can influence graduation rates as well. These factors are different across the Province of Ontario in any given year. The lowest are up North, where one can find the universities with the lowest graduation rates (P27). Besides, for instance, a favorable job market can determine PhD students from certain domains to pursue employment, for fabulous salaries, instead of pursuing their doctorate program, despite not graduating (P11). Another issue discussed, related to graduation rate, was the mix of academic programs. Comparing graduation rates between universities is challenging due to their mix of programs. The public is not aware of these factors, leading to a perception of metrics as face value, which can distort a university's reputation (P12).

Second, another indicator is graduate employment rate in a related field. This indicator represents the "[p]roportion of graduates of bachelor or first professional degree programs employed full-time who consider their jobs either 'closely' or 'somewhat' related to the skills they developed in their university program, two years after graduation" (MTCU, 2020). This metric has its issues, unveiled by some participants. In this vein, they questioned how it could be influenced by external factors, such as the field of study, economic conditions and job market, and so on. For instance, "if the economy in our city is really solid, it almost doesn't matter whether our students will graduate. They will get a job" (P27). In other words, "the universities where the most students get jobs are the universities where there are most jobs in that community" (P16).

Third, the next indicator discussed is experiential learning, which is defined as the "[n]umber and proportion of graduates in programs, who participated in at least one course with required Experiential Learning (EL) component(s)" (MTCU, 2020). Whereas

for other performance metrics used by universities, either imposed by government or not, the opinions of participants about their helpfulness are divided, experiential learning is appreciated by all as a valuable practice in real-world. From this perspective, the ministry encouragement to put more weight on experiential learning activities "has absolutely galvanized universities to be looking for ways of increasing experiential learning. I think that's good" (P01), and all universities focus on it (P19). In fact, the collaboration between government and universities was seen in a positive light in relation to this performance indicator (P30; P31).

Fourth, the final indicator is the retention rate. Based on participants' opinions, this is an indicator that shows the percentage of students who continue their studies at the same university from one academic year to the next. It represents an important tool of student satisfaction and accountability (P09). In addition, several participants remarked on some issues, such as performance indicator calculation for certain student groups and program particularities (P23), or accuracy of reporting practices (P07).

Ontario universities also use a variety of other performance indicators related to students to assess their overall academic experience and their satisfaction. Among the most common such performance metrics underlined by interviewees one can find those related to supporting national (including First Nations) and international students. Although many of these indicators are already in use, others are just on the wish lists of participants, such as "food programs, housing programs, subsidy programs" (P17). Today, the most important tool to assess the students' needs is the National Student Satisfaction and Engagement Survey (NSSE) score (P04; P29; P43). Actually, student satisfaction is the primary factor influencing performance. For instance, "our university

has always been about student experiences. Instead of waiting for government instructions or regulations, we constantly review these survey results to maintain academic excellence" (P35).

5.2.3 Use of performance measurement for organizational learning and development

A significant number of participants claimed that performance information is an important tool to be used in the process of organizational learning and development for any university, by finding areas for improvement (P26), areas "where are we doing well" and "where could we do better" (P10). The general note of participants is that there is a constant learning process at an organizational level, and "there is definitely learning based on different indicators that tell us different things about what we need to do" (P12). In this regard, universities that value continuous improvement and learning, and that encourage staff and faculty to learn from data and make data-driven decisions are more likely to adopt PMR practices. A participant gave the following example: "We're dealing with a sophisticated group of administrators, and I'm surrounded by PhDs with a lot of capacity for understanding the relationship between inputs and outputs. And we spent a lot of time talking about that" (P08). Many participants underlined that universities that encourage staff and faculty to make data-driven decisions (P10; P12; P16; P23; P40), to improve their PMR training (P08), or to improve the PMR leadership (P19; P20) are more likely to embrace PMR as a tool for learning and development.

The participants mentioned that a main internal use of PMR for learning and development is focused on students, and on everything related to them because "student satisfaction or student experiences would be the number one factor affecting the

conversation on performance" (P35). In that respect, one participant indicated that students should be the main focus of the universities' management. That individual underlined that at another university, not identified here, "they focused on bricks and mortar", while "they probably should have been focused on customer performance and quality of programs before building all the buildings" (P17). In this way, PMR includes evaluating and tracking a variety of metrics related to student activities to assess students' performance, engagement, and success during their studies, and after their graduation, such as experiential learning, retention rates, employment rates, or student satisfaction. Thus, one interviewee remarked that the indicators measured "around student experience is very important to us. This is one of the reasons why we have both experiential learning focus, but also research opportunities for our undergraduate students. And that's we are constantly monitoring those opportunities because it's about reputation" (P04). In addition, PMR is used as a tool for improving student satisfaction and student supporting needs. "Performance information can help provide signals or indicators around services and supports that students are looking for" (P03). The surveys represent a way that allows universities to identify areas of strength and areas that require improvement. "We do the quantitative metrics, qualitative, we do that on the basis of direct surveys to students. That is an important measure for student experience" (P36). Moreover, the students can be dissatisfied in various ways. "But if there's a consistent message coming through, then yes, we will try to understand the source and make corrections or changes. And there are changing expectations of our students. Now [students] expect things in their program, in their student experience that students 10 years ago wouldn't have expected. So, it's part

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of keeping up to date as well" (P02). In this sense, universities can also contribute to a more inclusive and supportive learning environment (P35).

A particular way to improve organizational learning and development is the use of inter-organizational strategies. In this sense, academic partnerships involve collaborations with external organizations and encourage the use of performance information for improving the quality of activities of their members. Those collaborations can allow academic institutions to use PMR in evaluating and benchmarking, for example, their research outcomes. At least one of the participant universities at the current study is a member of the Canadian Association of University Business Officers, which "collects data on certain things for institutions to compare themselves to", and also of Canadian University Survey Consortium, which "encourages universities to participate in their surveys of students" (P12). It is "really important that there are a range of performance measurements that institutions participate in at all the levels that you discuss", and "if you're strategic, you can learn from other institutions" (P08). In addition, "sharing information ought to be a good thing. It ought to be the case that universities can access information about their peers. And use that to help them make more informed decisions" (P01). In contrast, the absence of inter-organizational strategy reduces benchmarking, efficiency of resource allocations, or other collaborative opportunities, and, consequently, decreases the motivation to implement PMRS (P01). Moreover, the characteristics of universities participating in those strategical unions and their contexts represent important challenges in the process of obtaining useful information, especially for comparisons (P23).

PMR is also used within organizational learning as a dynamic process for improving performance indicators. For instance, a participant claimed that "we're constantly making changes to try and improve graduation rates. It does definitely help us to improve. It gives us some things to focus on" (P12). In addition, if a program has "a very low graduation rate or the time to completion is very long, that gives us signals to understand where there may be problems academically that we could address, through program changes, training of instructors, ancillary support for students" (P22). However, in the organizational process of learning and development based on PMR several issues arise. They are related to, for instance, overreliance on quantitative data, although the qualitative circumstances are essential for assessing the performance. For example, there are "performance metrics used to tell a narrative that's not fulsome. And my concern around performance metrics is that if it isn't fulsome or understood, what the implications could be? Then, its performance information is not leading to better performance" (P03). Moreover, looking more deeply into performance data can help to get better insight. Thus, "by looking at the more detailed breakdowns, by looking at the sub-populations, by doing some more detailed follow ups that you really find something that's actionable, something that you can identify and, in general, that tells you where to look to find possible solutions" (P23) can improve the process of learning and development.

The answers to the supplementary structured question Q2b, which was *To what extent does your university use performance measures for learning and development, from 1 (hardly at all) to 5 (to a great extent)?*, confirm what participants claimed in their semi-structured interviews. In this regard, a significant number of the 36 participants who

answered the question Q2b reported that their universities use performance measures for learning and development to at least a moderate extent.

5.2.4 Other purposes of using performance measurement

The participants at the current study mainly discussed other aspects of the use of PMR. First, the process of organizational learning and development from the use of PMR could provide various solutions for improving academic achievement. The researcher asked the participants about the degree of freedom universities have in developing and implementing those solutions. Generally, Ontario universities enjoy institutional autonomy (P10; P26; P35; P39). Thus, "we're pretty autonomous university. We can implement whatever we see fit. We might need permission for more drastic changes, but nothing that I'm aware of. Yeah, they [the government] don't really dictate what we can and cannot do" (P34). However, "there's always this question about exactly what power the government has over universities to regulate and set policy" (P39). And the answer offered by participants is "money, and it's their funding function and that funding lever that allows them to make these requirements" (P39), and that "the government with very strong, heavy-handed rules is increasingly playing or wishing to play in the operations and management of universities" (P25). And one of conclusions is that "in some cases, when imposed for the wrong reasons, performance indicators will have a tremendous negative impact on the autonomy of universities" (P42). Moreover, government regulations represent the government's way "through the back door, trying to reduce the autonomy of universities. Governments obviously mobilize all sorts of logics, which are quite legitimate around imposing performance metrics, namely accountability for public tax dollars" (P18).

Second, the participants highlighted the role of PMR in enhancing organizational reputation. For instance, "the fact that we do have extensive opportunities for experiential learning, we do emphasize that in our materials for potential students. It is something that we like to share because it speaks to our reputation. So, I would say that's another way in which the information is used" (P12). Besides, many participants underlined the integration of PMR into the strategic planning process by universities (P22; P30; P36; P43). Moreover, PMR information has an important role for informing organizational decision-making. Specifically, universities "decision-makers rely on accurate and timely performance data representations" (P30). PMR information has an important role in assessing and responding to various negative events on campus in Ontario universities, such as safety incidents, academic misconduct, student protests, and campus crises. A participant claimed, in this perspective, that "we had a lot of issues around racism on our campus and we've responded with a number of reports, but also, within those reports, with performance measurements to demonstrate to the students we listen to them, and this is what we're doing" (P08).

Third, Ontario universities use performance data for various argumentation in different circumstances. Generally, in each of these circumstances, the use of performance information strengthens the university's position, and provides "objective and verifiable" (P40) evidence to support those arguments. It is a good way "to prove to a skeptical audience" (P40). For instance, student recruitment and student retention are important universities' goals. Thus, universities use data about graduation rates, student satisfaction, and employment outcomes to persuade prospective students and their families. "I would say we are successful or not on the basis of the number of students

graduated, number of research projects undertaken …" (P10). "There is no single measure to say, 'so how are we doing on that?'. But performance measures are often used as proxies to show what we are doing, how we are doing it, how we compare to our peers, how we are doing compared to years ago, and, in general, to communicate to a variety of audiences" (P23). Moreover, "surveys would be another part of it" (P16). Besides, some universities "do a good job of supporting northern communities, the Aboriginal first generations. Yes, we absolutely monitor what is our proportion of students who are Indigenous, how many are first generation. From an access perspective, that's part of our mission." (P41). Performance information can be a powerful tool for argumentation and advocacy inside or outside universities' campus. "We use performance measures for everything. The information is very well structured" (P40).

Fourth, performance data are essential for fundraisers, being part of their marketing exercise to build credibility and trust. They are used in verbal conversations, marketing materials, or proposals. These metrics help gain credibility with external funding partners (P13). Performance data is also often used to persuade the university's audience about its performance, like in presentations, meetings with industry partners, and recruiting faculty members. It can be broken down into subject or faculty level datasets to show performance in specific fields. These indicators can also be used with the provincial government to argue for more resources for special projects (P32). However, the transparency of performance data, especially when organizational performance is lower than expected by stakeholders, can be an important challenge for Ontario universities. As underlined by a participant, the fear of negative public perception may influence the decision to disclose or withhold certain performance data (P40).

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Fifth, performance data can also be very important for evaluating various negative or adverse events on campus in Ontario universities. These occurrences may involve many kinds of events, including safety incidents, or campus crises. Specifically, an incident reporting system, which encourages students, faculty, staff, and public to report negative events promptly and accurately, is used for reporting various sexual violence, or racism issues on the campus of one participant university. Performance information includes some quantitative and qualitative data about the incidents, and what solutions were found by management to solve them (P08). Another type of campus event that is monitored is the security of campus, which involves emergency services, or relevant authorities in charge of addressing adverse events. So, periodic reports about how safe the students and the employees are feeling, based on PMR data, could improve transparency and accountability, which in turn can build trust. The related PMR data can enclose the time when the incidents are reported, the assessment of the impact on university reputation, or on university finances (P40). In addition, a participant highlighted a need for "a more qualitative response… because issues around equity, diversity, inclusion and anti-racism response, that sort of things really require a more developed and nuanced discussion than a simple accounting of numbers" (P43). Thus, performance data can ultimately improve campus community safety and well-being.

The answers to the supplementary structured question Q2c, which was *To what other purposes and to what extent did your university use performance measures, from 1 (hardly at all) to 5 (to a great extent)?*, show that at least four out of 43 participants mentioned that their universities use performance measures at least moderately for the following purposes: decision-making, student experience, recruitment and promotion,

external reporting, reputational purposes or marketing, comparability with other

universities, PMG, research improvement, and financial stability.

5.3 Research question 3

> To what extent does the use of PMR by public universities in Ontario, Canada, impact organizational performance, affect accountability and organizational legitimacy, and lead to comparisons and rankings of academic institutions?

Three themes are related to this RQ, namely: 1) Consequences of using PMR over

organizational performance, 2) Consequences of using PMR information for

accountability, transparency, and legitimacy, and 3) Consequences of using PMR

information over audience and public image. An analysis of the themes and the

subthemes related to this RQ is presented below.

5.3.1 Consequences of using performance measurement over organizational performance

"The use of performance measures could contribute to improving the quality of

activity in university" (P03). Performance metrics are key elements not only for assessing

organizational performance but also for benchmarking in Ontario universities. It "allows

us to create a barometer and see where we fit within the sector. For example, where are

we at with other tuition fees, for graduate studies, for international students, whatever it

is?" (P41). And this is just one of the aspects by which the use of PMR can contribute to

the improvement of organizational performance. Universities can also make more

informed and strategic decisions about resource allocation (funding and human

resources), or strategic plannings (which almost all Ontario universities developed lately)

by using PMR to identify areas of strength and weakness. For instance, a higher graduation rate is a sign of excellency related to support systems in place or an attractive campus, while a weak graduation rate prompts a focused effort to improve this performance metric by addressing potential organizational challenges, such as academic support or program structures (P10). Another example is linked to universities' efforts related to diversity and inclusion and to the representation of diverse student populations that can also be assessed by PMR. As stated by a participant, performance information influences the creation of an inclusive environment, which contributes to improving institutional performance (P40). From this perspective, adding qualitative metrics to the usual quantitative metrics employed might provide a more comprehensive assessment of the performance of Ontario universities, claimed several participants. "We would view quantitative data as a good thing to have, but we would also emphasize the story. We would not consider that sufficient. We would also require [to] be interested in qualitative data, in what people call the storytelling" (P01). However, none of participants discussed the potential subjectivity and bias that qualitative data can add.

The use of PMR over organizational performance can have not only positive consequences but also challenging or even negative consequences. To illustrate, one participant offered an analogy between a competitive organizational environment and a competitive children's environment. In this person's view, the use of PMR could help universities improve continuously when the focus is on all the items that are important for organization or could have negative consequences when the focus is only on the domains measured by PMRS.

For some children, who thrive in the competitive environment, it is a very good

thing because they are self-motivated. They don't need validation from the

outside. And for the other children it is highly stressful because they tend to

confuse who they are and their sense of self-worth with the judgment of the

external competition. And I think that analogy is useful for thinking about

performance measurement of organizations. It can have really positive effects

when we are using it to help us achieve the things that are important to us. But it

can have extremely negative effects if it is leading us to focus on things that at the

end of the day aren't going to be particularly important to the broader enterprise.

(P01)

Another negative consequence of the use of PMR over organizational

performance is related to its associated costs. Thus, institutional budgets are affected,

especially those of small universities, which are characterized by limited resources. In

turn, this situation can lead to diminishing the accuracy of data collected (P23).

Therefore, "performance indicators can be used to influence what universities do. But

that doesn't mean that they've necessarily improved the quality of activities and

influenced what the universities are doing" (P01). Although the use of PMR should be

guided by ethical practices, universities may have incentives to prioritize activities that

improve performance in targeted areas. In turn, they can neglect other aspects of their

processes that are not explicitly measured (P10). Another example of manipulative

practices is related to the domain of research productivity. Performance indicators can be

manipulated to benefit certain groups. To prevent manipulation, a system of checks and

balances must be implemented, ensuring that those who manipulate performance

indicators do not benefit against those who genuinely use or report them (P40).

Moreover, with SMA, although PMRS is in place, the goal of using performance metrics is often not reached. Moreover, the poor selection of performance indicators represents an invitation to play or to manipulate the system (P01).

Related to this topic, the answers to the supplementary structured question Q3a, which was *How would you assess the following possible consequence of the use of performance measurement at your university: Improving university's performance, from 1 (mostly negative) to 5 (mostly positive)?*, confirm what participants claimed in their semi-structured interviews. On this matter, a significant number of the 31 participants who answered Q3a reported that the use of PMR improves their organizational performance to at least a neutral extent.

5.3.2 Consequences of using performance information for accountability, transparency, and legitimacy

The particularities of each political system, federal or provincial, influence the use of performance information by Ontario universities, and determine the specific ways in which universities measure and report on their performance for accountability, transparency, and legitimacy (P26). Thus, the use of PMR can have various consequences, for example, for accountability, as claimed by participants. For instance, universities can prove that they contribute to global good, which is in line with their missions and objectives. "Universities have a social purpose. Performance data can help the larger community to better understand how we are contributing to the local, national, regional, and global economy" (P35). Another participant mentioned the use of fact-books, which are comprehensive documents containing institutional data and key

performance indicators used sometimes by universities for external reporting. "The fact-book gives you all the retention of a program, retention within a faculty, the demographics of your students, for undergrad or grad" (P17). Besides, by providing public information on performance through the fact-book, "one effect would be with respect to transparency, so we were hearing that government, and the public are not sure what universities do, that they're fairly autonomous, they don't fully understand them, and they are not sure how effective we are" (P19). At the same time, "performance reporting can play an instrumental role in shaping public perceptions about the purpose of post-secondary institution. What do we do and how? It is also an exercise of building bridges with communities" (P35). In a similar way, "with the SMA 3, we now have public facing report that serves in that purpose" (P19).

In the same perspective of public accountability, PMR can be a valuable tool for assessing the extent to which universities are fulfilling their responsibilities to society. Ontario universities have various societal goals, including advancing education or research, which are not always in line with those of the government. "It is questionable if the government understands the role of universities. We could say there's a fundamental difference in the definition of what the purpose of a university would be for, possibly, the government and the institution itself" (P04). "The goals of government with post-secondary education are very much economic drivers, and employment drivers, and even things like commercialization, which can sometimes be quite at odds with what universities view themselves as, which is fundamentally training, or education, or teaching, and research" (P10). It seems that this issue influences organizational performance. In this manner, the understanding of performance in post-secondary

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education is unrealistic and reduces it to job market preparation, because education should focus on social change, creating responsible global citizens, and building a sustainable world (P35). However, academic goals are not always in line with societal goals. They can vary depending on several factors, government policies being very important. For instance, "if your goal is only to graduate the best students, you may not actually be achieving society's goal, which is to have many university graduates. You could only graduate 10 students out of ten thousand, and achieve academic goals, but not achieving society's goals of having a well-educated workforce" (P27).

Besides, accountability and transparency of universities can be improved by effective communication of performance information to the public, such as online posting. And one of paramount consequences of this process is the public trust increase (P12). After all, by communicating to diverse audiences, each of them with varying interests and understanding levels, performance measures serve as proxies to demonstrate progress, or improvement over time (P23). With a similar focus, the management provides a platform with performance information to celebrate efforts in addressing societal challenges, like climate change, or medical research. To illustrate, universities can use PMR reporting to showcase their value to communities (P30). In this sense, performance indicators can provide "multiple views on the institution", and allow for "corrective actions", which is helpful (P07).

In addition to accountability and transparency, the use of PMR plays an important role in determining organizational legitimacy. For instance, some universities are compliant with United Nations Sustainable Development Goals (P08). Similarly, providing education to First Nations people is seen as a positive aspect by the

government and other stakeholders, which may be seen as a means to gain a better reputation, and to improve the process of legitimizing the university (P10).

5.3.3 Consequences of using performance information over audience and public image

In the current study, audience and public image are proxy measures of accountability and legitimacy, which may be considered sensitive topics by some participants. They mostly indicate how performance information is obtained and interpreted by different stakeholders. Specifically, audience represents "those people who admire, support, or take a consistent interest in a particular person, area of artistic activity, idea, etc.", whereas public image is "a concept or impression, created in the minds of the public, of a particular person, institution, product, etc." (Oxford English Dictionary, n.d.).

The audience for performance information includes diverse internal and external stakeholders of universities. Within Ontario universities, the institutional planning offices are the main users of PMR (P26). Besides, the boards of governors "have a particular view, and they are interested in certain things" (P23). They are "the main audience" of annual reports (P17; P30) and they use performance data when assessing the university's excellence (P40). Moreover, the faculties and the administrative staff are the primary audience for performance data related to their activities (P40). External audience for performance information is firstly represented by the provincial government (P42). Other important external audiences for performance data are represented by accreditation bodies, funding agencies, local communities, prospective students and their families, and ranking bodies (P15; P20).

Being among external stakeholders, parents often evaluate performance metrics when choosing universities for high school graduates. Playing the role in guiding and supporting their children, they are looking for relevant and reliable information to be used in the process of selection of the university and programs to attend. However, some participants are concerned about their ability to accurately read those data. Parents may be shoehorned into programs based on metric that may not suit their needs, as all institutions have unique programs and support (P03). However, PMR impacts messaging, and without actual performance data, it's just word of mouth (P24).

One of the most underlined uses of performance information by audience is to compare universities based on various criteria or interests of the respective stakeholders. Comparing universities can be challenging due to several factors related to the definitions and interpretations of performance indicators used. In that respect, the context (size of university, complexity of university, or geographical or economic environment) in which universities perform matters. In this connection, the participants offered some examples. Comparing universities "is valuable as long as you're understanding the context that you're comparing things that can and should be compared" (P41). "Context is everything. … And I find that there are nuances that are not captured when you're comparing universities in these numbers because you don't get to design them" (P42), or "making meaningful comparisons is about an understanding of the context of the individual institution" (P07). "You're not comparing necessarily apples to apples, unless you're comparing to an institution that's very much like your own. I think the greater value comes when you drill down into the data" (P24). And so, every institution being different, "comparing yourself with another institution, with a different mix, different

size, different relation to its community is invidious" (P38). In addition, "each university is distinct in many ways. Comparing one with another is not a meaningful exercise" (P35). For instance, the composition of the student body can impact the consequences of the use of PMR (P07; P24; P34). Moreover, even within an inter-university organization, composed by quite similar universities related to size or complexity, one can remark "the enormity of the difficulty of really comparing things and knowing that you've got meaningful comparisons… And more you understand about what you're comparing, more you realize that the nuance inside those comparisons means that that comparison really isn't all that meaningful (P23)." The characteristics of academic fields, and teaching and research disciplines influence the comparison of organizational performance within Ontario universities. For instance, academic fields with a strong emphasis on research have an important advantage on metrics like research output, publications, or citations (P14; P25).

When designed and implemented carefully, the comparisons of performance information in Ontario universities can offer some benefits (P16; P24; P27; P29). For instance, "When you have a university that is not well known, like three quarters in Canada, you need to have something which allows you to have your head come above water in certain areas, and often those are performance metrics" (P10). Besides, "understanding your position within the sector, compared to other institutions, can give really valuable insights into your own operations, especially when comparing to complementary institutions within your region" (P22). However, missing nuances (P23; P26; P36), or context-aware approaches, such as university sizes (P10), leads to no point for comparisons. In addition, "it creates an unnecessarily competitive environment which

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doesn't help us much achieve our broader goals. The spirit of collaboration, not the value of competition, should drive the idea of academic excellence" (P35).

University rankings is an important tool for comparing universities. The rankings can be influenced by the amount of research more than any other factor. For example, "one of the reasons why […] is considered to be one of the top universities in the country is not because of the quality of its teaching is great, because I don't think it's any better than anybody else's. It's because they produce a lot of research" (P38). This element can have drawbacks as well, such as overemphasis on research output, and neglecting other important factors of a qualitative education (P40). Rankings have distilled what it does mean to be a top-notch institution down to a handful of metrics. That changed the environment. "We know that some of the big international rankings actually are a factor that drives interest in institutions. So that's just part of the environment in which we operate" (P23). "And so, it become a checklist exercise" (P17). In addition, "what you see in world rankings is your performance feeds your reputation, which feeds your performance, which feeds your reputation. So, it's a self-fulfilling piece that we've started to see some of that move" (P19). The same academic rankings could have negative impacts on national and international students' recruitment as well. It seems that prospective international students do not look for the same characteristics of universities as prospective national students. However, many universities employ strategies to counteract it, such as hiring lobby agents (P39; P40) or offering generous scholarships (P40).

As the rankings are based on performance data and how well universities reported them, this process can transform into a rigged game. Therefore, within that game,

performance information and comparisons become almost useless to the public, as they can be manipulated. Once an organization is educated on how to collect data and report to these rankings, it can improve its rankings. And the main effect is the increase of the number of applications of international students, and international funding. "It's not about performance of quality, it's about performance of ability to give them the data they need on performance. It's terrible" (P26). A representative of another university highlighted even that the ranking bodies are perceived as the main targets of performance information, concluding that they are "the largest quantitatively based indicator that universities pay attention to" (P15).

Public image, which includes public perceptions and reputation, is impacted by the way information is communicated to the public. In this sense, press releases often highlight university's achievements, such as research accomplishments, and thus, it contributes to improvement of the public image by emphasizing excellency (P10). The use of performance information by Ontario universities can impact their reputations also. "Performance metrics are very important for an institution's reputation" (P22). Reputation is an important asset for universities, influencing various factors, such as student enrollment (P22). One of the characteristics of academic reputation is its great inertia. Thus, once established, reputation can be changed in public image with great difficulty. "Reputation has a great inertia. It is hard to shift. It's challenging for a university. … Even if we publish great data showing successful performance in terms of objective quality measures rather than opinion, I don't think that's going to change that narrative." (P02). "Once you've established a reputation, as a good university or as a bad, it takes a long time before people actually see the changes, because they don't follow it

that closely, they just have this vague idea in the back of their head" (P12). However, the above-mentioned inertia can be easily fractured by social media, as was the case of one Ontario university. "One human interest story can undo 15 years of performance rankings. Takes a lot of work to fix reputational damage" (P40).

Universities use data of their best performances to enhance their reputation, as underlined by one participant. "We use various performance reporting measures all the time to build our public image" (P09). Some participants mentioned that in many situations the performance data are used by universities as advertising and marketing elements to promote them to attract valuable students or faculty, or to increase the fundraising. On this matter, performance information is leveraged and can contribute to enhancing the university's reputation and visibility (P12; P17). In addition, there is more effort by universities to advertise their greatest accomplishments, as noted by one participant.

> If you open the National Post or the Globe and Mail, there's full page on 'we got a donation for brain cancer research, we got a donation for this/that'. And they're fighting performance on the basis of donations… I think most universities are looking for what their leading-edge celebration is, or did it attract a huge donor, or who are your alumni that speak to you. And, I think, some of that ends up being more important than rating systems. (P40)

In relation to these results, in this subsection, first, the answers to the supplementary structured question Q3b, which was *How would you assess the following possible consequence of the use of performance measurement at your university: Improving public perception and image of university, from 1 (mostly negative) to 5*

(mostly positive)?, confirm what participants claimed in their semi-structured interviews. In this way, a significant number of the 34 participants who answered Q3b reported that the use of PMR improves their organizational public perception and image to at least a neutral extent.

Second, the answers to the supplementary structured question Q3c, which was *How would you assess the following possible consequence of the use of performance measurement at your university: Improving comparisons with other universities, from 1 (mostly negative) to 5 (mostly positive)?*, confirm what participants claimed in their semi-structured interviews. In this regard, a significant number of the 32 participants who answered Q3c reported that the use of PMR improves their organizational comparisons with others to at least a neutral extent.

Third, the answers to the supplementary structured question Q3d, which was *How would you assess other possible consequences of the use of performance measurement at your university, from 1 (mostly negative) to 5 (mostly positive)?*. In this regard, four out of 43 participants mentioned the following possible consequences between neutral and mostly positive: decision-making, student satisfaction, funding, unintended consequences, improving reputation, and internal accountability. These perspectives offer additional grounds for concluding that the use of PMR can contribute to improvement of organizational performance and other outcomes.

6 Discussion

In this chapter, the researcher developed his thematic analysis from the Results heading by using the researcher's "interpretation of the data and their meaning" (Braun & Clarke, 2022b, p. 131), and by exploring the "theoretical, scholarly and wider contextual interconnections and implications" (Braun & Clarke, 2022b, p. 132), specifically the literature review. However, the research data not only provided answers to issues described by literature but also unveiled some other interesting points that were not considered into the original CF of the study.

For this study is qualitative, the researcher did not necessarily discuss with predilection the ideas developed by the majority or by a certain number of participants, but rather those ideas he considered more relevant. As already mentioned, the participants who did not speak about certain constructs did not mean that they did not think of them. It is possible, for instance, that the time limit prevented them from developing their ideas.

In the following subheadings, each RQ is discussed separately, based on the data presented in the Results chapter and researcher' scientific arguments. As the discussions on RQs were articulated around the same themes as the Results heading, it is possible for the reader to have the perception that the themes are entirely separate entities, which is not always the case. In fact, in real life they overlap. Due to this reason, in many situations the discussions relate to items included to several other themes as well. At the end of this chapter one can find the discussion of implications for management, limitations of the study, and suggestions for future research.

6.1 Research question 1

> How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of universities in Ontario, Canada?

Notably, by the late 1990s, the impact of NPM reforms, particularly the growing significance of public accountability, had begun to spread to the public universities in the Province of Ontario. The government's mandate that academic institutions submit reports based on a predetermined set of performance metrics had minimal impact on this process, provided that PMR has a unique relationship with NPM (Pollitt & Bouckaert, 2017). Besides, the governments have been influenced by other nations that have had experience with NPM, like Australia, New Zealand, the United Kingdom, or the Netherlands (Agyemang & Broadbent, 2015; Christopher & Leung, 2015; Kloot & Martin, 2000; ter Bogt & Scapens, 2012).

Organizational performance analysis is related to the relevance and pertinence of the performance metrics employed, selected either by the government, via SMA, by various funding, accreditation, or ranking bodies, or by universities themselves. The findings therefore demonstrate that, in addition to quantitative indicators, which have been supported by the literature (Modell, 2003; ter Bogt & Scapens, 2012), universities must also be evaluated using qualitative indicators, such as teaching excellence, the effectiveness of the EDI program's policy adoption, or ethical and professional standards, because, in order to obtain the full picture, a narrative explanation for each indicator is required. Moreover, our findings indicate that challenges always emerge, such as definitions of performance metrics, data collections, or other measurement issues, which are consistent with the literature (Goh et al., 2015; Hood, 2007; Pollanen, 2005; Tee,

2016; Wiers-Jenssen et al., 2002). In addition, this is in line with the logic of appropriateness of the normative pillar of institutional theory, which is oriented by a moral obligation to society (Scott, 2014). Thus, balancing qualitative and quantitative metrics is essential to providing a comprehensive view of university performance. Participants believed that a mature PMRS had the answer to these issues. This opinion aligns with the literature that confirms that a mature PMRS provides performance information that corresponds to the needs of users (de Lancer Julnes & Holzer, 2001; Torres et al., 2011; Yang & Hsieh, 2007), and that is pertinent (Hatry, 2008). Therefore, as long as their PMRSs date back to the 1990s, many Ontario universities are well on their way to improving them. Besides, the development of PMR practices was aided by advancements in data collection, analytics, and technology.

The use of PMR by Ontario universities is greatly influenced by political and regulatory factors. These factors are, principally, the regulations of provincial and federal governments, and the regulatory and funding mechanisms of various other governmental or nongovernmental organizations. As the literature suggests, this fact is consistent with institutional theory (DiMaggio & Powell, 1983). Specifically, governmental laws and regulations represent external pressures or regulatory functions that can lead to a homogenization of academic institutions from the perspective of adopting and using PMR. In this regard, the mechanism of control of the external pressures used by the political power is coercion (DiMaggio & Powell, 1983; Scott, 2014), which is a characteristic of "the realm of authority" (Scott, 2014, p. 61). Prior literature confirms also that the adoption and implementation of PMR by academic institutions is imposed

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by political factors (Arnaboldi & Azzone, 2010; Dobija et al., 2017; Dobija et al., 2019),

and that the use of PMRS by public organizations has increased (Taylor, 2009).

However, as political power shifts frequently in the Province of Ontario, as does

its doctrine, certain rules and regulations also change. In this way, the institutional

environment to which universities must adapt evolves continuously. Moreover, in the

same realm of institutional theory, accreditation and certification bodies are examples of

normative institutions that impose their values on universities, departments, academic

programs, or policies (DiMaggio & Powell, 1983). For instance, regulations imposed by

accreditation bodies and professional associations, such as the Ontario Universities

Council on Quality Assurance (OUCQA) or the COU, play a vital part in maintaining

professional standards and the caliber of education at Ontario's universities. These bodies

and associations assess performance information to guarantee the high quality of

education and research at universities, promoting accountability, allocating resources, or

assessing whether universities meet accreditation standards. Moreover, accreditations and

certifications by these bodies and associations are important indicators of the normative

pillar of institutional theory (Scott, 2014). Besides, "certification or accreditation by these

bodies is frequently employed as a prime indicator of legitimacy" (Scott, 2014, p. 73).

As previously noted, many Ontario universities used PMR long before the

government imposed them. As a result, numerous respondents stated that since PMRSs

were already in place in the 1990s, governmental factors had little influence on their

implementation. It seems the turning point was the Broadhurst Report (the report of the

Task Force on University Accountability) from 1994 that standardized the use of

performance data for accountability, including the protocols for data collection. In

addition, the development of data technologies from that period contributed to collecting and processing more performance data. The contingency theory employed in the literature review validates the significance of the two external environment-related contextual variables, namely technology and strategy, in determining the effectiveness of PMR adoption (Chenhall, 2006).

Literature mentions organizational size and organizational complexity together with external environment, technology, organizational performance culture, and people (students, faculties) as some of the main contingent factors that could influence the implementation of PMR discussed in the current study (Agyemang & Broadbent, 2015; Ferreira & Otley, 2009). Thus, because many participants provided their opinions by treating organizational size and organizational complexity as one and the same concept, the two factors were examined together. In addition, literature is scarce in studies that employ both concepts, suggesting that many scholars have had a similar perspective. For instance, two studies performed at a half a century apart from each other (Saliterer & Korac, 2013; Zelditch & Hopkins, 1961) consider organizational size a proxy for organizational complexity. One of the findings of this research is that the existence of financial and human resources to adopt and to use a PMRS is related to the size of universities. Obviously, a larger university has a greater likelihood of having these resources than a smaller one. Consequently, larger organizations are more likely to use PMRSs. Moreover, our results show that some participants from small universities are frustrated for not having enough resources to use PMR in all the domains they are interested in. This fact is confirmed by past research (Chenhall, 2003; de Lancer Julnes & Holzer, 2001). Besides, literature provides that where the human and funding resources to

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use PMRSs are very limited, even if PMRSs are in place, the goals of using PMRSs are rarely reached (Charbonneau, 2011).

In contrast, analysis of challenges beyond funding and human resources reveals that larger or more complex organizations are less likely to adopt PMRSs because these types of organizations typically face more technical difficulties, even though performance data may be more valuable to their management (Arnaboldi & Azzone, 2010; Cavalluzzo & Ittner, 2004; Dal Molin et al., 2017; Goh et al., 2015; Verbeeten, 2008). Besides, in relation to usefulness, PMRSs from complex organizations gather very large quantities of data, which are costly and difficult to be digested by potential users (Talbot, 2005). This claim of literature is a confirmation of a perspective suggested by few participants, who argued that the more complex the institution is, the less meaningful performance information measured at institutional level is. Consequently, the complexity of a public organization is a permanent source of issues for its PMRS (Arnaboldi et al., 2015). It is noteworthy that the participants' perspectives related to the influence of organizational size and organizational complexity were consistent with the literature, with roughly one third acknowledging that the use of PMR is slightly influenced, one third, moderately, and one third, highly.

As expected, during interviews the participants delved into subjects beyond the scope of the questions, unveiling other factors that influence the adoption of PMRSs. The most common factor mentioned was the organizational performance culture. In this sense, universities with developed organizational performance culture have naturally created an environment for the use of PMR. This environment is based on transparency, continuous improvement, evidence-based decision-making, persuaded leadership of the

value of PMR, prioritization of performance data accuracy and integrity, and support of PMR training at any level. However, being beyond the focus of this study, the researcher did not develop this topic.

6.2 Research question 2

> To what extent is PMR used by universities in Ontario, Canada, for political, regulatory, and compliance reporting, and for learning and development?

The government and the regulatory organizations (accreditation or funding bodies) impose on public universities the obligation to report periodically, using various performance information, on a range of domains. One of these domains is the new PBF model of governmental funding based on universities' performance data. Past research, although scarce, purports that the governments and other regulatory factors impose on academic institutions to use of performance data in their reports for governmental funding decisions in Australia (Guthrie & Neumann, 2007) or Poland (Dobija et al., 2017). This aspect confirms the institutional logic behind the regulative pillar of institutional theory. In its perspective, the government, and the regulatory organizations "craft laws and rules that they believe will advance their interests", whereas universities "conform to laws and rules because they seek the attendant rewards or wish to avoid sanctions" (Scott, 2014, p. 62). Besides, this is a way to increase governmental control by imposing organizational performance outcomes (Boberg & Barnetson, 2000). As the literature suggests, institutional theory focuses on the pressures and constraints of the institutional environment (Oliver, 1991). As public entities are dependent on external resources, universities do not have many alternatives to respond to these pressures that are specific to their institutional environment. So, they employ especially acquiesce, one

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of the five types of strategic responses to institutional processes (Oliver, 1991), as the main strategy in relation to the government and regulatory bodies.

The participants of this study described how their universities reproduce elements of various acquiescent tactics. First, within the habit tactic, organizational processes are historically repeated and institutionalized, and the roles of various participants, such as students, professors, or managers, are unchanged over long periods of time. Second, the imitation tactic, which is in agreement with mimetic isomorphism (Scott, 2014), relates to mimicking other similar but successful universities. Third, the compliance tactic is about obeying the rules. In this vein, by complying with environmental pressures, universities can get important benefits, such as funding or accrediting their departments to offer services, usually teaching, in accredited domains.

In relation to indicators measured in the process of PMR, participants stated that they measure many performance metrics, not only those imposed by the government or various organizations but also those decided internally. They are used, for example, for informing internal governance, communities, or other external audiences. Other specific factors are endorsed by the literature, such as accountability reporting, teaching evaluation (individual, departmental, and university level) (Melo et al., 2010), research output evaluation (Osterloh, 2010), or establishing HEI rankings (national and international level) (Adler & Harzing, 2009). The participants' suggestions are consistent with a study of Canadian universities about voluntary disclosure of performance indicators (Maingot & Zeghal, 2008). They also asserted that performance indicators are used for various goals, in addition to regulatory and compliance reporting, such as SMA,

or for assessing academic, research, or management performance, being consistent with past research (Pollitt & Bouckaert, 2017).

Although the performance indicators are expected to have a reasonable level of accuracy, they have various issues, the most common being their definitions. This idea is in line with past research (Pollanen, 2005; Wiers-Jenssen et al., 2002). It is important to have comparable information, not just comparable institutions. According to participants, the definitions should be clear, consistent, and aligned with the university's mission, and they must avoid a need for interpretation. Moreover, academic organizations often use proxy indicators instead of true performance indicators. According to the literature, this kind of circumstance can result in another problem, which is confusing the proxies with the indicators that provide an accurate picture of the process being measured (Franco-Santos et al., 2014). In addition, other issues are related to causal or non-causal relationships and to the context of measurement.

Two performance metrics were usually exemplified by participants, namely graduation rate and graduate employment rate, both being part of the set of 10 metrics imposed by the government to be reported by the universities in accordance with SMA. Both have advantages and drawbacks. For instance, a program with a low graduation rate or a time to completion that is too long gives readers a signal about the existence of problems in that program that could be addressed either through program changes, training of instructors, or ancillary support for students. However, the graduation time is very contingent on context, especially on the quality of admitted students. In addition, sometimes there is pressure to ensure that students graduate on time, regardless of whether they graduate well. Unfortunately, this performance information does not

improve the quality of the university or the student experience. It only improves organizational performance according to that metric. However, a university that is concerned with the caliber of its graduates can implement some intermediate measures to monitor whether the students are consistently on a path to graduation. These measures include the percentage of students who continue their studies beyond their first year, the level of their grades, and their progress toward completing their degrees. In relation to the graduate employment rate, it is difficult to find a member of an academic institution who accepts this performance indicator as useful for university management because universities do not have any control over it. Whether to find employment after graduation does not always depend on what the university did. There is not a straight line between education and employment or the job market. However, tracking graduate employment after five, ten, or twenty years from graduation, which is a reasonable timeframe for finding a place in the job market to use the skills acquired during post-secondary studies, can provide important feedback to universities related to the quality of education provided. At the same time, the administrative technological infrastructure to be able to measure is presumed to not be affordable for all universities.

Participants claimed that performance information represents an important tool that allows universities to identify areas of strength and areas that require improvement. This idea is endorsed by literature. Thus, when PMR is used for learning, organizations learn what is good about the work done and what is not, and why (de Lancer Julnes, 2008; Henri, 2006; Verbeeten, 2008). Conversely, a part of the literature supports the theory that the process of learning does not have any influence on organizational performance (Verbeeten & Speklé, 2015). In general, the use of PMR for learning and

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development is related to some aspects. First, organizational associations are good environments for learning. In this sense, in a context such as an association composed by similar universities in relation to size, complexity, or research and teaching fields, although differences may still exist among them, the shared performance reports of the members could help them to learn better where they are situated within that family and what they can change to improve their organization. However, its usefulness is sometimes doubtful because of the characteristics of universities participating in those strategic unions, and those contexts (jurisdictional, economical, and geographical) represent challenges for universities in the process of obtaining useful information, especially for comparisons. Nevertheless, deeper analysis of those performance data, using more detailed breakdowns, and examination of sub-populations could help find solutions for improvement. In this way, the literature shows that the process of learning could be undertaken by organizing learning forums (Moynihan, 2008b) or benchmarking groups for learning purposes created by diverse local governments or other public organizations (van Dooren et al., 2015). Many believe that cooperation among universities is preferable to a competitive system. This would allow all universities to benefit from one another's experiences.

Second, overall, performance information indicates the size of the error created by the actual results relative to the objectives set. The corrective action is produced by feedback or feedforward adjustments. Although the feedback control (Otley & Berry, 1980) is implicitly claimed by the participants to be used by their universities, none of them discussed about the feedforward control, even though the literature mentions that when the corrective process needs a significant time lag, feedforward control could be

preferred to feedback control (Emmanuel et al., 1990). Third, the learning and development process is dynamic. For example, the students could provide their satisfaction or dissatisfaction through several performance metrics from surveys, such as National Survey of Student Engagement (NSSE), Canadian Graduate and Professional Student Survey (CGPSS), or campus engagement exit, about some academic, administrative, or communication aspects of a program. But within each of these categories, the issues to be found changed rapidly over the years, with the evolution of technology being an important reason for that. Moreover, some participants underlined that the usefulness of survey data depends on how the questions for surveys are asked.

It is not easy to find some negative elements about the use of PMR for organizational learning and development. Although not necessarily negative, tracking the graduation rate, for instance, is a difficult task because it is reported seven years out. So, after making changes, universities must wait seven years to see any significant impact. Overall, the participants accepted that Ontario universities enjoy institutional autonomy in using PMR for organizational learning and development. In this regard, managers are not prevented from making free changes in universities' activities based on performance information for improving organizational performance. Past research has admitted that the adoption or use of PMRSs becomes limited when there is a lack of autonomy (Moynihan, 2008a) and that autonomous managers are more likely to use performance information (Moynihan & Pandey, 2010). Conversely, by imposing PBF, the participants suggested that the government breaches the autonomy of universities. This fact is confirmed by literature, which implies that public universities are not fully autonomous because of their resource dependency on the government (Broadbent, 2007).

6.3 Research question 3

> To what extent does the use of PMR by public universities in Ontario, Canada, impact organizational performance, affect accountability and organizational legitimacy, and lead to comparisons and rankings of academic institutions?

The use of PMR in Ontario universities can have consequences with impact over various organizational elements, such as organizational performance, accountability, transparency, legitimacy, audience, and public image, all of them being examined in the current study. First, organizational performance can be affected in various ways by using PMR. The literature mentions that organizational performance should be assessed only within the specific institutional environmental perimeter. As an illustration, "performance acts as a constraining frame around issues of [performance] management, [performance] assessment and [performance] measurement" (Folan et al., 2007, p. 618). Many participants confirmed that PMR can positively impact organizational performance. This observation is consistent with the literature (Micheli & Pavlov, 2020; Moynihan, 2009; Speklé & Verbeeten, 2014). However, contrary to several empirical studies in the PS from Europe (Pollitt et al., 2010), and USA (Ammons & Rivenbark, 2008; Poister et al., 2013), none of those participants explicitly stated that performance of academic institutions improves continuously after implementation of PMRSs. Nor did they suggest that the use of PMR automatically produces better academic work. This result is confirmed by a study performed in Canadian PS that concludes that the use of PMR is not a guarantee to improve organizational performance (Goh et al., 2015). Besides, only under specific conditions does the use of PMR contribute to the improvement of organizational performance (Gerrish, 2016).

One beneficiary of a rational use of performance information is the decision-making process (Agostino & Arnaboldi, 2018; Folz et al., 2009; Heinrich, 2002; Henri, 2006). In this regard, universities that extensively use performance data in the process of management can improve over time their organizational performance. Besides, the organizational performance can be positively impacted by the quality of decision-making process if it employs valuable performance data. This is consistent with literature (Agostino & Arnaboldi, 2018; Henri, 2006; Nielsen & Baekgaard, 2015). It should be highlighted that to get the intended outcomes from the use of PMR, the managers must be well trained, as suggested by literature. From this perspective, to improve organizational performance, public managers should know what performance indicators to measure, how to measure them, and how to collect the data (Behn, 2003). Else, where decision-makers are less specialized in interpreting performance data and have less time for this process, and, although PMRSs are in place, the goals of using them are rarely reached (Charbonneau, 2011).

However, in some circumstances, the use of PMR can have challenging or even negative consequences over organizational performance. In this sense, universities may have incentives, for instance, governmental funding, to prioritize activities that improve performance in targeted areas, neglecting the other domains. A consequence of this behavior, evoked by Smith (1995), is the tunnel vision. An example of tunnel vision provided by literature shows that in Germany academic researchers focus on fashionable research topics which are easily publishable. Thus, all other topics that do not fall into these categories are marginalized (Frost & Brockmann, 2014).

Other possible unintended consequences are related to PBF. The competition between universities for funding can be useful in terms of, for instance, improvement of activities or organizational performance. However, what if the majority of resources would finally be concentrated on only one or few universities? How would the others survive, especially the small universities? In addition, universities can create a prisoner's dilemma scenario (Rapoport, 1989), by prioritizing performance information that minimizes the risk of underfunding rather than providing communities with their real contributions and values. Although the actual algorithm of funding is not so risky, this question should be always asked when an increasing part of funding will be provided based on competitions.

Second, during the last two decades, the use of PMR has served universities to demonstrate their commitment to accountability and transparency, which are important characteristics of public organizations for increasing and maintaining public trust (Agostino & Arnaboldi, 2018; Melo et al., 2010; van Dooren et al., 2015). In this sense, performance reports should inform the readers whether, for instance, the students have sufficient support in terms of food programs, housing programs, subsidy programs, and so on. The external reports, which are comprehensive documents containing institutional data and key performance indicators, have also the role to build bridges with communities. An important specific illustration of accountability of an academic institution to local community is the training programs for Indigenous People, who can then use their acquired skills to develop their local communities. In general, it would be difficult to prove its commitment to internal or external accountability or to transparency

without using performance data. This perspective is in line with prior research about accountability (Ammons & Rivenbark, 2008; Folz et al., 2009; van Dooren et al., 2015).

Third, in parallel with accountability and transparency, the use of PMR plays an important role in determining organizational legitimacy. In this sense, the regulatory emphasis is about the use of PMR for conformity with the rules established by the governmental regulatory organizations, whereas the normative use can be about, for instance, "accreditations and certifications by standard setting bodies" (Scott, 2014, p. 65). Moreover, mimetic isomorphism (DiMaggio & Powell, 1983) is one of the elements underlined by many participants in the process of gaining legitimacy by their universities, as confirmed by literature (Barreto & Baden-Fuller, 2006). In this perspective, the use of PMRSs is a result of copying or mimicking successful organizations. For instance, a strategy for self-legitimizing is to mimic the practices of universities that stand in rankings above the university in cause. However, although mimetic use can help in gaining legitimacy, sometimes it is done at the cost of maximization of efficiency (Brignall & Modell, 2000). Besides, it is not a guaranty to improve organizational performance because one cannot find two universities that operate in the same circumstances. In addition, under institutional theory perspective, the literature suggests that organizational survival is determined by the "responsiveness to external demands and expectations" (Oliver, 1991, p. 147). In this sense, the government regulations represent external pressure, and the last SMA the changing environment. Therefore, to obtain the funds, universities should use performance information to demonstrate how they meet the expectations in a competitive and dynamic environment, to identify potential risks and challenges, to evaluate their successes, or to improve their reputation.

Fourth, as expected, PMR has a substantial influence over organizational audience and public image. In this regard, several aspects are important, such as organizational comparison, academic rankings, and institutional reputation. In fact, comparing organizations based on their performance information is just a natural way to use that information (Agyemang & Broadbent, 2015; Melkers & Willoughby, 2005; Moynihan, 2009). In this manner, understanding the university's position within its sector or its evolution over time can provide valuable feedback, and it can contribute to improving its transparency and accountability. In this process, performance measures are often used as proxies. However, comparing the performance of various organizations cannot offer plausible conclusions if the measures are applied in circumstances which are particular to each entity (Behn, 2003), such as university program mix. Consequently, the participants did not find interesting to participate in comparisons and benchmarking, either at national or at international stage. In addition, some participants agreed that in general the public is not interested in performance targets and indicators as well, including in this list the performance reports requested by the government through SMAs.

In the same vein, the rankings, which are based on performance data, have begun to have a significant impact on student and faculty recruitment. As several organizations have produced world university rankings, such as Academic Ranking of World Universities, QS World University Rankings, and Times Higher Education World University Rankings (Tee, 2016), we can talk about a mini-industry of ranking bodies. In this respect, the simple existence of rankings encourages universities to use PMR, which is confirmed by institutional theory. Put simply, the development of communication technology has positively influenced the size of market of diffusion of information,

including academic rankings, since the beginning of the current millennium, affecting universities all over the world. Despite their popularity, the rankings have several challenges. In this regard, the performance data employed by ranking bodies are not audited, auditable, or traceable, although their accuracy is determinant in establishing reliable and valid comparisons. Besides, lately, it seems that the academic institutions hired specialists educated in data collection and data reporting to these ranking bodies, with immediate consequences in raising those organizations in the hierarchy. Therefore, the external users should learn that a ranking is done according to somebody's sense of performance data and how well the institution reported that data.

In the same perspective, reputation is another important element that contributes to enhancing the university's public image. Performance information can influence the reputation of universities (Agyemang & Broadbent, 2015), although many participants claimed that the reputation is established, the age of institution being determinant, and difficult to be changed, resulting in a great inertia. However, they did not argue that the reputation is totally static. In this sense, quantitative and qualitative performance data can influence the dynamics of reputation, such as the sum of alumni's success and contributions to the world, as well as the accountability, transparency, and trust, by providing the public with trustworthy performance information, for example, the research impact in knowledge advancement and community economics. In addition, advertising, celebrating, and social media, also affected by performance information, have increased lately their influence in determining the academic reputation, in some instances more than rankings. For example, by receiving a great donation, or by hiring a Nobel Prize winner, it is possible to improve the reputation of a university.

6.4 Implications, limitations, and perspectives for future research

The literature shows that PMR is increasingly used by the PS worldwide, particularly by the HE sector. However, studies about this topic performed in the Canadian context are still scarce. The use of the lens of both institutional and contingency theories is another important advantage of current research that is not frequently employed by scholars. Moreover, this research examined a wider palette of aims for employing PMR than the most empirical studies in the literature, which generally observed only the use of PMR from a decision-making perspective (Nitzl et al., 2019). This research benefited from the interpretivist paradigm by understanding reality through the eyes of participants, in that a majority of members of the top management of universities form a rather homogenous group. During his work, the researcher encountered various challenges that have their roots in the research design used and the methodology selected. Besides, during interviews and data analysis, some new questions were raised, which can be answered by doing future examinations.

The first implication is related to the two factors examined to determine their influence over the adoption of PMRSs, specifically university size and university complexity. The selection of these two elements was strongly based on contingency theory, which is one of the most salient perspectives used in management accounting research. In the context of the research objectives, the two main contingent factors were appropriately chosen to capture the items the study intended to explore, being directly related to the RQs, and having the quality of yielding insights that addressed the core inquiries of the study. Contrary to the literature (Agyemang & Broadbent, 2015; Ferreira & Otley, 2009), the results of the current research suggest that the two factors do not have

an important influence over the adoption of PMR by Ontario universities. Moreover, rather than using the two factors differently, many participants seemed to use them interchangeably, although they were introduced and explained to respondents during the interviews in a clear and accessible fashion, avoiding jargon or overly complex language. In fact, the literature mentions some scholars who failed to differentiate between the two factors. For example, two studies conducted fifty years apart, Zelditch and Hopkins (1961) and Saliterer and Korac (2013), use organizational size as a proxy for organizational complexity. The variability in how respondents interpreted or responded to the contingent factors was limited. However, as it posed challenges in drawing meaningful conclusions from the data, the researcher cannot conclusively show that the contingent factors of organization size and complexity impact the use or implementation of PMRSs by public universities in Ontario. As these challenges were identified, a recommendation for improving the measurement of the contingent factors in future research is to include the question not only into the supplementary structured questions but also into the semi-structured interview. This alternative approach could enhance respondents' understanding.

Second, many challenges are related to performance indicators, which are the core of PMR. One challenge has to do with offering standard definitions of performance metrics, using standard procedures for collecting data, or dealing with other measurement-related concerns (Goh et al., 2015; Hood, 2007; Pollanen, 2005; Tee, 2016; Wiers-Jenssen et al., 2002). In general, clarity, consistency, avoidance of interpretation, and disregard for context are traits of definitions that are important but typically faulty. It has been argued that universities should use both quantitative and qualitative data

(Modell, 2003; ter Bogt & Scapens, 2012) to fulfill their moral obligations to society by providing accurate performance information. However, the use of qualitative data should only occur after any potential subjectivity or bias associated with it has been mitigated. Therefore, further studies on the issues and utility of qualitative data in PMRSs can be very beneficial. At the same time, as students are central to academic activities, this study reveals new directions for using PMR to improve the student experience. For instance, respect for EDI principles or universities' campus safety and security policies are some of the topics that have just started to be included by universities in their lists of performance indicators to be measured.

Third, PMR is useful in correcting organizational performance results through feedback (Otley & Berry, 1980) or feedforward (Emmanuel et al., 1990) adjustments. However, none of the participants claimed the use of feedforward adjustments, although, theoretically, they are more advantageous to be employed in certain situations than feedback adjustments. Although one cannot rule out the possibility that the participants did not differentiate the two concepts by titling them both feedback adjustments, further research could clarify this aspect. In addition, the management's freedom to make feedback or feedforward adjustments is an indication that the organization enjoys institutional autonomy (Moynihan & Pandey, 2010). At the same time, although a significant number of participants admitted their universities are fully autonomous and the management has the freedom to make any changes to improve organizational performance, the literature suggests that the imposition of PBF by the government, along with mandatory PMR, determines the breach of academic autonomy (Broadbent, 2007).

Therefore, further research could provide insights on the relationship between the level of institutional autonomy and the level of freedom to make organizational adjustments.

Fourth, the claim that the use of PMR can contribute to enhancing organizational performance was rather inconsistent among participants. Noteworthy, this theory is generally accepted, but only under certain circumstances, as agreed by the literature (Gerrish, 2016). The current study does not directly confirm a positive association between, on one side, the use of mimetic isomorphism (DiMaggio & Powell, 1983; Scott, 2014) for gaining organizational legitimacy and, on the other side, organizational performance improvement. While prior research suggests that gaining legitimacy is sometimes done at the cost of maximization of efficiency (Brignall & Modell, 2000), this is not proof that, overall, this process does not positively influence organizational performance. Therefore, this topic deserves to be deeply studied in the future.

Finally, the same subject, but with research conducted across Canada, could be another promising field for future investigation. As the responsibility of education in Canada is delegated to provincial governments, this research may reveal provincial differences and commonalities, and best practices for using PMR. Future research could also focus on a new sequence of interviews with, if possible, the same participants from the current study after a certain period, as well as considering additional constructs emerging from this study, such as organizational culture. Thus, this longitudinal examination might help to identify the changes in various factors, to confirm or discover new influential factors, and to understand their influence on using PMR over time and in different contexts and circumstances, such as performance metrics, organizational

learning, organizational legitimacy, or public accountability in postpandemic

environments.

7　Conclusion

Since the adoption of NPM in the PS in western countries, PMR, which is an important tool of NPM, has been used more frequently than before. Although it is a concept fairly commonly studied over time in the PS, particularly the public academic sector has not benefited much from such studies worldwide. Current research has sought to explore the use of PMR by Ontario public universities. The particularity of the academic sector, which is subject to unique operational and regulatory environments, can significantly influence the outcomes of PMR use. This research employed an inductive interpretative methodology and was essentially exploratory. The researcher used qualitative research approaches and adopted a single case study method, with a strategically selected group of Ontario public universities being treated as embedded units of analysis in this study. Semi-structured interviews with 43 top officials in Ontario institutions served as the primary study technique. Secondary data and a brief questionnaire were also used as supplements.

The current study focused on three primary topics. The first answered the RQ: How do political and regulatory factors, organizational size, and organizational complexity influence the use of performance information by the management and regulators of Ontario universities? The investigation determined that the main political and regulatory factors that encourage universities to use PMR are the provincial and federal government rules, while other regulatory elements, represented by the regulatory and funding systems of other governmental or nongovernmental bodies, such as accreditation institutions, have a very similar impact. However, the above-mentioned political influence is not always linear or uniform, being affected by the political doctrine

of each government. In addition, as some forms of PMRs had been used by Ontario

universities long before the government started to impose them, the results suggest that in

the absence of government regulations, organizational size and organizational complexity

could influence the use of PMR. In this respect, while smaller or less complex

universities may find it easier to implement PMRSs, larger or more complex

organizations, with more human and financial resources, are more likely to adopt

PMRSs. Moreover, participation in various national and international rankings with the

goal of enhancing the organizational reputation or enrolling better students or faculty

members also plays an important role in implementing PMRSs by academic institutions.

The second topic addresses the second RQ: To what extent is PMR used by

Ontario universities for political, regulatory, and compliance reporting, and for learning

and development? The current examination found that, although academic autonomy is

not yet much affected, the government uses PBF and SMA as principal tools for having

control over universities. However, the accuracy of the performance metrics used by the

two tools is one of the challenging issues that must be solved in the near future by the

government. In addition, in the process of organizational learning and development, the

use of PMR can contribute to the improvement of organizational performance by using

data to identify areas of strength and weakness. In the same process of organizational

learning, inter-organizational collaboration is an example of a strategic way for several

organizations to work together with the goal of improving their organizational

performance.

The last topic answered the RQ: To what extent does the use of PMR by Ontario

universities impact organizational performance, affect accountability and organizational

legitimacy, and lead to comparisons and rankings of academic institutions? This study

ascertained that by making them public, performance data play an important role in

improving the accountability and transparency of any public university. In addition, to

gain legitimacy, many universities copy other successful universities. Moreover, an

important part of the external public audience is interested in comparisons of universities

and rankings. However, the measurement of indicators used in assessing universities is

not always done in similar conditions. Thus, the contexts in which universities do their

activities raise an important issue related to the relevance of those rankings or

comparisons. In addition, the pandemic posed significant challenges to the established

system of accountability, which assesses performance through isolated snapshots that are

frequently taken at inappropriate moments and often focus on irrelevant metrics. This

approach has resulted in interpretations of performance data that lack contextual accuracy

(Shepherd, 2022).

With respect to research design, RQs were directly aligned with CF. The P&B

framework, the basis of the CF used in the study, was flexible enough to accommodate

elements for a control process of Emmanuel et al. (1990, p. 9), and Otley and Berry

(1980). The actual findings met the initial expectations of the CF regarding the level of

detail and granularity in responses. Although CF was not very complex, it was

comprehensive enough to address significant aspects of RQs. Moreover, although CF

itself did not allow for a very nuanced analysis of the data, this issue was alleviated using

thematic analysis, which enabled the identification of subtle patterns or themes within

responses, and revealed the depth of participants' experiences or perspectives effectively.

Nonetheless, additional contingent factors from literature such as organizational culture and capabilities could also be explored.

Several aspects of the research design were particularly effective. Among them, we can find the qualitative method approach, a well-chosen data collection technique, and a strong CF that yielded valuable insights. Moreover, the respondents' answers were influenced by their domain of specialization. As they came from various such domains, this fact enriched significantly the data collected. However, in future research, the CF can be improved to better address the RQs and capture detailed responses. In this vein, one solution is the inclusion in the CF of a logic model that functions as a strategic framework for the organization or program, delineating its intended outcomes, the activities to be implemented, and the outputs it aims to generate to achieve the anticipated results (Treasury Board of Canada Secretariat, n.d.). This solution is all the more relevant as the federal government encourages public institutions to use it. Besides, as the collection instrument for the theme of the influence of two contingent factors in adoption of PMR did not provide conclusive results, being based especially on the supplementary quantitative questions, this could be an area for improvement in future studies by using semi-structured questions. Other recommendations can be related to conducting a deeper investigation into how themes like organizational performance culture, gaming, and data manipulation influence the study's primary outcomes.

Although many important empirical studies on this topic were performed worldwide, especially in the last two decades, only a few focused on the Canadian context, and no known studies were conducted in the Canadian public universities. In addition, no known studies of the use of PMR in PS have used both institutional and

contingency perspectives as their theoretical foundations. Conversely, the present study

analyzed the use of PMR from various managerial perspectives, as opposed to the most

empirical studies that used PMR only from one perspective, usually decision-making.

Importantly, it also considered the regulatory and voluntary use of PMR by external

parties, such as government regulators and other agencies. The conclusions of the current

study could extend the understanding of the implications of the use of PMR in PS, in

general, and in the HE context, in particular, from both institutional and contingency

theory approaches. From a practical perspective, this research could improve the

understanding of how the use of PMR might affect the performance of public

universities. Finally, this study could also help anticipate the consequences of the use of

PBF for the public universities in Ontario.

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Appendices

Appendix A: Regulatory context of Canadian universities

Section 93 of the Constitution Act, 1867, states that "[i]n and for each Province the Legislature may exclusively make Laws in relation to Education" (Canada Department of Justice, 2012). Therefore, each of the ten Canadian provinces has its own laws and regulations about HES, including organization, governance, and funding. So, in Canada one could find ten unique HES. Moreover, the federal government does not have a ministry of education (Shanahan, 2015a). While the federal government is in charge of many HE responsibilities, such as funding research programs considered national priorities (Shanahan, 2015b), Canadian academic institutions are "independent, autonomous, not-for-profit corporate entities by either a primary piece of provincial or federal legislation, royal charter, or royal proclamation" (Shanahan, 2019, p. 3).

Although almost all Canadian provinces use various degree PMR, Alberta, along with Ontario, have been most active (Ziskin et al., 2014). In 1997 Alberta was the first Canadian province that implemented PBF in academic system. The first goal was to increase productivity by increasing the number of enrolled students, reducing the funds per student, increasing efficiency, and reducing the administrative costs. The second goal was to increase governmental control by imposing organizational outcomes (Boberg & Barnetson, 2000). In turn, in 1999 the Government of Ontario started to require the public universities to report yearly three performance indicators, namely 1) graduation, 2) employment, and 3) Ontario student assistance program loan default rates. The initial goal was to help parents and prospective students in selecting universities and programs.

Although this initiative would provide data for comparing the performance of various

universities, the information offered by the three performance indicators was considered

too vague for making decisions. Therefore, starting the following academic year,

graduation rate and employment rate have been used in the process of allocating 1.4% of

funding resource (Government of Ontario, n.d.). In 2005 the Government of Ontario

established the Higher Education Quality Council of Ontario (HEQCO) with a mission to

assist the government to improve postsecondary education. Therefore, HEQCO decides

PMR to be used by the HES in Ontario (Weingarten & Hicks, 2018).

PBF, named sometimes outcomes-based funding, is the process through which the

amount of public or private funding of educational organizations is linked, usually via a

formula, to various institutional outputs or outcomes related to teaching and research, and

to other outcome indicators, such as employment ratio or earnings of graduates (Guthrie

& Neumann, 2007; Ziskin et al., 2014). PBF is believed, according to the Government of

Ontario, to be an important accountability element. Consequently, its plan is to increase

the proportion of funding of HEI based on performance to 60 percent, in the next five

years (Fedeli, 2019, p. 187). This plan is aligned with the plans of other governments that

use PBF "to make their higher education institutions focus on particular outcomes and

financially reward them for performance that is in line with government priorities" (de

Boer et al., 2015, p. 4). In fact, PBF has been used in many countries for a long time. In

USA, between 1979 and 2009 26 states implemented PBF for funding the academic

systems (COU, 2013). In addition, in the European Union states, UK implemented PBF

in 1986, Finland in 1994, Denmark in 2000, and Austria in 2002 (de Boer et al., 2015).

However, the implemented models of PBF differ from one country to another because

"their culture, political and legal system, policy style, size, higher education system characteristics and strategic agendas are different" (de Boer et al., 2015, p. 8). The differences are related especially to "the proportion of performance-based funding, the performance indicators used, [and] the weights attached to the indicators in the models" (de Boer et al., 2015, p. 8).

In the view of the Government of Ontario, the increase of the percentage of funding based on performance represents an important step towards ameliorating the outcomes of the higher educational process and improving the performance and accountability of academic organizations. Besides, the federal government supports academic research by offering grants based on research proposal competitions or by creating different public foundations and research programs (e.g., Canada Research Chairs), or graduate and postdoctoral research fellowships (Shanahan, 2015b). Finally, other important sources of revenue are the tuition fees and the donations (Snowdon, 2005). Jongbloed (2004, p. 9) recognized that "[a]n ideal funding system does not exist. It all depends on the goals that policy-makers would like to achieve on behalf of students and society in general…. [T]he success of any system will … depend heavily on the amount of funds invested in it from public and private sources". Effective from April 1, 2020, to March 31, 2025, the Government of Ontario implemented the Strategic Mandate Agreement 3 (SMA3) between the MTCU and all public universities in Ontario. It is considered "a key component of the Ontario government's accountability framework for the postsecondary education system" (MTCU, 2020). Although SMA3 is the third strategic mandate agreement between the Government of Ontario and Ontario's

universities, only the new PBF model in SMA3 is linked to targets of student and economic outcomes (Government of Ontario, n.d.).

Under the SMA3, the Province requires the reporting of ten performance indicators for two areas it has decided as priority for universities. First, skill and job outcomes, has as an objective to assess the capacity of the university in improving the graduate outcomes. Its performance indicators are the following: 1) graduate employment rate in a related field, 2) institutional strength and focus, 3) graduation rate, 4) graduate employment earnings, 5) experiential learning, and 6) skills and competencies. Second, community and economic impact, has as objective to assess how effective universities are in supporting the provincial economy. It is based on the following performance indicators: 1) community and local impact of student enrolment, 2) economic impact (institution-specific), 3) research funding and capacity, i.e., federal tri-agency funding secured, and 4) innovation, i.e., research revenue attracted from private sector sources. In addition, universities have a third priority area, namely productivity, accountability and transparency, which is not linked to PBF. Universities are authorized to allocate weights for all ten performance indicators for PBF purposes between 10 percent and 35 percent from the total PBF for the academic year 2020-2021, decreasing to between 5 percent and 25 percent from the total for the academic years 2022-2023 to 2024-2025.

Consequently, first, SMA3 is a regulatory factor that determines the use of PMR by the public universities from the Province of Ontario. Second, universities use PMR imposed by SMA3 for compliance with provincial laws and accountability reporting, and also for various managerial functions, such as planning and budgeting, resource allocation, decision-making, control, organizational performance evaluation, and

organizational goal communication. Moreover, SMA3 is an example of coercive mechanism (DiMaggio & Powell, 1983), or regulative structure (Scott, 2014), or political pressure (Oliver, 1992) that leads to legitimization of SMA3 and institutionalization of universities. Third, the most important repercussion of the use of SMA3 is the governmental funding decision. The desirable effects of the use of PMR from SMA3 are the improvement of the skill and job outcomes of the students and graduates, positive impact on community and provincial economy, and improvement of organizational productivity, accountability, and transparency. It is not possible to know yet the direction and the size of these effects. In addition, because all universities have the obligation to use the same performance indicators for SMA, the performance of HEI could be easier to compare. However, this comparison should consider that the percentages of performance indicators used by universities in determination of PBF are not necessarily identical. Furthermore, the use of SMA3 will impact organizational performance, the quality of decision-making and resource allocation, accountability, public trust, and learning what should be changed to improve organizational performance, although these reports cannot provide the direction and the level of impact.

Appendix B: Semi-structured interview guide

This interview is being conducted in relation to a research study about the use of PMR in Ontario universities. You have agreed to participate at this interview by signing the consent form and agreed the interview being recorded in order to ensure accuracy of your comments and facilitate notetaking. The main interview questions relate to factors affecting PMR use, purposes of PMR use, and organizational effects of PMR use.

Section 1: Factors affecting performance measurement use

S1a) In your opinion, how do governmental regulations affect or influence the use of performance measurement in your university? Please provide examples!

S1b) Except for the governmental regulations, are there other external factors that encourage or even impose the use of performance measurement in your university? Please provide examples!

Section 2: Performance measurement use

S2a) To what extent and how is performance measurement used by your university for political, regulatory, and compliance reporting (for funding and accreditation organizations)? Can you provide some examples of performance indicators used for these purposes? What is your opinion about the regulations imposed by the provincial government for performance-based funding?

S2b) How does performance information help your university to learn what changes to make to improve the quality of activities? Can you provide some examples of performance indicators used for this purpose, if any? To what extent is the management of your university allowed by provincial government to find and to implement solutions based on the learnings from the use of performance measurement?

Section 3: Organizational effects of performance measurement use

S3a) You could claim that your university is either successful or not in fulfilling its mission. On what basis do you make this assertion? Do you use performance information in argumentation? Or is this assessment mostly subjective?

S3b) What is the primary audience of performance measurement reports? Are national and international accreditation bodies among the primary audience? What about national and international ranking bodies? In your opinion, what are the main effects of such performance measurement reporting on how the university is perceived by the public or on its public image?

S3c) How useful are performance measurement reports in the process of comparing the performance of your university with that of others? How do you feel about use of performance measurement for these purposes?

Section 4: Summary questions

To conclude, could you please answer the following three overall summary questions asked/shown on your computer screen one at the time (see Appendix C)?

Appendix C: Supplementary structured questions

Q1) To what extent did the following factors affect your university's decision to implement performance measurement systems? Rate the items below from **1 (hardly at all)** to **5 (great extent)**.

	1	2	3	4	5
a) Provincial governmental requirements	☐	☐	☐	☐	☐
b) Size of university	☐	☐	☐	☐	☐
c) Complexity of university	☐	☐	☐	☐	☐
d) Please specify others:	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

Q2) To what extent does your university use performance measures for the following purposes? Rate the items below from **1 (hardly at all)** to **5 (great extent)**.

	1	2	3	4	5
a) Political, regulatory, and compliance reporting	☐	☐	☐	☐	☐
b) Learning and development	☐	☐	☐	☐	☐
c) Please specify others:	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

Q3) How would you assess the following possible consequences of the use of performance measurement at your university, from **1 (mostly negative)** to **5 (mostly positive)**?

	1	2	3	4	5
a) Improving university's performance, e.g., extent to which university has achieved its goals and objectives	☐	☐	☐	☐	☐
b) Improving public perception and image of university, e.g., common views and impressions about university reported in news or social media	☐	☐	☐	☐	☐
c) Improving comparisons with other universities, e.g., program or university rankings by governments or external parties	☐	☐	☐	☐	☐
d) Please specify others: --	☐	☐	☐	☐	☐
--	☐	☐	☐	☐	☐
--	☐	☐	☐	☐	☐
--	☐	☐	☐	☐	☐

Thank you for your participation in and valuable contributions to this study!

Appendix D: Letter of invitation

Letter of Invitation

[Date]

[Title, First Name, Last Name]
[Position]
[Address]

Dear [title, name]

Subject: PhD Study on Performance Measurement in Ontario Universities

My name is Catalin Silviu Neculita. As a PhD student in the Sprott School of Business at Carleton University, I am working on a thesis research project under the supervision of Dr. Raili Pollanen.

You are invited to participate in this study on performance measurement in Ontario universities. The study aims to understand the use of performance measurement in universities, the factors that influence this use, and the perceived impacts of this use.

Based on your position in the management of […] University, you have a great deal to share about the use of performance measurement at your university and would be a knowledgeable and valuable participant. This study does not intend to evaluate or critique your practices, but rather to learn from you about your university's practices. In addition, your university could benefit from participating in this study by gaining further understanding of its own practices, and those of other universities, and potentially learn from the experiences of others. A summary report of the results will be available to the participants.

This study involves **one approximately 40 – 50-minute interview** that will take place online through video conferencing software at a mutually convenient time. With your consent, the interview will be video recorded. Once the recording has been transcribed, it will be destroyed.

While this project does involve very low professional risks, care will be taken to protect your identity. It will be accomplished by keeping all responses anonymized and allowing you to request that certain responses not be included in the final project.

You will have the right to skip the questions that you do not want to answer and end your participation in the study at any time, for any reason, up until one week after the interview. If you choose to withdraw, all the information you have provided will be destroyed.

All research data, including video recordings and any notes will be password protected. Besides, any hard copies of data including handwritten notes will be kept in a locked filing cabinet in the researcher's office at Carleton University. Research data will only be accessible by the researcher and the research supervisor.

This research has been cleared by the Carleton University Research Ethics Board (REB) A—ethics clearance number [number].

Should you have any **ethical concerns** with the study, please contact the REB Chair, by phone: 613-520-2600 ext. 2517 or by email: ethics@carleton.ca.

If you would like to participate in this research project, or have any questions about this research, except for research ethics questions, please contact me at 819-762-2580 or via email at SilviuNeculita@cmail.carleton.ca for further information.

Thank you kindly for considering this research opportunity. **Your contribution would be very important to this study and very much appreciated**.

Sincerely,

Catalin Silviu Neculita, CPA, CGA, MEng

Appendix E: Informed consent form

Informed Consent Form

Name and Contact Information of Researchers:
Catalin Silviu Neculita, Carleton University, Sprott School of Business
Tel.:
Email: SilviuNeculita@cmail.carleton.ca
Supervisor and Contact Information:
Dr. Raili Pollanen
Email: Raili.Pollanen@carleton.ca
Project Title
Performance Measurement in the Public Universities in the Province of Ontario, Canada
Carleton University Project Clearance
Clearance #: [number]   Date of Clearance: [date]
Carleton University Research Ethics Board contact information:
    Phone: 613-520-2600, ext. 2517
    Email: ethics@carleton.ca
Invitation
Your participation in this study is voluntary, and a decision not to participate will not be used against you in any way.
What will I be asked to do?
If you agree to take part in the study, we will ask you to:
- Participate at an individual interview, which is expected to last about 40-50 minutes.
- They will take place either on an online platform, such as Zoom, or telephone if videoconferencing is not available.
- The interview will be videorecorded and once it has been transcribed, it will be erased. However, the participant can choose not to be recorded.
- After the video recordings have been transcribed, you will have an option to review your transcript for accuracy and make any editorial changes you wish.

Risks and Inconveniences
We anticipate only very low or minimal professional risks to participants of this study, but it involves a time commitment of about one hour.
Withdrawing from the study
If you withdraw your consent during the course of the study, all information collected from you before your withdrawal will still be used, unless you request that it be removed from the study data.
After participating in the study, you may request that your data be removed from the study and deleted by notice given to the Principal Investigator (named above) within 7 *days* after your completed interview.

Confidentiality

We will remove all identifying information from the study data as soon as possible, which will be after transcribing the interview.

We will treat your personal information as confidential, although absolute privacy cannot be guaranteed.

All data will be kept confidential, unless release is required by law.

The results of this study may be published or presented at an academic conference or meeting, but the data will be presented so that it will not be possible to identify any participants.

Data Retention

After the study is completed, your de-identified data will be retained for future research use for a period of five years and then securely destroyed. Electronic data will be erased and print copies will be shredded.

Statement of consent – print and sign name

I voluntarily agree to participate in this study.	___Yes	___No
I agree to be video recorded.	___Yes	___No
I agree to be contacted for follow up research.	___Yes	___No
I wish to review my interview transcript.	___Yes	___No
I wish to receive a summary report of the results.	___Yes	___No

By signing this form, you are not waiving any rights or releasing the researchers from any liability.

_____   _____   _____
Name of participant (Please print)   Signature of participant   Date

Research team member who interacted with the participant

Catalin Silviu Neculita

_____   _____   _____
Name of researcher (Please print)   Signature of researcher   Date

Thank you for your contribution to this study!

Please retain a copy of this document for your records.

Appendix F: Letter of introduction

Carleton University | Sprott School of Business

[Date]

[Title, First Name, Last Name]
[Position]
[Address]

Dear [Title, Last Name]:

Subject: PhD Study on Performance Measurement in Ontario Universities

It is my pleasure to introduce Mr. Catalin Silviu Neculita, a PhD student in Management at the Sprott School of Business, Carleton University. His PhD thesis research, conducted under my supervision, focuses on performance measurement practices in Ontario universities. The thesis examines the degree of their use, factors affecting their use, and potential benefits, as well as drawbacks, of their use at the university level.

These issues are particularly relevant and timely for Ontario universities, given increasing provincial reporting requirements and initiatives to further strengthen provincial performance-based funding to universities. This study can provide new information on and insight into current comparative practices and further help universities plan for future managerial needs, as well as provincial requirements, for performance information.

On behalf of Silviu and the Sprott School of Business, as well as personally, I greatly appreciate and encourage your participation in this important, timely and exciting study. Your anticipated participation involves a short confidential interview. More information about this study is provided in the accompanying letter of invitation.

We look forward to hearing a positive response from you!

Sincerely,

[Signature]

Raili Pollanen, PhD Thesis Supervisor
Adjunct Research Professor (Retired Associate Professor)
Email: Raili.Pollanen@carleton.ca

Appendix G: Autocoded themes (codes)

Name	Files	Refs.
performance	**42**	**483**
performance measurement	38	123
performance indicators	23	64
performance metrics	22	38
performance measurement reports	9	16
performance information	11	13
performance management	5	9
performance measurement systems	4	7
performance data	6	6
particular performance measurement	2	4
performance funding	2	4
performance measurement programs	1	4
performance rankings	2	4
performance reports	4	4
using performance measures	2	4
good performance	1	3
institutional performance metrics	2	3
key performance indicators	2	3
performance outcomes	3	3
relative performance	1	3
10 performance metrics	2	2
academic performance	2	2
actual performance	2	2
affecting performance measurement	2	2
certain performance metrics	2	2
customer performance	1	2
employee performance monitors	1	2
historical performance	1	2
imposing performance metrics	1	2
individual performance metrics	2	2

Name	Files	Refs.
internal performance measures	2	2
much performance	2	2
performance accountability frameworks	2	2
performance assessment measures	1	2
performance goals	2	2
performance indicator environment	1	2
performance measurement system	1	2
performance measurement tools	1	2
performance targets	1	2
pre-existing performance measures	1	2
provincial performance management	1	2
research performance	2	2
simple performance metrics	1	2
strategic plan performance indicators	1	2
together performance metrics	1	2
true performance measurement	1	2
true performance measurement systems	1	2
using performance indicators	2	2
using performance information	1	2
110 other items with 1 reference from 1 file		
measurement	**40**	**276**
performance measurement	38	120
performance measurement reports	9	16
performance measurement systems	4	7
measuring things	5	5

Name	Files	Refs.
particular performance measurement	2	4
performance measurement programs	1	4
using performance measures	2	4
good measure	2	3
important measure	3	3
particular measures	3	3
accountability measures	1	2
affecting performance measurement	2	2
certain measure	2	2
institutional level measure	1	2
internal performance measures	2	2
measurement board	2	2
performance assessment measures	1	2
performance measurement systems	1	2
performance measurement tools	1	2
pre-existing performance measures	1	2
provincial measurement	2	2
quantitative measure	2	2
single measure	1	2
standardized measure	2	2
true performance measurement	1	2
true performance measurement systems	1	2
75 other items with 1 reference from 1 file		
student	**39**	**205**
student experience	12	16
international students	12	14
student satisfaction	8	13
graduate students	8	10
indigenous students	3	5
student body	5	5
student services	4	5

Name	Files	Refs.
student success	4	5
domestic students	4	4
student recruitment	4	4
student satisfaction surveys	3	4
potential students	3	3
student engagement	2	3
student enrollment	3	3
student population	3	3
student surveys	3	3
attracting students	2	2
co-op students	2	2
first-year students	2	2
individual student	2	2
outstanding student experience	1	2
particular student	2	2
quality students	2	2
student data	2	2
student employability	2	2
student feedback	2	2
student satisfaction information	1	2
students activities	2	2
students demand	1	2
undergraduate students	2	2
77 other items with 1 reference from 1 file		
performance measurement	**40**	**201**
performance measurement	38	119
performance measurement reports	9	16
performance measurement systems	4	7
particular performance measurement	2	4
performance measurement programs	1	4
using performance measures	2	4
affecting performance measurement	2	2
internal performance measures	2	2

Name	Files	Refs.
performance measurement systems	1	2
performance measurement tools	1	2
pre-existing performance measures	1	2
true performance measurement	1	2
true performance measurement systems	1	2
33 other items with 1 reference from 1 file		
government	**39**	**173**
government regulations	23	35
provincial government	15	28
government funding	11	15
government relations	4	4
government policy	3	3
government requirements	3	4
government support	3	3
appeasing government regulations	1	2
government changes	2	2
government designs	1	2
government interests	2	2
government metric	2	2
government partnerships	2	2
government priorities	2	2
government reporting	2	2
liberal government	2	2
populist government	2	2
previous government	1	2
provincial government partners	1	2
57 other items with 1 reference from 1 file		
funding	**38**	**169**
performance-based funding	12	16
government funding	11	15
research funding	9	14
public funding	7	8
performance-based funding model	1	6

Name	Files	Refs.
funding formula	3	5
much funding	4	4
performance funding	2	4
funding structures	3	3
external funding	2	2
external research funding	1	2
funding envelope	2	2
funding model	2	2
future funding	1	2
grant funding	2	2
tie funding	2	2
tri-council funding	2	2
78 other items with 1 reference from 1 file		
university	**35**	**151**
university sector	7	9
small university	5	6
comprehensive universities	4	5
individual university	4	4
canadian universities	2	3
comparing universities	3	3
intensive universities	3	3
liberal arts university	3	3
particular university	3	3
ranked university	3	3
top university	3	3
university setting	3	3
world university rankings	1	3
certainly universities	2	2
competitive university	2	2
complex university	2	2
driving universities	2	2
good university	2	2
large university	2	2
public universities	2	2
research-intensive university	2	2
undergraduate university	2	2
universities research	2	2
university administrations	2	2
university graduates	2	2
university level	2	2
university system	2	2

Name	Files	Refs.
72 other items with 1 reference from 1 file		
metrics	**32**	**136**
performance metrics	22	38
performance-based metrics	2	7
different metrics	4	5
financial metrics	3	5
good metric	3	4
various metrics	4	4
certain metrics	3	3
institutional performance metrics	2	3
provincial metrics	2	3
specific metrics	3	3
10 performance metrics	2	2
certain performance metrics	2	2
community impact metrics	1	2
financial health metrics	1	2
government metric	2	2
imposing performance metrics	1	2
individual performance metrics	2	2
monitoring metrics	1	2
research metrics	2	2
right metrics	2	2
simple performance metrics	1	2
together performance metrics	1	2
37 other items with 1 reference from 1 file		
institutional	**34**	**128**
post-secondary institution	5	6
institutional level	4	5
institutional autonomy	3	4
institutional ranking	4	4
peer institutions	3	4
small institution	4	4
academic institution	3	3
different institutions	3	3
individual institution	3	3
institutional performance metrics	2	3
large institution	3	3
public institutions	3	3

Name	Files	Refs.
good institution	2	2
institutional culture	1	2
institutional data	2	2
institutional goal	2	2
institutional governance	2	2
institutional level measure	1	2
institutional reputation	2	2
institutional system	2	2
particular institutions	2	2
research-intensive institution	2	2
undergraduate institutions	2	2
61 other items with 1 reference from 1 file		
research	**33**	**116**
research funding	9	14
research grants	8	9
research dollars	3	5
research chairs	4	4
research productivity	4	4
research side	3	4
research projects	2	3
external research funding	1	2
research activity	2	2
research excellence	2	2
research function	1	2
research metrics	2	2
research output	2	2
research performance	2	2
universities research	2	2
vice president research	2	2
55 other items with 1 reference from 1 file		
indicators	**30**	**103**
performance indicators	23	64
key performance indicators	2	3
performance indicator environment	1	2
reputational indicators	1	2
strategic plan performance indicators	1	2
using performance indicators	2	2
28 other items with 1 reference from 1 file		

Name	Files	Refs.
rates	**28**	**92**
graduation rates	21	39
employment rates	9	11
retention rates	7	10
credit rating agencies	1	3
success rate	3	3
100 percent graduation rates	1	2
completion rates	2	2
graduate employment rates	1	2
20 other items with 1 reference from 1 file		

Appendix H: Descriptive statistics for supplementary questions

Research questions		Number (%) Responses					Total[3]	Mean	Median	Mode
		1	2	3	4	5				
Q1a[1]	To what extent did the provincial governmental requirements affect your university's decision to implement performance measurement systems?	0 (0.0)	3 (8.1)	7 (18.9)	6 (16.2)	21 (56.8)	37	4.2	5.0	5
Q1b[1]	To what extent did the size of university affect your university's decision to implement performance measurement systems?	10 (31.3)	3 (9.4)	8 (25.0)	7 (21.9)	4 (12.5)	32	2.8	3.0	1
Q1c[1]	To what extent did the complexity of university affect your university's decision to implement performance measurement systems?	5 (15.6)	5 (15.6)	6 (18.8)	12 (37.5)	4 (12.5)	32	3.6	3.5	4
Q2a[1]	To what extent does your university use performance measures for political, regulatory, and compliance reporting?	0 (0.0)	1 (2.8)	5 (13.9)	7 (19.4)	23 (63.9)	36	4.4	5.0	5
Q2b[1]	To what extent does your university use performance measures for learning and development?	0 (0.0)	5 (13.9)	7 (19.4)	13 (36.1)	11 (30.6)	36	3.8	4.0	4
Q3a[2]	How would you assess the following possible consequence of the use of performance measurement at your university: Improving university's performance?	0 (0.0)	3 (9.7)	8 (25.8)	9 (29.0)	11 (35.5)	31	3.9	4.0	5
Q3b[2]	How would you assess the following possible consequence of the use of performance measurement at your university: Improving public perception and image of university?	0 (0.0)	3 (8.8)	10 (29.4)	12 (35.3)	9 (26.5)	34	3.8	4.0	4
Q3c[2]	How would you assess the following possible consequence of the use of performance measurement at your university: Improving comparisons with other universities?	1 (3.1)	5 (15.6)	9 (28.1)	11 (34.4)	6 (18.8)	32	3.5	4.0	4

Note:
[1] 1=Hardly at all; 2=Slightly; 3=Moderately; 4=Very; 5=Great extent.
[2] 1=Mostly negative; 2=Slightly negative; 3=Neutral; 4=Slightly positive; 5=Mostly positive.
[3] The maximum number of responses is 43.