

Using Performance Information for Improvement Actions: Expectations, Challenges, and Prospects for Human Services Managers

by

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Abstract

The growing pressure for efficiency and service quality in the public and third sectors has led to an increasing prevalence of performance and quality measurement. As a result, many social and health care providers spend a great deal of time and effort collecting performance and quality indicators. However, there are hardly any well-founded answers to the question of whether this performance information is being integrated - as intended - into important planning, decision-making and optimization processes of the organizations. Therefore, this dissertation examines what drives human service organizations to measure performance and service quality, and to what extent they use the resulting information to improve performance. The dissertation consists of three sub-studies and is based on data from a survey of more than 700 managers in German- and French-speaking Switzerland. The results show that the existing requirements of external and internal supervisory bodies are not a sufficient condition for an effective use of performance and quality management systems. A systematic application of performance information also requires appropriate resources and information of high relevance and reliability. Even more crucial is that executive managers identify strongly with the necessary procedures and recognize their benefits.

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1. Why Performance Information Use Requires a Managerial Identity. Evidence from the Field of Human Services.

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Abstract

Previous research suggests that civil servants can perceive their role differently and that these differing perceptions also influence their responses to managerial reform programs. Yet there is little research examining how different role perceptions influence the application of performance measurement. Using survey data from 742 human service organizations in Switzerland, the present study addresses this gap by investigating how professional and managerial role identities affect managers' use of performance information. The results support the hypotheses that role identities indirectly influence the application of performance information through the effects on role conflict that may occur when managerial professionals measure the performance of their organizations. A lack of resources, stringent political control, and poor information quality are also found to be associated with role conflict and a limited use of performance information.

1.1 Introduction

Reform initiatives inspired by the New Public Management (NPM) movement and demands to invest in performance measurement have led to the emergence of new responsibilities for public and nonprofit sector executives. In order to demonstrate that public funding is spent efficiently and effectively, managers are encouraged - or forced, to track measurable targets, manage and control achievements by using performance information, and report the performance of the organization to public authorities (Bouckaert & Halligan, 2008). Against this background, several scholars have argued that NPM is an “identity project”, since public management reforms promote new work roles that require an alteration of priorities, values, and self-definitions (du Gay, 1996; Horton, 2006; Rondeaux, 2006). Much of the literature assumes that public sector reforms based on private management principles will replace or complement executives’ traditional orientations with business-like values and corresponding managerial identities (Bourgault & Van Dorpe, 2013; Emery & Giaque, 2014; Meyer, Egger-Peitler, Höllerer, & Hammerschmid, 2014). In this context, scholars have also highlighted the resulting tensions for those who try to balance the competing, and at times conflicting, orientations in the public sector (Poulsen, 2007; Tummers, Vermeeren, Steijn, & Bekkers, 2012; Van der Wal, De Graaf, & Lawton, 2011).

Despite the growing prevalence of performance measurement, an effective application of performance information remains a critical issue in many measurement systems (Ammons & Rivenbark, 2008; de Lancer Julnes & Holzer, 2001). Studying the use and non-use of performance data, previous research has identified a range of factors that foster or constrain the utilization of performance information for internal management (for a review see Kroll, 2015a). However, a relatively small number of studies to date have explored how performance information use is influenced by managers’ personal values, beliefs, and identities. Scholars

have therefore called for further research on the impact of managers' personal attributes and role identities on the utilization of performance information (Kroll, 2014, 2015a).

The present article takes this shortcoming in the literature as its starting point and aims to improve our understanding of how role identities matter for the use of performance information in at least two important respects. First, unlike previous research that focused on top public administrators in generic settings of public administration, we explore the role identities of leading professionals in specialized human service organizations. The executives in human service fields deserve more attention because the increasing demands for performance measurement signify a profound shift from professional ethics and standards for working directly with clients to a managed service provision with a stronger emphasis on organizational performance, requiring leading professionals to take on new managerial roles and responsibilities (Causer & Exworthy, 1999; Kirkpatrick, Ackroyd, & Walker, 2005). Against this backdrop, the current analysis contributes to the literature by examining how managerial professionals identify themselves with traditional and new role conceptions and whether their varying self-definitions affect the perception and application of performance measurement.

A second key contribution of this study is that we pay special attention to tensions during the application of performance measurement that may arise as a result of conflicting values and norms. This emphasis is important because scholars have suggested that the managerial logic inherent in performance measurement is at odds with professional values and standards (Flynn, 1999; van der Veen, 2013). There is, however, little empirical evidence showing whether, and with what consequences, executives with a professional background experience such inconsistent values and norms. This is why we introduce the concept of role conflict and link it to executives' role identities and reliance on performance data. The research question at the core of this study is how performance information use is affected by professional and managerial role identities and whether these relationships are mediated by role conflicts experienced by professionals in charge of management functions.

The present article proceeds as follows. We begin by reviewing the existing literature regarding impact factors for performance information use and then refer to identity theory, in order to outline our hypotheses for the relationships between role identities, role conflict and performance information use. Next, as described in the methodological section of the article, we illustrate these linkages by using structural equation modeling with survey data from 742 human service organizations in Switzerland. The findings indicate that a managerial role identity is a crucial individual disposition that fosters performance information use in various ways. In contrast, a professional self-concept is found to hamper data usage, though less directly and to a much lesser extent than it is fostered by a managerial identity. The article concludes with a discussion of its contributions, limitations, and implications.

1.2 Theory and Hypotheses

1.2.1 Drivers of Performance Information Use

As large numbers of public and nonprofit organizations have undertaken substantial efforts in the development of measurement systems and performance indicators, a growing body of research has begun to focus on the actual use of the information generated. Addressing this topic, scholars have conceptualized performance information use in various ways (cf. Behn, 2003; Van Dooren, Bouckaert, & Halligan, 2010), but their main focus has been devoted to a purposeful use of performance data. This type of utilization refers to the application of systematic feedback information with the goal of improving public services through goal-based learning, better targeting of resources, and better-informed decisions (Kroll, 2015a; Moynihan, Pandey, & Wright, 2012). Since this is the actual objective of most performance measurement interventions, it is of crucial importance to understand the conditions conducive to performance information use.

A systematic review of potential impact factors on data use by Kroll (2015a) has shown that organizational variables such as measurement system maturity, leadership support, and

organizational culture are the most frequently tested influences on the application of performance information. Stressing the importance of cultural influences, scholars have argued that an actor's ability to learn and develop further depends not only on an organization's analytical capacity but also on the degree to which the organizational culture promotes continuous improvement, appreciates additional feedback information, and accepts performance measurement routines as an appropriate organizational behavior (Moynihan, 2005; Taylor, 2011). Other studies have alluded to the importance of a supportive environment that helps an organization to obtain the necessary trust, autonomy, and resources for building or utilizing internal management capacity (Yang & Hsieh, 2007; Yang & Pandey, 2009).

Given that managers, as potential users of performance data, always have some degree of discretion, scholars have also emphasized the importance of individual manager-related characteristics. In particular, it has been noted that managers who have positive attitudes toward performance measurement and are convinced of its benefits in terms of improving management and services are more willing to take the extra effort associated with the consideration and use of performance information (Kroll, 2015a; Moynihan, Pandey, & Wright, 2012; Taylor, 2011). As regards the impact of managers' identities on data use, Hammerschmid and coauthors (2014) demonstrated that top officials with a managerial role identity make more internal use of performance information. Kroll (2014), on the contrary, failed to find any significant link between public administrators' identity and their reliance on data usage. In the light of these inconclusive results, our study helps to clarify whether and how identities affect the utilization of performance information.

1.2.2 Role Identities and their Evolvement in the Context of Reform

Over the last few years, public servant's identities and their evolvement in the context of managerial reform programs has attracted growing interest in public management research (Berg, 2006; Bourgault & Van Dorpe, 2013; de Graaf, 2011; Meyer et al., 2014; Rondeaux,

2006). Identities (or, more specifically, role identities) are defined as “self-conceptions, self-referent cognitions, or self-definitions that people apply to themselves as a consequence of the structural role positions they occupy” (Hogg, Terry, & White, 1995, p. 256). Since persons are typically embedded in multiple groups and role-relationships, identity theory asserts that persons have multiple identities which are ordered hierarchically, such that the identities at the top of the salience hierarchy are most likely to be activated (Stryker, 1968). The activation of an identity then leads to a cognitive process of self-verification in which the person behaves so as to maintain consistency with his or her role perception (Burke, 1991; Stets & Burke, 2000). Identity theory thus hypothesizes that the higher the salience of an identity relative to other identities, the higher the probability of behavioral choices in accord with the incorporated values and norms attached to that identity (Stryker & Burke, 2000).

Prior research seems to confirm the assumption that identities evolve as a result of management reforms. Bourgault and Van Dorpe (2013), for instance, find that role identities of top civil servants have changed from an emphasis on enforcing rules on guarding the public interest towards leading people through changes and ensuring an efficient use of resources. Notwithstanding this, they did not find the emergence of a pure managerial identity in the four European countries examined. Rather, the bureaucrat, policy advisor or professional identity persists in the civil service. These findings coincide with results from other studies that indicate a persistence of bureaucratic and professional identities alongside new managerial self-concepts in the civil service (de Graaf, 2011; Poulsen, 2007) or emphasize the emergence of hybrid identities that combine traditional and managerial principles (Berg, 2006; Meyer & Hammerschmid, 2006; Rondeaux, 2006). Consequently, there are now various different role concepts for civil servants to identify with.

1.2.3 Changing Roles, Identification Process, and Role Conflict

Although changing roles may have implications for the self-definitions of public administrators and professionals, new roles are unlikely to fully determine an individual's identity and behavior. Individuals always need to interpret a particular work role and identify themselves with the expectations that are attached to that role (Halford & Leonard, 1999). In the context of contemporary managerial reform programs, for instance, leading professionals will interpret their managerial role on the basis of their existing beliefs and self-concepts, and, by doing so, try to achieve correspondence between the associated role expectations and their self-definition (Poulsen, 2007; Stets & Burke, 2000). It is this process of identification which creates new managerial identities, but also leads to dilemmas and role conflict when new demands stand in opposition to an individuals' existing beliefs and identities.

According to the social psychological literature, role conflict occurs when a role incumbent feels that two or more expectations imposed on him or her are incompatible (Katz & Kahn, 1978). On this basis, Tummers et al. (2012) suggest that public professionals often experience a 'policy-professional role conflict' during policy implementation, namely when professionals perceive the role requirements demanded by the policy to be incongruent with professional values, norms, or behaviors. This is particularly the case when the policy has a strong focus on economic goals such as efficiency and financial transparency, or when the use of performance management systems and output controls are enforced (Tummers, Bekkers, & Steijn, 2009). As a result, professionals are often unwilling to implement such policies. Berg (2006) provides some further evidence that middle and lower level managers often share the concerns of front-line service professionals regarding public management reforms and react with resistance to these initiatives when they perceive managerial principles and tools as being incompatible with their professional identity (see also Kirkpatrick et al., 2005). When such incompatibilities or conflicts emerge during the implementation of performance measurement, consequences can also be expected regarding the use of performance information. Managers'

perception that data collection and consideration routines are at odds with their own values and beliefs may well raise skepticism as to the appropriateness of such practices and, consequently, increase their reluctance to invest extra time and effort into data usage.

1.2.4 Linking Identities and Role Conflict to Data Usage

Performance management interventions embody a set of expectations of how managerial professionals should behave (Moynihan & Hawes, 2012). Instead of focusing on professional procedures and standards, they are supposed to focus on results and rely on performance information when making decisions (Bouckaert & Halligan, 2008; Emery & Giaque, 2003). The way executives actually interpret this set of expected behaviors and live up to them, as explained above, takes place on the basis of the internalized beliefs and values that make up their self-concepts. On these grounds, we assume that role identities provide a fruitful approach to the exploration of how personal attributes of managers influence a purposeful use of performance information.

Performance measurement is one means of achieving a managerial logic that emphasizes businesslike values such as efficiency, innovativeness, risk-taking, responsiveness, and transparency (Horton, 2006; Kroll, 2014; Van der Wal et al., 2011). This closely fits the values and beliefs generally associated with a managerial identity. Hence, executives who see themselves mainly as managers are likely to consider performance measurement as an appropriate organizational routine, since the associated requirements are highly consistent with the values and beliefs that make up their self-concept. Given this compatibility, we assume that the higher the salience of a managerial role identity, the less likely is the experience of role conflict and the greater a person's willingness to invest some extra effort for a purposeful use of performance information. This can be hypothesized as follows:

H_{1a}: A higher level of a managerial role identity will have an indirect, positive effect on performance information use through its diminishing effect on role conflict.

Traditional role conceptions in many public and nonprofit organizations are related to professional standards for case treatment, code of ethics, principles of discretion and peer-control (Flynn, 1999; Freidson, 2001; Hupe & van der Krogt, 2013). A distinct professional identity linked to the specialized skills for the solution of human problems asserts a greater devotion to the public good rather than the economic efficiency of work (Freidson, 2001; Halford & Leonard, 1999). Given that many managers were formerly employed in professional roles or remain involved in professional practice, it can be assumed that they are familiar with professional principles of practice (Tummers et al., 2012).

Numerous studies show that professional orientations centering on the individual client, equal treatment, discretion, and equity are difficult to align with a managerial logic with a strong emphasis on organizational issues, standardization, control, and businesslike values such as efficiency (Berg, 2006; Emery & Giauque, 2003; Flynn, 1999; Tummers et al., 2009). When taking on managerial responsibilities, managerial professionals may thus be faced with multiple, potentially conflicting objectives, values and modes of occupational control. Based on this, we assume that executives who see themselves mainly as professionals are more likely to perceive an incompatibility between their internalized beliefs and the required practices for performance measurement, giving rise to the experience of role conflict. The occurrence of role conflict, in turn, is likely to decrease a person's willingness to invest extra time and effort in data usage because it reinforces doubts about the appropriateness of this behavior and leads to less positive attitudes toward performance measurement practices. We thus hypothesize:

H_{1b}: A higher level of a professional role identity will have an indirect, negative effect on performance information use through its augmentative effect on role conflict.

Of course, performance information use is not just a matter of identity. For example, adequate resources in regards to time, personnel, and technical capacity have repeatedly been found to foster performance information use because they facilitate sustained data collection

and analysis (de Lancer Julnes & Holzer, 2001; Moynihan & Landuyt, 2009). Moreover, it is reasonable to assume that the availability of resources to accomplish necessary managerial tasks can also influence managers' experience of role conflict. When a person's existing resources are insufficient to fulfill particular role expectations, he or she may experience an incongruence between demands and capacity, which leads to role conflict (Rizzo, House, & Lirtzman, 1970). On these grounds, we assume that resource adequacy facilitates a more pragmatic handling of measurement requirements, decreases potential role conflicts, and thereby leads to a higher level of performance information use. Since we are primarily interested in this indirect effect, we hypothesize:

H_{2a}: The availability of resources for performance measurement will have an indirect, positive effect on performance information use through its diminishing effect on role conflict.

The degree of managerial authority – or the degree of political control as its restriction - represents another potential influence on performance information use. If managers have the capacity to make decisions and initiate change, they have greater incentive to identify and solve problems based on performance information (Moynihan & Pandey, 2010; Swiss, 2005). For this reason, performance interventions and the underlying idea of 'managerialism' call not only for a greater focus on results, but also pretend to increase managerial authority and scope for action (Ritz & Sager, 2010). Notwithstanding this, performance measurement has often been introduced without providing managers any enhanced operational autonomy (Dull, 2009; Moynihan, 2006).

In practice, the devolution of authority and control is frequently challenged by a series of new formal rules, obligations, and contractual arrangements that tends to tighten control over public service delivery and to increase the influence of external political authority (van der Veen, 2013; Lægreid, Opedal, & Stigen, 2005), also referred to hereinafter as 'political control'.

This is likely to affect managers' willingness to use performance information. If managers' flexibility is restricted by many constraints of political control, as Swiss (2005) argues, they will be little inclined to use performance information for decision-making and improvement efforts. Furthermore, under conditions of stringent external oversight and scrutiny, managers may see performance measurement as a control arrangement and as a threat to professional discretion, rather than as a support for internal management (Ammons & Rivenbark, 2008). Since this is likely to exacerbate the perceived gap between measurement requirements and a manager's own goals or self-concept, we assume that a higher level of political control is positively associated with the experience of role conflict which, in turn, hampers a purposeful use of performance information. This leads us to the last hypothesis:

H_{2b}: Perceived political control will have an indirect, negative effect on performance information use through its augmentative effect on role conflict.

1.3 Data and Method

1.3.1 Sample

The research population consist of approximately 2.300 specialized human service organizations in the German- and French-speaking parts of Switzerland. It includes public and nonprofit facilities that represent five major areas of human services in Switzerland in which the legislative and regulatory authorities regard the application of management systems as a central strategy for better management and improved service quality. The facilities included in this study are regulated and supervised mainly by the cantons, while services are usually provided by public authorities at the local level and by numerous nonprofit organizations. It should be mentioned here that the strong federal structure of Switzerland has resulted in a highly decentralized welfare system, in terms of control, financing and implementation (Bonoli & Champion, 2015). As a consequence of this, Switzerland does not have an accessible national database that includes all human service organizations. This is why this study includes only

facilities with membership in a professional association, whose share is about 90 percent of the total population.

An online survey was sent to 2,047 executive directors during the summer of 2015 and achieved a 37.7 percent response rate ($n = 772$)¹. A total of 30 questionnaires were excluded from the analysis because the corresponding organizations did not collect any performance information at all. Among the remaining 742 human service organizations, nursing homes are most common (52%), followed by facilities for the disabled (22%). Work integration (10%) and children and youth institutions (9%) represent the third and fourth largest fields, while specialized facilities for drug addicts are the smallest group in the sample (7%). The proportion of public organizations is 24 percent, while the remainder is nonprofits relying to a large extent on public funding. More than half of the study participants (55%) are qualified social workers, social pedagogues, psychologists, or health professionals with an average 8 years of professional experience. Another 23 percent hold a degree in economics or received formal training in management, most of them (79%) with several years of work experience in the commercial sector. The remainder is distributed across numerous other occupations. Among all respondents, 70 percent were male, and the average age was 54 years. The median tenure in the current position fell between 7-9 years.

1.3.2 Study Measures

All study variables were measured using indices consisting of multiple survey items ranging from 1 (strongly disagree) to 7 (strongly agree), unless otherwise noted. Most questionnaire items were adapted from the existing literature and translated from the source language (English) into the target languages (German and French), following the procedure recommended by Brislin (1980). Appendix 1 contains more detailed information on variable measurement.

Performance information use is measured by an index of five items adopted from Moynihan, Pandey, and Wright (2012) and Kroll (2014). The index (Cronbach's alpha = 0.92) captures managers' purposeful application of performance information for common purposes of data usage such as learning, decision-making, and control.

To measure the executive directors' role identities, two indices are constructed each based on four statements from the existing literature that reflect various requests, objectives and standards that respondents may associate with their role (cf. Bourgault & Van Dorpe, 2013; de Graaf, 2011). The *managerial role identity* scale ($\alpha = 0.80$) indicates the extent to which the respondents identify themselves with a set of objectives and principles that are typically associated with a managerial role conception. The *professional role identity* scale ($\alpha = 0.79$) reflects the traditional role perception in human service organizations and encompasses the extent to which the respondents regard professional principles as constitutive elements for their role. Factor analysis supports the two-factor solution, indicating that the identity types under consideration are two distinct forms of self-definition.²

Role conflict ($\alpha = 0.82$) is measured using four items from the policy-professional role conflict scale developed by Tummers et al. (2012). Tummers and colleagues conceptualized three types of role conflict on the policy level, and the corresponding scales have been used to measure the experience of role conflicts among mental healthcare professionals when implementing the reimbursement policy known as Diagnosis Related Groups (DRGs). One advantage of these scales is that all items can be rephrased to specify a particular policy being examined. For practical reasons, we confine ourselves in this study to the policy-professional role conflict, which has been proved to be most influential in explaining public professional's willingness to implement (DRG) policies. The role conflict scale employed in this study captures the extent to which respondents perceive that performance measurement conflicts with their professional attitudes, values, and norms.

We include two additional variables that may influence performance information use as well as the experience of role conflict. First, we consider an index for measurement-related *resources*, such as time, money, personnel, and technical support capabilities for performance measurement. The index ($\alpha = 0.84$) is composed of three items adapted from de Lancer and Holzer (2001) and Dull (2009b). Second, we measure the intensity of *political control* with a three-item index ($\alpha = 0.74$) assessing the degree to which executive managers perceive the legal requirements and administrative regulation to constrain their organization's autonomy and independence, broadly following Lægreid et al. (2005).

In addition, we include goal clarity and information quality as control variables because both have repeatedly been found to be related to performance information use (cf. Kroll, 2015a). *Goal clarity* ($\alpha = 0.74$) is measured using a three-item scale developed by Rainey (1983). *Information quality* ($\alpha = 0.92$) is measured using five items from Kroll (2015b). The range consists of seven response categories from "very poor" to "excellent". To control for a possible sector effect, we include a dummy variable for an organization's *ownership* form (public vs. nonprofit). Lastly, *gender* and current *job tenure* are included to control for individual differences among respondents. Table 1 presents the descriptive statistics for each variable and the correlations.

1.3.3 Analytical Procedure

In the present study, the challenge for the statistical analysis is to detect the indirect effects of four measures (managerial and professional role identity, resources, and political control) on performance information use via a mediating factor (role conflict). Structural equation modeling (SEM) was applied for this analysis as it provides an effective and direct way of testing hypothesized relationships among latent constructs, specifying and estimating mediated relationships, and for taking measurement errors into account (Bollen, 1989). The calculations were performed with the lavaan package in R.

Table 1: Descriptive Statistics, Bivariate Correlations, and Reliabilities

	Descriptive Statistics			Correlations and Reliabilities									
	Mean	S.D.	Range	1	2	3	4	5	6	7	8	9	10
Study variables													
1 Performance information use	26.60	6.37	5-35	(.92)									
2 Managerial role identity	20.12	3.92	4-28	.35**	(.80)								
3 Professional role identity	20.88	3.99	4-28	.15	.17**	(.79)							
4 Role conflict	14.53	4.79	4-28	-.40**	-.20**	.04	(.82)						
5 Resources for measurement	13.16	4.20	3-21	.28**	.02	-.03	-.33**	(.84)					
6 Political control	14.11	4.23	3-21	.04	.06	.03	.17**	-.15**	(.74)				
Control variables													
7 Goal clarity	18.23	2.78	3-21	.12**	.14**	.10**	-.05	.15**	-.01	(.74)			
8 Information quality	27.35	4.87	5-35	.43**	.09*	.09*	-.30**	.35**	.03	.24**	(.92)		
9 Facility ownership (public)	0.24	0.43	0-1	-.05	.01	.01	.00	.02	-.01	-.09*	.02	NA	
10 Sex (male)	0.70	0.46	0-1	.02	-.02	-.12**	.02	-.01	.12**	.01	.00	-.05	NA
11 Tenure	3.67	1.33	1-5	.11**	.02	.11**	.08*	.08*	.12**	.17**	.13**	-.04**	.13

Notes: N= 742; S.D. = standard deviation; standardized Cronbach' s alpha in parentheses.

*p < .05, **p < .01

A two-step approach was chosen for data analysis, following the recommendations of Anderson and Gerbing (1988). Prior to testing the hypotheses, we conducted confirmatory factor analyses (CFA) to assess the reliability of the study measures and test the hypothesized measurement model for all latent constructs. To test model fit, we used chi-squared statistics and multiple fit indices, as recommended by Hu and Bentler (1999). Because the inclusion of various types of organizations that differ in terms of ownership form, principal task, financing and control raises concerns as to whether the instrument possesses the same psychometric properties in all groups of organizations, this step also includes testing for measurement invariance across different areas of human services, as well as across the public and nonprofit sector.³ We assessed measurement invariance following the general sequence of imposing increasingly restrictive equality constraints across groups (Vandenberg & Lance, 2000). In the second step, we included the observed control variables as covariates and respecified the measurement model to test the hypothesized relationships using SEM.

Data screening was conducted before to assess multivariate normality, multicollinearity, and heteroscedasticity. There was no indication of multicollinearity or heteroscedasticity. Given that pre-analyses of the data revealed some deviation from multivariate normality, the maximum likelihood estimation (MLM) was combined with ‘robust’ standard errors and Satorra-Bentler scaled chi-square statistics for estimations and model evaluation (Satorra & Bentler, 2001). All reported path coefficients are standardized.

1.4 Analyses and Results

1.4.1 Measurement Model

For the hypothesized measurement model, in which all items were loaded on their expected latent construct, the model fit indices confirmed that the model fits the data well. The chi-square to degree of freedom ratio ($\chi^2/df = 760/398 = 1.91$) met the traditional rule-of-thumb criteria ($\chi^2/df < 2$). The root mean square error of approximation (RMSEA = 0.035) was lower than

0.06 and the root mean squared residual (SRMR = 0.048) was below 0.08. Both comparative fit index (CFI = 0.963) and Tucker Lewis index (TLI = 0.957) were above 0.95. Furthermore, all the factor loadings were significant at the $p < 0.001$ level and nontrivial in size (lambda values ranged from 0.57 to 0.92), providing support for the convergent validity of the indicators. The properties of the measurement model are summarized in appendix 2.

Measurement invariance was investigated by comparing the fit of various models that differ with respect to between-group constraints on factor loadings, item intercepts, factor variances and factor covariances. The properties of all models are summarized in appendix 3. Concerning the equivalence of the instrument across service domains, partial measurement invariance was established. Additional analyses to test for structural invariance revealed that constraining factor variances and covariances lead only to a negligible decrement in overall fit compared with the partial invariance model. Therefore, the assumption of an invariant range of scores on the latent factors and stable factor relationships across service domains is tenable. With regard to the equivalence of the instrument across sectors, the stepwise imposition of parameter constraints did not lead to any substantial decrease in model fit in any model. Scalar (strong) measurement invariance was thus established. The constraints on factor variances and covariances are also tenable. Overall, the analyses support a high degree of measurement and structural invariance of the eight-factor model.

1.4.2 Structural Model

The theoretical model turned out to fit the data well: the χ^2/df ratio ($900/480 = 1.88$) was below 2; RMSEA (0.034) was below 0.06 and SRMR (0.047) below 0.08. TLI (0.952) and CFI (0.959) were also indicative of a good data fit, being higher than 0.95. The Lagrange multiplier test showed that no additional path could be added to improve model fit. The Wald test suggests that the direct paths linking goal clarity and role conflicts as well as professional role identity and performance information use could be removed without substantially decreasing model fit.

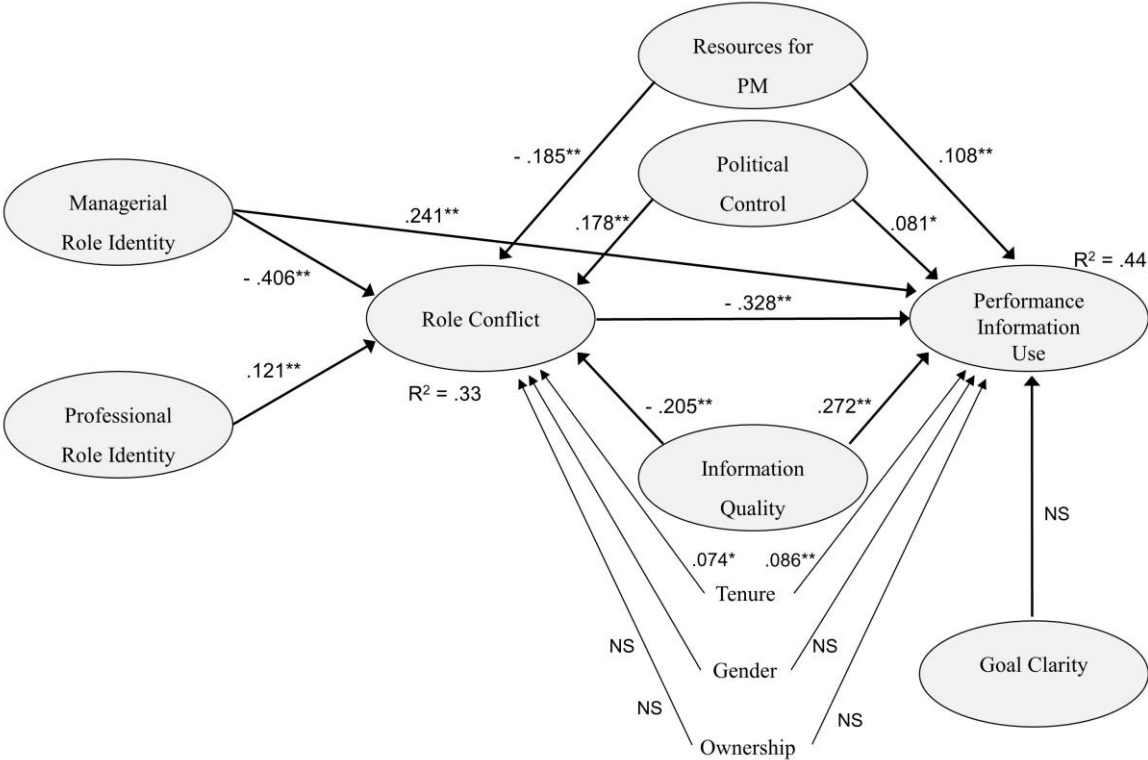
The modified and final model exhibited an almost identical data fit ($\chi^2/df = 904/482 = 1.88$; RMSEA = 0.034; SRMR = 0.048; CFI = 0.958; TLI = 0.952). The model explained about 44 percent of the data variance for performance information use and 33 percent of the variance for the experience of role conflict. In addition, all coefficients for the hypothesized paths were significant at least at the $p < 0.05$ level and in the assumed direction. Standardized path coefficients, significance levels, and R-squares are reported in figure 1.

Consistent with hypothesis 1a, managerial role identity has a direct effect on role conflict and, through this relationship, an indirect positive effect on performance information use ($B = 0.133$, $z = 5.567$, $p < 0.01$), as shown in figure 1. It further transpired that the mediator role conflict accounts for about half of the association between managerial role identity and data usage, since there is also a significant direct relationship between this identity type and performance information use. Conversely, professional role identity has a direct effect on role conflict and, only through this relationship, an indirect negative effect on performance information use ($B = -0.040$, $z = -2.875$, $p < 0.01$). This supports hypothesis 1b. Compared to the effects of a managerial identity, however, the direct and indirect effects of professional role identity are rather weak.

As expected in hypothesis 2a, the availability of resources for measurement is negatively associated with role conflict and has an indirect positive effect on performance information use via this mediator ($B = 0.061$, $z = 3.598$, $p < 0.01$). Hypothesis 2b is also supported as political control is positively associated with role conflict, and through this mediator, has an indirect negative effect on performance information use ($B = -0.058$, $z = -3.644$, $p < 0.01$). Since this negative effect is opposite in sign to the direct effect of political control on performance information use, also referred to as ‘inconsistent mediation’, role conflict acts like a suppressor variable in this case. Combined, these two effects result in a small and non-significant total effect. Yet mediation is present because role conflict explains part of the relationship.

Concerning control variables, information quality and job tenure are significantly associated with both role conflict and performance information use. When the quality of the available information increases, managers report less role conflict with performance measurement and higher scores on performance information use. The results further imply that more years in the current position tend to increase data use, but also have a positive relationship with the experience of role conflict. The other controls (ownership, gender, goal clarity) do not display any significant relationship with role conflict and data use.

Figure 1: Path Coefficients for the Final Structural Model



$X^2 = 904$; $df = 482$; $RMSEA = .034$; $SRMR = .048$; $CFI = .958$; $TLI = .952$

* $p < .05$; ** $p < .01$. Standardized coefficients are reported.

1.5 Discussion

Since the extent to which measurement efforts prove to be successful greatly depends on the actual use of the data generated, it is of crucial importance to identify factors that are conducive or restrictive to performance information use. In response to calls for more studies examining the individual differences between managers that affect data use, the present article investigates human service managers' role identities and their influence on the utilization of performance information. Unlike most previous research, which focused only on the direct effects of various independent variables on performance information use, we also take into account mediation effects and thereby provide a better understanding of the mechanisms by which managers and contextual factors shape the application of performance information.

Our key findings confirm the important and, - to date - understudied role of executives' identities for a purposeful use of performance information. It is, however, important to stress that a comparison of the direct and indirect effects of the two identity types under consideration reveals that a managerial role identity exerts a stronger and more straightforward effect on performance information use than a professional self-conception. As expected, leading professionals who predominantly experience their role as that of a manager undergo significantly less role conflict when measuring the performance of their organization. This is because the requirements associated with performance measurement are highly compatible with the values and beliefs that make up their self-concept.

Independently from that, i.e. even when controlling for the level of role conflict, a managerial identity is positively and significantly associated with performance information use. This implies that a managerial identity is a crucial individual disposition that fosters data usage in various ways. In the public and nonprofit sectors, the introduction of management tools that draw heavily on performance indicators promotes a fundamental new work role for executives (Meyer & Hammerschmid, 2006). As regards the actual use of such tools, we demonstrate that

executives must identify with the emerging role of an active manager that initiates change, leads people through transition, and ensures control that staff is pursuing organizational goals in an efficient way.

But what if executives see themselves mainly as professionals? Human service managers who strongly identify themselves with a professional role concept experience greater role conflict with performance measurement, indicating that they face some difficulties in aligning the underlying principles with their professional beliefs. Nevertheless, the values and principles associated with a professional self-concept have displayed a rather weak link to the occurrence of role conflict and it is exclusively through this relationship that the professional identity type has a negative effect on performance information use. Unlike in the case of a managerial identity, no direct relationship between a professional identity and data usage has been observed. The bivariate correlation in table 1 even reveals a positive, though not significant, association. In sum, our results indicate that a professional self-definition hampers performance information use to a much lesser extent than it is fostered by a managerial identity. This finding also indicates that – despite the observed difficulties in reconciling competing demands – executives with a salient professional identity do not perceive performance measurement as a serious threat to professional standards and autonomy, nor inevitably refuse the utilization of performance information. Therefore, we found no evidence for the popular notion of a fundamental antagonism between professional ideals and new management tools (Flynn, 1999; van der Veen, 2013), at least not at the management level examined.

A likely explanation for our result is that, as suggested by Exworthy and Halford (1999), some professionals strategically embrace management techniques when climbing the career ladder. In less professionalized fields of social work and social care in particular, senior professionals may, despite some initial concerns also view those techniques as an opportunity to advance their professional development and to strengthen their management role (Kirkpatrick et al., 2005).

In addition to providing these insights concerning the role of identities for data usage, our study also contributes to a growing body of literature examining civil servants' identities in the context of managerial reform programs. Our analysis reveals that managers in comparable organizations and positions can perceive their role differently, which, in turn, also shapes managerial attitudes and style of decision-making. This builds on prior research showing that the restructuring of public administration results in multiple identities (Bourgault & Van Dorpe, 2013; Meyer et al., 2014; Rondeaux, 2006) that influence public servants' responses to NPM-inspired reforms (Berg, 2006).

Our findings further coincide with results from studies indicating a persistence of professional orientations alongside new managerial self-concepts (Bourgault & Van Dorpe, 2013; de Graaf, 2011). In this regard, it is worth noting that our analysis shows that the identity types under consideration are two distinct role perceptions, which are similarly strongly pronounced within human service organizations today and, interestingly, positively related to each other (see table 1 and footnote 2). The results thus show that executives with a professional background can adapt to and identify with managerial role concepts while retaining elements of their professional disposition. As a consequence, executives may simultaneously have multiple identities that vary in intensity or salience. The pattern of identity change thus needs to be thought of more as a complement to than a substitute for the traditional orientation. What this suggests for future research is that scholars should take into consideration that executives in similar job positions may interpret their role differently and exhibit multiple identities simultaneously. These further analyses could usefully be complemented by additional efforts to operationalize and measure more identity types with greater accuracy. It would then be interesting to look more thoroughly at the relationships between these varying self-definitions and their influence on managers' responses to different external demands.

The findings from the present study further indicate that managerial attitudes and behaviors cannot be adequately understood when they are viewed in isolation from contextual

influences. We demonstrate that resource inadequacy, strong political control, and poor information quality precipitate the perception of role conflict and decrease the likelihood of a purposeful use of performance information. These factors turned out to be more important in explaining managers' difficulties when it comes to performance measurement than a professional identity. This insight is important because many public service organizations operate under conditions of scarce resources, stringent political control, limited autonomy and lack of information (Hupe & van der Krogt, 2013; Moynihan, 2006; Nutt, 2006). We thus recommend that scholars consider these constraints in subsequent studies and examine their interplay with the attitudes and behaviors of executives who have to implement managerial reform programs. This can provide important insights into the challenges for those who try to balance the competing requirements in the public and nonprofit sector. It should also be mentioned here that our analyses revealed no significant differences between public and nonprofit managers with regards to the experience of role conflict and their reliance on performance information.⁴

Some limitations of this study must be borne in mind when interpreting the results. First, measuring all constructs on the basis of just one survey always raises concerns with respect to common source bias (CSB). Nevertheless, George & Pandey (2017) note that the risk of CSB is exaggerated for studies that do not use perceptual measures of organizational performance. These scholars show that when procedural remedies are taken to reduce the potential for CSB, measuring both the independent and dependent variables by a single data source does not necessarily and routinely result in spurious results. In the present study, we focus on a dependent variable which is less prone to CSB than a self-reported measure of performance (cf. Meier & O'Toole, 2010), and we placed the survey items for our main constructs in separate parts of the questionnaire in order to minimize the susceptibility for CSB. Further, we found no indication of inflated correlations. A glance at table 1 shows that only 18 of the 28 reported correlations (dichotomous control variables and job tenure excluded) proved to be statistically

significant, indicating that almost 36% of the correlations were not significant. Moreover, the relatively low correlations between the study measures and additional tests for the discriminant validity of the latent construct do not indicate that CSB is a major threat to the validity of our analysis. It should also be noted here that no other data source was available for our study and, importantly, that our measures pertain to values, beliefs and perceptions of managers, which are very difficult to measure in ways other than those used in this study.

A second limitation of the study is that the results are based on self-reported data. It is therefore possible that respondents overestimate the level of performance information use. Experimental research designs that allow the observation of actual behavior in real-life situations might be an interesting approach for future research to strive for more objective data (cf. Kroll, 2015a). Third, one should also bear in mind that the present study was carried out in specialized human service organizations in Switzerland. Although the study's generalizability was increased by considering executives with different occupational backgrounds and by including organizations from various service domains in the public and nonprofit sector, one should be cautious in extrapolating the results to other domains and countries.

1.6 Conclusion

Our research sought to find out whether human service managers' role identities matter when it comes to performance measurement, and our key finding is clear: Role identities affect both the experience of role conflict with performance measurement and the utilization of performance information. A lack of resources, high levels of political control, and poor information quality are also found to be associated with role conflict and a limited use of performance information. Based on this, we can draw the following conclusions for managerial reform programs more generally.

First, there is evidence to suggest that managerial reform objectives are more likely to be achieved when executives embrace businesslike values and identify themselves with

managerial principles. A practical implication of this is that promoters of performance-based management should, in addition to the technical aspects, also focus on the people responsible for implementation and pursue an influence strategy in order to increase the willingness of those individuals to take on a management role and endorse a managerial orientation. This can be especially important in human service fields, where executives often have a professional background and not necessarily a well-founded management education.

Proactive attempts to influence beliefs, attitudes, and identities within organizations subject to performance interventions can be guided by the approaches discussed in the change management literature (e.g. Armenakis, Harris, & Mossholder, 1993). For example, a strategy to develop supportive values and cultures can start with a persuasive change message that emphasizes the importance and benefits of (performance) management for leading professionals and the wider organization, fosters people's confidence in their capability to be a good manager, and provides support for the relevant training. Further training investments directed toward the implementation of management reforms can also help to disseminate information about how performance management works, clarify expectations, and improve managers' understanding of how to utilize their discretion to use performance information (Kroll & Moynihan, 2015). As well as communication and education, influence strategies can also make attempts to guarantee certain forms of participation and discretion that allow the inclusion of discrepant views, negotiation, and experimentation with the new requirements (Kotter & Schlesinger, 1997).

Second, the present study illustrates that certain tensions and conflicts may be inherent to the role of managerial professionals dealing with performance measurement. It has become apparent, however, that this is not simply a matter of identity. Instead, our findings strongly indicate that contextual factors play a significant part in managers' struggle in aligning new role demands with traditional orientations. A practical lesson from this study is that the provision of adequate resources and operational flexibility can help to dismiss doubts concerning

incompatibility between a managerial logic and professional standards. Therefore, the setting of stringent requirements concerning the use of management instruments without providing the addressees with the requisite resources and autonomy to meet these demands should be avoided.

In conclusion, this article provides important insights into the opportunities and difficulties managerial professionals may face when implementing performance measurement. We hope that this analysis might encourage further research on the mechanisms through which both individual dispositions and context factors contribute to the success of contemporary and future reform initiatives.

1.7 Notes

¹ To test for non-response bias in our data, we compared the characteristics of respondents in the sample with the population parameters obtained from an administrative data set collected by the Swiss Federal Statistical Office (BFS, 2015). The three variables of age, gender, and job tenure were available for both the respondents and non-respondents (though not for the work integration domain, which is why managers in this field were not considered in the non-response analysis). In our sample, 70 percent of the respondents were male, and 30 percent were female. This ratio is comparable to that in the general population (67% men and 33% women). The respondents' average age was 54 years, which is only marginally higher than the national average (53 years). The respondents median job tenure fell between 7-9 years, which is identical with the population parameter. In sum, the comparison revealed no substantial differences between the respondents in our sample and the population, which makes us confident that our further analyses are not distorted by any non-response bias.

² Before the hypothesized measurement model was tested, we conducted an explanatory factor analysis (EFA) in order to test whether managerial role identity and professional role identity are indeed two distinct constructs. We performed an oblique promax rotation because it seems

plausible that the factors are correlated. The analysis showed two factors that correspond to PRI (eigenvalue = 2.28, all item loadings above 0.59 and communalities above 0.40) and MRI (eigenvalue = 1.29, all item loadings above 0.61 and communalities above 0.41). Overall, each item strongly loads on its expected construct and shows weak cross-loadings (the latter are between -.02 and .07). EFA thus demonstrates that the items used measure two distinct concepts.

³ In order to have an adequately large group size, we combined the facilities for the disabled and children and youth institutions in one group. Work integration institutions and facilities for drug addicts were also grouped together. We think that this approach is justified here because facilities for the disabled often provide services for minors, and substance abuse services sometimes include job placement services.

⁴ In contrast, some differences were found with regard to performance information use across service domains. Additional F-tests confirmed that the level of performance information use is significantly higher in nursing homes (mean = 27.7) and significantly lower in children and youth institutions (mean = 23.1) than in all other service domains. In the remaining domains, managers' reliance on performance information (mean = 25.3 to 26.4) does not significantly vary.

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Appendix 1: Study Measures

Performance information use (Cronbach's alpha = .92)^a

- I regularly use performance information to make decisions.
- I use performance information to adopt new solutions for old problems.
- I use performance information to set priorities.
- I use performance information to identify problems that need attention.
- I use performance information to track goal achievement.

Role conflict (Cronbach's alpha = .82)^a

- Looking from my professional values and norms, I embrace performance measurement. (R)
- Performance measurement negatively affects my professional autonomy.
- In working with performance measurement, I violate my professional ethics.
- Working with performance measurement conflicts with my values and norms as a professional.

Professional role identity (Cronbach's alpha = .79)^a

- I systematically and regularly read professional journals, websites, etc. for professionals in [*specific area of human services*].^b
- I regularly attend professional meetings organized for professionals in [*specific area of human services*].^b
- I am aware of the existence of a code of conduct for human service professions.
- I believe that professionalism and loyalty to professional rules are the leading values in my work.

Managerial role identity (Cronbach's alpha = .80)^a

- My primary role is setting goals and leading people through changes to achieve these goals.
- Efficiency, effectiveness and economy are the key objectives for people in my position.
- In my job, it is important to ensure control that staff is pursuing the organization's goals in a correct and efficient way.
- It is my job to innovate and ensure change.

Resources for performance measurement (Cronbach's alpha = .84)^a

- We lack time and money for the measurement of performance and quality. (R)
- We lack assigned staff who are knowledgeable about gathering and analyzing performance information. (R)
- Our organization has an efficient information system for measuring and analyzing performance and quality.

Political control (Cronbach's alpha = .74)^a

- The law and regulations relating to [*specific area of human services*] are too detailed.^b
- The executive board does not have enough autonomy and independence from politics to manage the organization in an effective way.
- [*Specific type of human service organizations*] are overregulated and too much controlled by the state.^c

Information quality (Cronbach's alpha = .92)^d

How do you assess the quality of the performance information in your organization as regards the following dimensions?

- Tangibility
- Steering relevance
- Reliability
- Timeliness
- Overall quality

Goal clarity (Cronbach's alpha = .74)^a

- This organization's mission is clear to almost everyone who works here.
- It is easy to explain the goals of this organization to outsiders.
- This organization has clearly defined goals.

Ownership (public)

What is the legal form of your facility? (coded as 1= public, 0 = nonprofit)

Gender (male)

Are you male or female? (coded as 1= male, 0 = female)

Job tenure

How many years have you been in your current position? (coded as 1= less than 1 year, 2 = 1-3 years, 3 = 4-6 years, 4 = 7-9 years, 5 = 10 and more years)

Note: (R) Reverse worded.

- a. Items were measured on a seven-point Likert scale ranging from 1 (= strongly disagree) to 7 (strongly agree).
- b. Areas of human services were: the long-term care sector, the special needs sector, the work integration sector, the addiction treatment sector, the child and youth sector
- c. Types of human service organizations were: nursing homes, facilities for the disabled, work integration institutions, children and youth institutions, facilities for drug addicts
- d. Items were measured on a seven-point Likert scale ranging from 1 (= very poor) to 7 (excellent).

Appendix 2: Properties of the Measurement Model

Constructs and Indicators	Loadings ^a	Z-value	Error Variance ^b	IR ^c	CR ^d	AVE ^e
Performance information use					.912	.675
PIU1	.914		.165	.835		
PIU2	.866	36.446	.250	.750		
PIU3	.837	33.568	.299	.701		
PIU4	.742	25.464	.449	.551		
PIU5	.734	19.413	.461	.539		
Professional role identity					.782	.483
PRI1	.915		.163	.837		
PRI2	.565	14.714	.680	.320		
PRI3	.651	17.614	.577	.423		
PRI4	.593	15.574	.649	.551		
Managerial role identity					.795	.502
MRI1	.923		.148	.852		
MRI2	.659	16.038	.565	.435		
MRI3	.594	14.635	.647	.353		
MRI4	.605	13.185	.633	.367		
Role conflict					.811	.520
RCON1	.664		.559	.441		
RCON2	.689	24.107	.525	.475		
RCON3	.685	11.834	.531	.469		
RCON4	.833	12.207	.306	.694		
Resources for performance measurement					.854	.665
RESRC1	.882		.222	.778		
RESRC2	.875	24.424	.234	.766		
RESRC3	.672	18.500	.549	.451		
Political control					.756	.513
PCNTR1	.859		.262	.738		
PCNTR2	.641	13.215	.589	.411		
PCNTR3	.625	12.460	.609	.391		

Appendix 2: Properties of the Measurement Model (continued)

Information quality					.918	.691
QUALITY1	.902		.186	.814		
QUALITY2	.836	31.495	.301	.699		
QUALITY3	.843	30.617	.289	.711		
QUALITY4	.781	27.107	.390	.610		
QUALITY5	.789	26.824	.377	.623		
Goal clarity					.744	.495
CLRTY1	.794		.370	.630		
CLRTY2	.654	12.374	.572	.428		
CLRTY3	.653	12.854	.573	.427		

^a Loadings are standardized ($p < 0.01$ for all).

^b calculated as 1 minus the indicator reliability

^c Indicator reliability (IR) indicates the percent of variation in each indicator that is accounted for by the factor to which it was assigned, calculated as the square of the standardized factor loading. Values greater than 0.39 are considered ideal.

^d Composite reliability (CR) is analogous to Cronbach's coefficient alpha, and reflects the internal consistency of indicators measuring a given factor. Values should generally be greater than 0.69.

^e Average variance extracted estimates (AVE) are calculated to assess the amount of variance captured by factors in relation to variance attributable to measurement error. Constructs should have variance extracted estimates greater 0.49.

Appendix 3: Model Fit Statistics from Confirmatory Factor Analyses for Multi-group Invariance Testing

Model	Restriction	χ^2 (df)	χ^2/df	RMSEA	SRMR	TLI	CFI	ΔCFI	$\Delta\chi^2$	Δdf	Decision
0 Hypothesized measurement model	-	760 (398)	1.91	.035	.048	.957	.963				accepted
Measurement invariance (MI) across service domains											
1 Configural MI	-	1690 (1194)	1.42	.041	.061	.942	.951				accepted
2 Metric (weak) MI	Factor loadings	1741 (1240)	1.40	.040	.063	.944	.950	.001	51	46	accepted
3a Scalar (strong) MI	Factor loadings, intercepts	1861 (1286)	1.45	.043	.065	.938	.943	.007	120**	46	rejected
3b Partial MI ^a	Factor loadings, intercepts	1776 (1270)	1.40	.040	.064	.945	.950	.000	29	30	accepted
4 Factor variance invariance	Factor loadings, intercepts, factor variances	1801 (1286)	1.40	.040	.074	.944	.949	.001	16	25	accepted
5 Factor covariance invariance	Factor loadings, intercepts, factor variances, factor covariances	1877 (1342)	1.40	.040	.080	.945	.947	.002	76	56	accepted
Measurement invariance (MI) across sectors											
6 Configural MI	-	1143 (796)	1.44	.034	.054	.958	.964				accepted
7 Metric (weak) MI	Factor loadings	1169 (819)	1.43	.034	.053	.959	.964	.000	26	23	accepted
8 Scalar (strong) MI	Factor loadings, intercepts	1201 (842)	1.43	.034	.054	.959	.963	.001	32	23	accepted
9 Factor variance invariance	Factor loadings, intercepts, factor variances	1204 (850)	1.42	.033	.056	.960	.964	.001	3	8	accepted
10 Factor covariance invariance	Factor loadings, intercepts, factor variances, factor covariances	1240 (878)	1.41	.033	.060	.961	.963	.001	36	28	accepted

Notes: $N = 742$, ** $p < 0.01$, * $p < 0.05$; MI= measurement invariance; χ^2 = chi-square discrepancy; df = degrees of freedom; χ^2/df = chi-square to degrees of freedom ratio; RMSEA = root mean square error of approximation; SRMR = root mean squared residual; CFI = comparative fit index; TLI = Tucker Lewis index; $\Delta\chi^2$ = difference in chi-square; Δdf = difference in degrees of freedom; ^a in the partial MI model, seven parameters are allowed to vary across groups.

2 Measuring Quality for Human Service Improvement: How Nonprofits Meet the Quality Requirements of Public Authorities

This is the peer reviewed version of the following article: Roger Pfiffner (2020). Measuring quality for human service improvement: How nonprofits meet the quality requirements of public authorities. Nonprofit Management & Leadership, 31(1), 103 – 127, which has been published in final form at <https://doi.org/10.1002/nml.21416>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions. This article may not be enhanced, enriched or otherwise transformed into a derivative work, without express permission from Wiley or by statutory rights under applicable legislation. Copyright notices must not be removed, obscured or modified. The article must be linked to Wiley's version of record on Wiley Online Library and any embedding, framing or otherwise making available the article or pages thereof by third parties from platforms, services and websites other than Wiley Online Library must be prohibited.

Abstract

The growing pressure for service quality has led to an increase in the dissemination of quality models in nonprofit human service organizations. In spite of this, little is known about their implementation. The present study therefore examines how quality management directives imposed by public authorities affect the adoption and use of quality measurement systems under different sets of conditions. Key findings, based on survey data from 536 human service nonprofits in Switzerland, suggest that external quality requirements foster the adoption of measurement systems to the greatest degree, but simultaneously reduce their actual utilization for service improvement. The strength of these effects is contingent on the organizations' resources and the quality of indicators. Managers' commitment to quality measurement shows the strongest effect on the use of quality measurement systems. These findings and the implications for future research and practice will be discussed.

2.1 Introduction

Assessing and improving the quality of human services is an urgent policy, practice, and research concern (Bunger & Lengnick-Hall, 2019). Nonprofit human service organizations are increasingly being held accountable for the quality of their services and, consequently, are facing growing pressure to undertake more systematic efforts to assess the internal capacities of the organization, enhance outcomes, and report their achievements to supervisory authorities (Lee & Clerkin, 2017; Lee, McMillen, Knudsen, & Woods, 2007). Changing client needs and fiscal austerity also require appropriate actions to prevent service failures or a decline in service quality. As a consequence, there has been a significant increase in the adoption of quality models such as the European Foundation for Quality Management (EFQM) Excellence model, the Common Assessment Framework (CAF), models based on the quality management standards set by the International Organization for Standardization (ISO 9001) or related management frameworks (Cairns, Harris, Hutchison, & Tricker, 2005; Mahmoud et al., 2019; Melão, Bastida, & Marimon, 2019).

A common feature of quality models is that they include measurement procedures that provide various types of non-financial information that reflect internal organizational capabilities, stakeholder needs, and intermediate outcomes (Talbot, 2010; Van Dooren, 2008). One of the underlying assumptions of quality models is that urging organizations to generate such information helps supervisory authorities to hold them accountable (Carnochan, Samples, Myers, & Austin, 2014; LeRoux & Wright, 2010). As human service nonprofits often fulfil vital human needs and provide services to vulnerable clients, it is essential to prevent any quality deficiencies that could pose a threat to health or wellbeing (Melão & Guia, 2015). Moreover, promoters of quality models believe that a balanced set of quantitative indicators facilitates a holistic assessment of service quality, helps managers to identify problems, and

thus provides additional feedback information to target continuous quality improvement initiatives (Evans & Lindsay, 2017; Kaplan, 2001).

Although quality models have become widespread in the European nonprofit sector, only a small number of empirical studies have investigated their adoption, use, and impact (e.g. Cairns, Harris, Hutchison, & Tricker, 2005; Melão & Guia, 2015). The majority of the current research on performance interventions in the nonprofit sector is focused on performance management and the use of outcome measures, and thus has a somewhat different focus. That research shows, among other things, that accountability and funding requirements from external stakeholders are one of the main reasons that nonprofits measure the performance of their organization, but that there is considerable variation in the extent to which organizations respond to those demands (Lee & Clerkin, 2017; MacIndoe & Barman, 2013). The present study builds on this research, but shifts the focus onto two important, hitherto largely neglected aspects.

The first key contribution of our study is that it goes some way towards bridging the research gap on the introduction of quality models, highlighting the key success factors and challenges for quality measurement approaches in a nonprofit human service context. In doing so, unlike most previous studies, we focus on quality approaches with a strong focus on micro-level issues such as organizational capacities and procedures, staff, and client satisfaction (Talbot, 2010; Van Dooren, 2008). Quality indicators are thus closer to the core activities of an organization than information concerning results on the meso- or macro-level, which begs the question of whether the former type of indicators can be more easily used for service improvements.

The second contribution of the study is that it provides a better understanding of how nonprofits respond to quality management requirements imposed by funders and regulators. So far, the existing research has identified a number of variables with a direct effect on the adoption and use of measurement systems, but it has rarely considered indirect and contingency effects

(see Kroll, 2015a). In particular, only a small number of large-scale studies have investigated the complex interrelationships between external accountability demands and internal organizational characteristics when explaining nonprofits varying quality improvement practices (e.g. Mitchell & Berlan, 2018). To lessen this gap, we focus on the potential moderating effects of resource availability, information quality, and managers' commitment to quality measurement. The main question to be answered is under which conditions human service nonprofits follow and meet external demands for measuring and improving service quality.

The article is structured as follows. The next two sections describe the main features of common quality models and discuss potential impact factors relating to their adoption and use. Based on organizational learning theory and previous research on performance measurement, several hypotheses are outlined. This is followed by a description of the research setting, our data, and methods. Using survey data from 536 nonprofits in Switzerland, we then test our hypotheses and present the results. The article concludes with a discussion of our findings and their implications for quality interventions and future research.

2.2 Theory and Hypotheses

2.2.1 Introducing Quality Models: Conceptual Issues

In Switzerland, as in other European countries, a key part of the growing pressure for quality is that human service nonprofits are increasingly required by law or by regulations to employ management models aimed at achieving and improving the quality of services (Pfiffner, 2019; Schilling, Cranovsky, & Straub, 2001). Most organizations receive funding from cantonal or local governments, but function outside the public administration infrastructure. Hence, public authorities seek ways to influence the behavior of service providers outside their direct hierarchical control with the aim of ensuring certain standards in management and service

delivery. Encouraging or urging nonprofits to implement quality models is regarded as a central strategy for achieving this goal.

According to Talbot (2010, p. 108-113), quality models can be defined as a special type of performance intervention that provides decision-makers with a framework to emphasize both internal organizational capabilities and results, with the objective of improving the overall performance of a given organization. As such, they imply that the improvement of internal capability dimensions (such as leadership, strategy, resources, people, and processes) will also boost aspects such as efficiency, responsiveness, people satisfaction, and client outcomes. Therefore, quality models prescribe the factors that managers need to take into account in order to achieve organizational goals and meet stakeholder expectations.

The introduction of quality models usually requires that service providers document all quality-related activities (e.g. in a quality manual), which allows supervisory bodies or external auditors to inspect whether the defined practices are appropriate and comply with standardized criteria (Melão & Guia, 2015). In addition, external quality requirements often request proof for the installation of a continuous improvement process. This encompasses the development by nonprofits of annual action plans specifying quality targets, concrete measures to achieve these targets, as well as indicators by which changes in the organizations' capacities and achievements can be assessed and tracked (Van Dooren, 2008).

Since quality models virtually always include a multi-dimensional measurement model, the continuous collection of information related to quality is a crucial component of these interventions (see EFQM, 2012; ISO, 2015; Mahmoud et al., 2019). Quality-related information is often categorized in two or more separate categories of indicators – one focusing on outcomes and the other(s) on internal performance drivers (Talbot, 2010, p. 108). Both types of indicators primarily measure non-financial aspects such as client satisfaction, staff motivation and turnover, process times, changes in client structures or needs, pressure sore rates in nursing homes, job placement rate for the unemployed and much more. The promoters of such measures

assume that a broad set of quality indicators allow for a holistic assessment of quality, assist managers in identifying problems either in internal capabilities or outcomes, and to better address the differing needs of multiple stakeholders (such as clients, employees and funders, for example). This also provides decision-makers with additional feedback information to target quality improvement initiatives (Evans & Lindsay, 2017; Kaplan, 2001).

In the literature, scholars have distinguished between adoption and implementation as two stages of performance measurement (de Lancer Julnes & Holzer, 2001; Holzer, Ballard, Kim, Peng, & Deat, 2019). While adoption refers to the measurement process and the development of performance measures, implementation represents “knowledge converted into action” or the actual use of information for management purposes (de Lancer Julnes & Holzer, 2001, p. 695). Accordingly, the distinction between adoption and implementation can be applied to assess the introduction of quality models. In the current study, the adoption of quality models refers to the development of a multidimensional measurement tool that results in indicators related to both internal performance drivers and intermediate outcomes. On the other hand, implementation captures the actual use of these indicators, for the purposes of learning and service improvement.

2.2.2 Factors Driving the Adoption and Implementation of Quality Models

The implementation of performance-based management systems implies new formal rules and procedures for target setting, data collection and self-assessment aimed at fostering organizational learning. The underlying assumptions of such interventions are, as Moynihan (2005) has shown, largely consistent with a structural approach of organizational learning. This approach points to the importance of structural and procedural arrangements that enable organizational members to detect and correct errors through the systematic collection, analysis, dissemination, and use of functional information (see also Lipshitz, Popper, & Oz, 1996). Applied to the introduction of quality models, this implies that organizations can improve by

assigning specialized resources to learning processes and generating reliable quality indicators through multidimensional measurement systems. Formal rules and procedures for such routines are also considered to be aspects of an organization that can be fostered by legislative and administrative requirements.

Apart from structural influences, organizational learning theory also stresses the importance of organizational culture for learning and improvement. For instance, Moynihan and Landuyt (2009) propose an integrative approach in which structural and cultural aspects are seen as mutually dependent. Pursuant to this approach, the existing culture shared by organizational members shapes how organizations respond to external pressures, employ their resources, and interpret information (see also Mitchell & Berlan, 2018). Applied to the use of quality models, it implies that organizations develop further if they set up functioning routines of data collection, *and* when their members simultaneously value and support this kind of procedure. This fits well with the quality management literature emphasizing that attempts to improve service quality must begin with the commitment of top management, which then ideally leads to an organization-wide commitment to quality (ISO, 2015; Melão & Guia, 2015).

2.2.3 Hypotheses

Scholars have shown that the imposition of new reporting mandates (Thomson, 2010) and institutional funders' increasing coupling of resource provision and accountability requirements (MacIndoe & Barman, 2013; Lee & Clerkin, 2017) are important drivers for the adoption of outcome measurement in the nonprofit sector. Based on this, we first assume that quality management directives imposed by funders and regulators are one of the main reasons that nonprofits measure the quality of their services. We thus hypothesize:

H_{1a}: External quality requirements are positively related to the adoption of a multidimensional quality measurement system.

However, previous research suggests that there is considerable variance in the extent to which nonprofits respond to external demands and adopt performance measurement (Lee & Clerkin, 2017; Thomson, 2010). One explanation for this observation is that promoters of performance interventions often fail to take account of the organizations' resources to implement them systematically. As a result, organizations may lack the internal capacity for developing and sustaining a comprehensive measurement system (MacIndoe & Barman, 2013). Hence, studies have repeatedly shown that resource constraints have a direct negative effect on performance and quality measurement (Cairns et al., 2005; Holzer et al., 2019). Thus far, however, there is little evidence to show whether the availability of resources also moderates the effect of accountability requirements on the measurement practices of nonprofits. To fill this gap, we test whether an organization's responsiveness to quality requirements is contingent on the resources available to it for the attainment of such demands. Human service organizations often face severe resource constraints (Carnochan et al., 2014; Lee et al., 2007), which makes it difficult for them to invest extra resources for sustained data collection and, by doing so, ensuring compliance with the external mandate. This leads us to hypothesize:

H_{1b}: The relationship between external quality requirements and measurement system adoption is moderated by the availability of resources, such that the effect of quality requirements will be stronger in organizations with greater resources than in those with fewer resources.

Organizational culture provides a further explanation for the varying responses to external quality requirements found among nonprofits. Scholars have placed particular emphasis on the crucial role of executive managers in aligning external demands with internal conditions, overcoming resistance, and building sustainable capacity for learning and quality improvements (Alaimo, 2008; Poole et al., 2001). In view of this, we suppose that external requirements for quality management will have a greater impact on an organization's routines

of data collection when executive directors are convinced that additional feedback information will help them to improve service quality. Given this commitment, there is a greater compatibility between external expectations and managerial interests, which is likely to increase executives' willingness to invest extra effort into the adoption of the procedures required (Pfiffner, 2019). Therefore, we hypothesize:

H_{1c}: The relationship between external quality requirements and measurement system adoption is moderated by executive directors' commitment to quality measurement, such that the effect of quality requirements will be stronger in organizations with committed managers.

Most mandates to measure performance and quality are based on the assumption that managers can use the information to make better decisions and realize service improvements. It is therefore assumed - in line with a structural approach of organizational learning - that encouraging or forcing organizations to maintain an information system will be followed by routines of data usage (Moynihan, 2005). However, previous studies have provided contradictory results on the impact of external stakeholders or mandates on the actual use of performance measures (see Lee & Clerkin, 2017; 2012; Moynihan & Lavertu, 2017), which is why we assume that the influence of quality requirements varies under different sets of conditions.

From a neo-institutional theory perspective (DiMaggio & Powell, 1983; Meyer & Rowan, 1977), nonprofits adopt performance-based management practices for the purpose of asserting legitimacy. While organizations respond to the demands or pressures from their environment, however, they may also encounter difficulties that mitigate the effect of external requirements. As a result, the implementation of the required tools remains 'ceremonial' and decoupled from actual decision-making practices. This is especially likely when performance and service quality are difficult to evaluate (Meyer & Rowan, 1977).

In human service organizations, it is often difficult to capture the quality of intangible services and to construct meaningful measures of success (Carnochan et al., 2014), which makes it more difficult for managers to live up to the expectation of making decisions based on quality indicators. When the available information is of poor quality and little relevance, there is also less benefit from implementing a quality model substantially. Managers may thus decide for a more passive response to external demands, limiting their activities to the adoption of a measurement system in order to ensure compliance with an external mandate, but without actually using the information for internal management. This is why we assume that information quality has a moderating influence on the relationship between external quality requirements and measurement system use. We hypothesize:

H_{2a}: The relationship between external quality requirements and measurement system utilization is moderated by information quality, such that the level of measurement system use will be higher in organizations with higher information quality than in those with lower information quality.

As mentioned above, an organization's response to external requirements also depends on the values, norms, and beliefs shared by its members and stakeholders (DiMaggio & Powell, 1983; Michel & Berlan, 2018; Moynihan & Landuyt, 2009). Several studies drew particular attention to the attitudes of executive managers and have demonstrated that leadership support has a substantial positive influence on the implementation of performance measurement systems (Dull, 2009; Holzer et al., 2019). In a qualitative study, Alaimo (2008) has also shown that executive directors play a crucial role in aligning the demands from external stakeholders with the values and norms within nonprofit human service organizations, which is an important prerequisite for the effective use of program evaluations and improvement measures. In light of this, we assume that managers who believe that service quality can be managed and improved through formal procedures will be more inclined to transform the mandates for quality

management into daily management practices and service improvements. Therefore, we hypothesize:

H_{2b}: The relationship between external quality requirements and measurement system utilization is moderated by executive directors' commitment to quality measurement, such that the effect of quality requirements will be stronger in organizations with committed managers.

2.3 Data and Method

2.3.1 The Study Setting

The Swiss nonprofit sector consists mainly of service organizations within the field of health and social care. More than three quarters of all nonprofit-government contracts and grants are devoted to these domains, where they constitute around 45% of the organizations' revenues (Helmig, Gmür, & Bärlocher, 2011). Nonprofits thus rely heavily on public funding, for which they compete not only with one another, but also with public organizations and a growing number of profit-seeking social enterprises. In international comparisons, nonprofits in Switzerland operate in a permissive regulatory environment; the barriers to entry are low and there is great scope for activity (Bloodgood, Tremblay-Boire, & Prakash, 2014).

In Switzerland, as in many other European countries, human service nonprofits need an operating license to deliver services and receive reimbursement of service costs from public funds. The primary authority regulating and supervising human services resides at the cantonal level. The cantons (that is, the member states) thus set out and control the licensing conditions and related quality requirements (Schilling et al., 2001). In many cases, these specifications stipulate that nonprofits have an operating concept that includes, among other things, detailed information on the organization's quality management (SODK, 2011).

Although the presence of a quality management system is usually a precondition for licensing, the regulatory guidelines on this issue vary considerably in terms of concreteness and scope across cantons and different domains of social welfare. Nonprofits are only partly required to obtain a certificate for a specific quality management system, issued and audited by an accredited certification body. This leaves the service providers and their umbrella associations some discretion in deciding whether to adopt a generic quality model (such as ISO or EFQM) or whether to develop their own domain-specific frameworks. As a consequence, there are a large number of different quality initiatives, with very diverse coverage, focus, standards, and enforcement regimes (Schilling et al., 2001).

2.3.2 Data Collection and Sample Characteristics

This study utilizes data from a self-administered survey of nonprofit human service managers in the German- and French-speaking parts of Switzerland. The web-based survey was performed in April 2015 and delivered to the population of 1,635 executive directors in five selected areas of human services (see below). The lists of potential respondents, together with their personal work e-mail addresses, were obtained from the cantonal sections of the professional associations. We verified and expanded these lists using publicly available listings and intensive Internet research. On these grounds, virtually all executive managers in the five service domains (with the exception of managers in the Italian-speaking part of Switzerland) were contacted and invited to participate in the survey. A total of 563 completed questionnaires were received after two reminders, providing a final response rate of 34.4%. 27 questionnaires (4.8%) were excluded from the study because the respondents did not perform any quality management activities whatsoever.

Executive directors included in the final sample ($N = 536$) were responsible for nursing homes (42%), facilities for the disabled (28.3%), work integration institutions (10.8%), children and youth institutions (10.1%), and facilities for drug addicts (8.8%). Men represented 72% of

the respondents, women 28%. The average age was 54 years and the median tenure in the current position fell between 7-9 years. The median size of the organization, measured in terms of number of clients, was between 60-79. 42% of the organizations investigated had a certified quality management system in place.

The representativeness checks we performed on the data show that the observed under-representation of women at the highest management level, as well as the other characteristics of the respondents and organizations in our sample, are typical for the Swiss nonprofit sector.¹

2.3.3 Measures

With the exception of the controls, the following variables were measured using indices consisting of multiple survey items. Most of the questions were adopted from the existing performance management literature and linguistically adapted for the investigation of quality management practices in Switzerland. A Likert-type scale with response options ranging from 1 to 7 was used for each item, except for the external quality requirement measure (for further details on all items and scales, see Appendix 1). All variables included in the study are outlined briefly below.

External quality requirements

We used five binary items (0 = no; 1 = yes) to construct an overall measure for the extent to which organizations are required to measure, manage, and report the quality of services. The respondents were asked to indicate whether or not the law or regulation stipulates the implementation of five common quality requirements (such as the certification of a quality management system). The total number of “yes” responses was used as the measure for external quality requirements.

Resources

The index for an organization's capacity for sustained data collection and analysis, including access to resources in regard to time, money, and skilled staff, was measured by three items. Cronbach's alpha was 0.70.

Information quality

The overall quality of the information available to managers in terms of relevance, reliability, and tangibility was measured using a five-item scale (Cronbach's alpha = 0.91) developed by Kroll (2015b).

Commitment to quality measurement

Five items were used to measure executive managers' commitment to quality measurement (Cronbach's alpha = 0.90). The self-developed scale broadly follows similar attempts to measure managers' positive attitudes towards and commitment to performance measurement (see Kroll, 2012). Our scale indicates the extent to which the respondents have positive attitudes towards measurement and believe that quality measures help to improve management, organizational performance, and result in benefits for the clients.

Measurement system adoption

Nonprofit organizations generally draw on a number of information sources (such as electronic recording systems, surveys, or external audits) and stakeholders (such as clients, employees) when measuring organizational performance and service quality (Carman & Fredericks, 2008). Therefore, we asked the survey respondents to indicate the extent to which their organization has implemented various common data collection procedures (for example periodic measurement of client satisfaction). A high score on the six item composite index (Cronbach's alpha = 0.82) is indicative of a more comprehensive measurement system and greater availability of non-financial feedback information.

Measurement system utilization (implementation)

Five items were used to measure executive managers' reliance on the existing measurement system and indicators for targeting continuous quality improvement initiatives. The resultant index (Cronbach's alpha = 0.80) is comparable to the measures used in quantitative studies of performance information use (Bourdeaux & Chikoto, 2008; Carman & Fredericks, 2008; Moynihan, Pandey, & Wright, 2012). Low scores indicate superficial implementation of a quality model, while higher scores represent more effective use of quality information for learning and improving.

Control variables

Previous research has found that boards of directors are one of the main influences that nonprofits use outcome measurement (MacIndoe & Barman, 2013). Therefore, we consider the boards' effectiveness to be a control variable. The index adopted from LeRoux and Wright (2010), referred to as 'governance effectiveness', consists of four items (Cronbach's alpha = 0.88). We also control for the size of an organization in terms of number of clients (coded as 1 = less than 20 clients, 2 = 20–39 clients, 3 = 40–59 clients, ..., 8 = 140 and more clients). Gender (coded as 0 = female, 1 = male) and current job tenure (coded as 1 = less than 1 year, 2 = 1-3, 3 = 4-6, 4 = 7-9, 5 = 10 and more years) were finally included to control for individual differences among respondents.

2.3.4 Statistical Analysis

To fully examine the hypothesized associations, four OLS regression analyses were conducted. We estimated a first regression model to examine the direct effects of our independent variables on measurement system adoption. The second model included two interaction terms. This allows the moderation hypotheses to be tested. An analogous approach was used for a further two models, where the dependent variable is the reported utilization of a quality measurement

system. For all models, the independent variables were centered and standardized prior to the formulation of the interaction terms.

Before we conducted the regression analyses, potential data problems and the necessary conditions for applying OLS were reviewed. We first assessed potential issues of multicollinearity by investigating the variance inflation factors (VIFs) of the predictors. In all models, the observed VIF scores ranged between 1.04 and 1.58 and, thus, were all clearly within the acceptable range. Second, we assessed the normal distribution of regression residuals using a visual examination of normal Q-Q plots and the associated histograms. The figures indicated normally distributed residuals. Third, Breusch-Pagan tests for heteroscedasticity showed that the p-value is close to zero in all models, which is why they are estimated based on Huber-White's robust standard errors.

2.4 Results

2.4.1 Preliminary Analyses

The next analyses determined the convergent and discriminant validity of the measures using confirmatory factor analysis (CFA) with Maximum Likelihood estimation. Fit indices indicated that the measurement model used in this study has a good fit to the data ($\chi^2 = 648.68$; $df = 335$; $RMSEA = 0.042$; $SRMR = 0.052$; $CFI = 0.954$; $TLI = 0.947$). As reported in Appendix 2, all the standardized factor loadings were significant at the $p < 0.001$ level and ranged between .51 and .94. The composite reliability (CR) values for all constructs were above 0.70 while the average variance extracted (AVE) estimates, with one exception, were above .50. Overall, this provides support for the convergent validity of the indicators. Further, the levels of square root of the AVE for each construct were greater than the constructs' bivariate correlations summarized in Table 1, providing evidence of discriminant validity (Fornell & Larcker, 1981).

Since the data for this study originate from a single source, common source bias (CSB) could be an issue. To minimize the risk of CSB, we followed common recommendations such as using established scales, guaranteeing anonymity, and placing the survey items for the main measures in separate parts of the questionnaire (Podsakoff et al., 2003). In addition, we carried out Harman's single-factor test, which involves a confirmatory factor analysis (CFA) where all variables - except the controls - are allowed to load onto one general factor. The model exhibited a very poor fit to the data ($\chi^2 = 4534.9$, $df = 377$, $RMSEA = 0.143$, $CFI = 0.402$, $TLI = 0.356$), which pleads against the assumption that the correlations are strongly inflated by CSB. It should also be taken into account that the variables used in this study do not belong to the set of variables that is particularly prone to CSB (cf. George & Pandey, 2017).

2.4.2 Descriptive Statistics and Correlations

The descriptive results, summarized together with the bivariate correlations in Table 1, revealed that the average scores for the adoption and use of measurement systems appear to be quite high, since both scores are clearly above the central points of the response scales. The two variables are also correlated at 0.51, indicating that the utilization of a measurement system for service improvement increases in proportion to the measurement procedures in place.

The correlation matrix showed that the main relationships between the study variables are in the assumed direction. In organizations subject to higher quality requirements, executive directors reported a higher level of measurement system adoption. An organization's resources are also positively associated with the adoption of different measurement practices and - slightly less so - with their utilization for improvement measures. On average, the level of available resources and managers' commitment to measurement could be considered moderate, while

Table 1: Descriptive Statistics, Bivariate Correlations, and Reliabilities

	Descriptive statistics			Correlations and Reliabilities								
	Mean	S.D.	Range	1	2	3	4	5	6	7	8	9
Study variables												
1 Measurement system adoption	5.51	1.26	1-7	(.82)								
2 Measurement system utilization	5.22	1.26	1-7	.51**	(.80)							
3 External quality requirements	3.39	1.46	0-5	.33**	.07	(NA)						
4 Resources	4.38	1.34	1-7	.37**	.28**	.09*	(.70)					
5 Information quality	5.47	0.95	1-7	.33**	.38**	.01	.38**	(.91)				
6 Commitment to quality measurement	5.12	1.25	1-7	.29**	.43**	.08	.33**	.31**	(.90)			
Control variables												
7 Governance effectiveness	5.49	1.34	1-7	.26**	.20**	.06	.20**	.21**	.08	(.88)		
8 Size	4.08	1.94	1-8	.25**	.07	.07	.19**	.08	.16**	.04	(NA)	
9 Gender (male)	0.72	0.45	0-1	.06	.07	.06	.01	-.02	-.02	.08	.14*	(NA)
10 Job tenure	3.71	1.31	0-5	.17**	.12**	.00	.14**	.13**	-.04	.09*	.05	.13**

Notes: N= 536; S.D. = standard deviation; standardized Cronbach's alpha in parentheses.

*p < .05, **p < .01

information quality was rated more positively. However, the standard deviations were quite high. Furthermore, as expected, information quality and leadership commitment are positively correlated with the utilization of an existing measurement system, while external quality requirements show no significant effect.

2.4.3 Factors Affecting the Adoption of Quality Measurement Systems

The first regression model (1a) ($R^2 = 0.35$, $p < 0.01$) assesses the main effects of the predictors on the adoption of quality measurement systems. The results shown in Table 2, columns 2 and 3, offer strong support for hypothesis 1a, which predicts that external quality requirements will have a positive effect on the adoption of a multidimensional measurement system. It appears from the analysis that quality requirements are positively related to measurement system adoption at the 0.01 level of significance. The magnitude of the beta coefficient ($B = 0.328$) indicates that external requirements account for most of the variance in adoption, making this the strongest predictor for the organizations' measurement activities in this study. All variables except 'gender' have a statistically significant effect in the model. Among them, governance effectiveness is found to have the second largest effect on measurement system adoption ($B = 0.211$, $p < 0.01$). Respondents from organizations with effective boards of directors and responsible overall leadership reported greater efforts to measure the quality of their services.

Organizational resources ($B = 0.173$, $p < 0.01$) and executive directors' commitment to quality measurement ($B = 0.119$, $p < 0.01$) both have a positive and significant effect on nonprofits' efforts to quantify the quality of their services. But do they also moderate the relationship between quality requirements and measurement system adoption, as predicted in hypotheses 1b and 1c?

Table 2: Results of the Regression Analyses for Predicting Measurement System Adoption and Implementation

	Measurement System Adoption				Measurement System Utilization			
	Model 1a		Model 1b		Model 2a		Model 2b	
	B (Robust SE)		B (Robust SE)		B (Robust SE)		B (Robust SE)	
Study variables								
External quality requirements	.328**	(.035)	.330**	(.034)	-.150**	(.044)	-.147**	(.044)
Resources	.173**	(.039)	.179**	(.038)	-.006	(.045)	-.005	(.044)
Commitment to quality measurement	.119**	(.041)	.110**	(.040)	.316**	(.045)	.299**	(.046)
Information quality					.275**	(.046)	.293**	(.046)
Interactions								
External quality requirements*resources			.094**	(.036)				
External quality requirements*commitment to quality measurement			.057	(.036)			.027	(.040)
External quality requirements*information quality							.085*	(.038)
Control variables								
Governance effectiveness	.211**	(.036)	.210**	(.035)	.046	(.042)	.046	(.042)
Size	.076**	(.019)	.075**	(.018)	-.035	(.022)	-.032	(.022)
Tenure	.100**	(.029)	.099**	(.029)	.034	(.030)	.033	(.030)
Gender (male)	.043	(.084)	.049	(.083)	.050	(.092)	.042	(.092)
Measurement system adoption					.498**	(.047)	.496**	(.048)
<i>N</i>		536		536		536		536
<i>R</i> ²		.346		.355		.427		.432
Adj. <i>R</i> ²		.338		.344		.418		.420
<i>F</i> value		39.95**		32.12**		43.61**		36.28**

p* < .05, *p* < .01

Looking at model 1b ($R^2 = 0.36$, $p < 0.01$), including the interaction terms (see Table 2, columns 4 and 5), the findings suggest the presence of a significant moderating effect by resource availability ($B = 0.094$, $p < 0.01$). Indeed, the positive effect of external quality requirements is reinforced when the organizations have sufficient resources for quality measurement, while a lack of such resources reduces the effect. The simple slope analysis shows that the coefficient for external quality requirements (B) is 0.236 for low resource levels (with a 95% confidence interval CI of ± 0.100 , $SE = 0.051$, $p < 0.01$) and 0.423 for high levels of resources ($CI_{0.95} \pm 0.106$, $SE = 0.054$, $p < 0.01$). Figure 1 illustrates this relationship. It shows that external quality requirements positively affect adoption, even when organizations face resource constraints. However, as the availability of resources increases, the relationship between quality requirements and quality measurement becomes more pronounced. Therefore, hypothesis 1b concerning the moderating effect of resource availability is supported.

In contrast, executives' commitment to quality measurement does not act as a moderator for the relationship between external quality requirements and measurement system adoption. As the interaction term is not statistically significant ($B = 0.057$, $p > 0.10$), hypothesis 1c is not supported.

2.4.4 Factors Affecting the Utilization of Quality Measurement Systems

If we now turn to model 2a ($R^2 = 0.43$, $p < 0.01$), connecting the predictors with measurement system utilization, four variables were found to have a statistically significant influence (see Table 2, columns 6 and 7). First, the results show that the level of measurement system adoption explains most of the variance in the dependent variable ($B = 0.498$, $p < 0.01$), followed by executive directors' commitment to quality measurement ($B = 0.316$, $p < 0.01$). Information quality is also associated with measurement system utilization ($B = 0.275$, $p < 0.01$). Managers are more likely to use quality measurement systems for remedial actions when these systems provide them with information of high reliability, relevance, and usefulness. In contrast, quality

requirements have a negative relationship with measurement system use when all other variables are held constant ($B = -0.150, p < 0.01$). This result is somewhat surprising, as the relationship takes the opposite direction to that intended by funders or regulators.

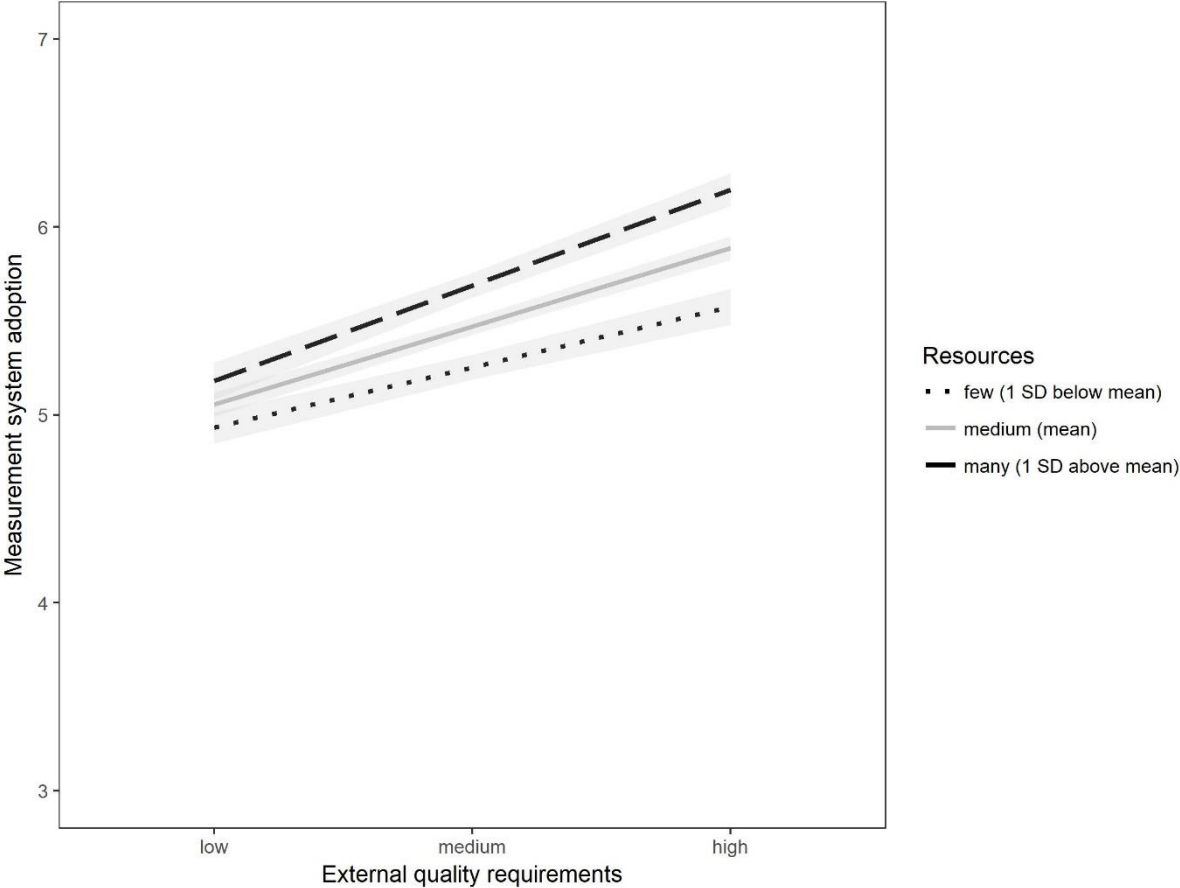


Figure 1: The Moderating Effect of Resource Availability on the Relationship Between External Quality Requirements and Measurement System Adoption

Although the availability of resources facilitates measurement practices in human service organizations, it does not directly foster the use of quality indicators for service improvement ($B = -0.006, p > .10$). The controls also seem to have little impact on managers’ use of quality measurement systems for service improvement. At $p < 0.05$, there is no significant relationship between measurement system utilization and governance effectiveness, size, tenure or gender.

By including the interaction terms in the final regression model 2b ($R^2 = 0.43$, $p < 0.01$), the remaining hypotheses can be tested. Hypothesis 2a predicted that the relationship between quality requirements and measurement system utilization is moderated by information quality. The results presented in the last columns of Table 2 confirm that the interaction between quality requirement and information quality is statistically significant ($B = 0.085$, $p < 0.05$). As shown in the effect display in Figure 2, the slope of the line is almost flat for organizations with a high level of information quality. In these organizations, stricter quality requirements have virtually no effect on the utilization of quality measurement systems. The simple slopes show that, where information quality is high, the relationship between quality requirements and measurement system use is slightly negative, but not significant ($B = -0.062$, $CI_{0.95} \pm 0.118$, $SE = 0.060$, $p > 0.1$). In contrast, managers in organizations with medium information quality and particularly in those with low information quality use quality measures to a lesser degree when requirements increase. The analysis indicates that external quality requirements have a marginally negative effect on measurement system utilization at medium levels of information quality ($B = -0.147$, $CI_{0.95} \pm 0.084$, $SE = 0.043$, $p < 0.01$) and a more pronounced negative effect when coupled with low levels of information quality ($B = -0.232$, $CI_{0.95} \pm 0.114$, $SE = 0.058$, $p < 0.01$). The data thus confirms hypothesis 2a concerning the differential effect of quality requirements.

On the other hand, the interaction between external quality requirements and executives' commitment to quality measurement was not significant at $p < .05$. Nonprofit managers' commitment to quality measurement drives the utilization of measurement systems directly, but does not enhance the effect of external requirements on their implementation. Hypothesis 2b is therefore not supported.

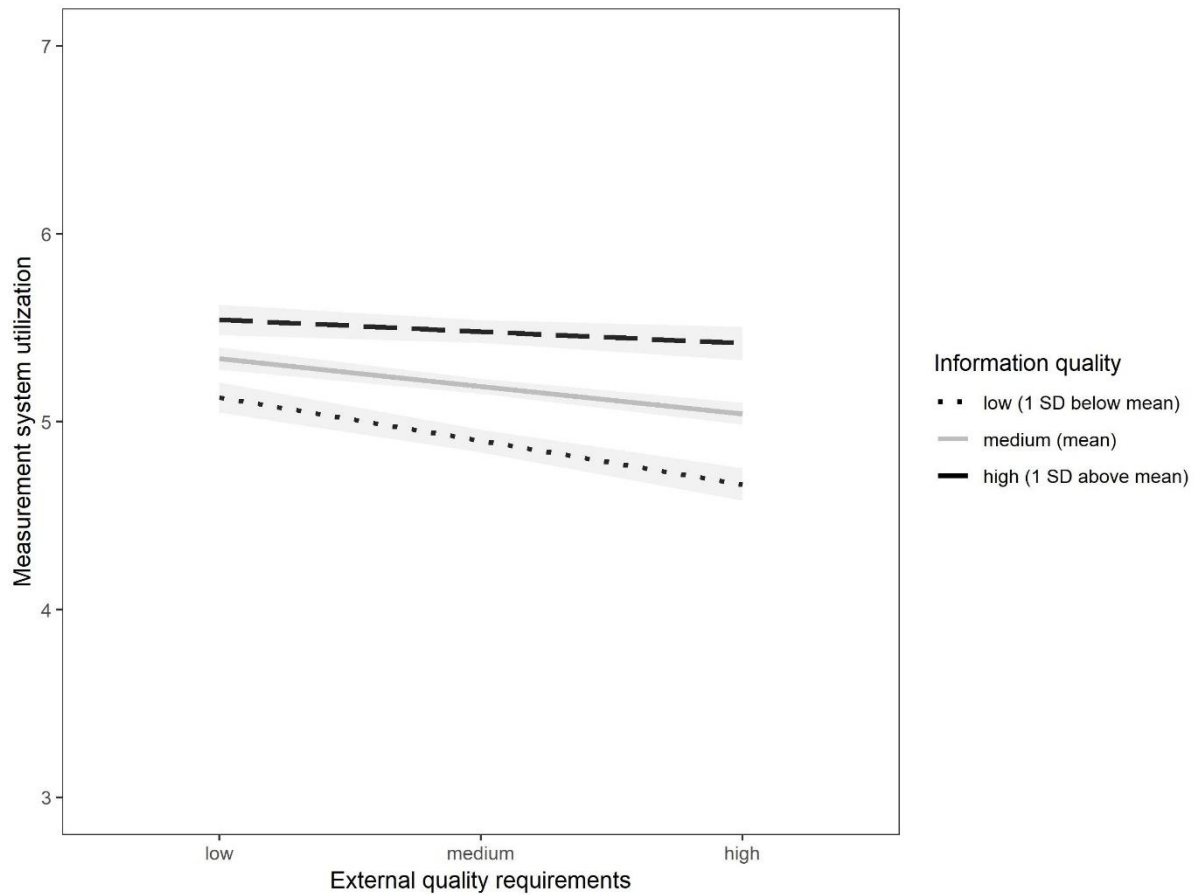


Figure 2: The Moderating Effect of Information Quality on the Relationship Between External Quality Requirements and Measurement System Utilization

2.5 Discussion and Implications

Contemporary quality management initiatives involve large numbers of human service organizations dedicating considerable resources and efforts to the quantification of their services. However, the purpose of most quality models is not simply to measure service quality by indicators, but to provide decision-makers with a systematic framework for improving organizational capacities and outcomes. From a reformer's viewpoint, such a systematic framework is a key prerequisite for an organization's successful response to changing environmental demands, for delivering the services required by clients and fulfilling the

established objectives. Therefore, it is of crucial importance to examine whether the efforts deployed hitherto do, in fact, support management and the constant enhancement of service quality. Against this background, the present study addresses the highly relevant question under which conditions human service nonprofits adopt and use quality models as required by public authorities.

Our findings indicate that nonprofit human service organizations adopt quality measurement first and foremost due to external demands. Quality requirements imposed by funders or regulators are shown to have the strongest effect on the extent and scope of measurement procedures. This supports other scholars' observation that measurement practices are typically triggered by external bodies seeking accountability, rather than by executives themselves seeking the information to target improvement initiatives (Cairns et al., 2005; Carnochan et al., 2014; MacIndoe & Barman, 2013). Second, our findings indicate that adequate resources in terms of time, money, and staff not only have a direct and positive effect on quality measurement practices, but also moderate the relationship between quality requirements and measurement system adoption and thus increase nonprofits ability to meet external demands for quality measurement.

In part, the differences regarding adoption also explain the varying degree of implementation. Our study shows that the extent and scope of the measurement procedures in place is significantly and positively related to human service managers' use of quality measures. In addition, the results suggest that indicators related to quality must be relevant, reliable, and up-to-date in order to be used for service improvement. This provides some support for the underlying assumption of a structural approach to organizational learning, according to which functioning routines of quality measurement are followed by routines of data usage for learning and decision-making (see Lipshitz et al., 1996; Moynihan & Landuyt, 2009). We attribute this to the fact that good quality indicators are close to the core activities of an organization and, thus, show fairly directly which areas need improvement.

Despite this, the relationship between adoption and utilization is not perfect, indicating that other factors also matter. Our research shows that the factors driving the utilization of quality measures are different from those that explain the pattern of adoption. For instance, more demanding quality requirements from public authorities foster the adoption of quality measurement but hamper its internal use for quality improvement. This unintended consequence of external mandates occurs when human service nonprofits fail to generate relevant and reliable feedback information. Hence, increasing pressure for quality management can be counterproductive when the measurement systems in place provide the end users with no information suitable for internal management purposes. When the quality of information is high, the diminishing effect of quality requirements disappears, but still no positive impact can be observed.

A first likely explanation for this interesting finding is that external demands shift nonprofits' focus away from using quality measures, e.g. towards the mere generation of quality indicators, the improvement of measures, or the documentation of quality-directed activities. Second, quality and performance measurement are often introduced as a series of state-level requirements that apply similarly to all facilities (Moynihan, 2005). This will most probably increase the service providers' measurement practices such that they ensure compliance with the external mandate. At the same time, the one-size-fits-all nature of such requirements is likely to reduce their fit to organizations' daily operations, as well as the flexibility of the organizations in terms of what is reported and measured. For this reason, the required practices often have little value for internal management (Carnochan et al., 2014).

It is often argued that reform efforts, such as total quality management and performance measurement, will be more successful when those who have responsibility for implementation are committed to the mandated models (Holzer et al., 2019; Melão & Guia, 2015). Our findings point in the same direction. It appears from the analysis that the more human service managers have positive attitudes towards measurement and see the benefit for management and clients,

the more likely they are to rely on a multi-dimensional measurement system when targeting quality improvement initiatives. Among the main study variables considered, executives' commitment to quality measurement has the strongest effect on measurement system utilization. Notwithstanding the foregoing, this form of commitment does not mediate the relationship between external quality requirements and the use of quality indicators. When nonprofits' introduction of quality models lags behind the requirements from public authorities, then it is due mainly to a lack of resources or a poor information base, but independent from managers' commitment to quality measurement. On this basis, we conclude that most human service nonprofits do what they can to meet the legislative and administrative requirements for quality management. For anything over and above the minimum standards for quality management, however, executive directors' commitment to quality measurement is paramount.

2.5.1 Implications

Our results have several implications for quality interventions in human service organizations and future research. Contrary to popular belief, our research suggests that more stringent requirements for quality management do not necessarily guarantee that the required information systems are actually used for internal management purposes. This first implies that encouraging or forcing human service organizations to invest in quality models is simply not enough to make service organizations overcome the many challenges associated with quality management. Promoters of quality models should therefore pay more attention to the potential barriers to and drivers of successful implementation.

For instance, rigorous guidelines and highly standardized mandates for quality management should be applied only with great caution - if at all, because they can reduce the utilization of quality models within single organizations. The implication of this for contemporary reform efforts is that initiatives designed to increase accountability must ensure that the associated mechanisms are applicable to internal management operations, that they

guarantee an appropriate level of flexibility, and consider the organizations' varying information needs. It may be a promising perspective for future research to identify and describe best-practices which allow for the effective detection of quality defects and simultaneously encourage internal self-critical reflections about quality and service improvements. Additional in-depth case studies may also provide a better understanding of why and how, paradoxically, external demands for quality management impede the utilization of a required measurement system for internal management.

2.5.2 Limitations

Like most studies, the present study is not without limitations. First, our sample is limited to executive directors only. Executives are in the best position to assess governance effectiveness and to provide information about quality requirements and their commitment to quality measurement. On this ground, however, we were not able to investigate whether an effective use of quality models actually improves service quality, responsiveness to client needs, or outcomes. Furthermore, our study did not survey the board of directors or other stakeholders, which is why we do not know how they assess the investigated aspects. These critical issues need to be clarified in future studies.

A second limitation is that the present study relies on self-reported measures, which may raise concerns about a desirability bias in the dependent variable. Although all measures in the study are multi-item and had high reliability, it cannot be excluded that the respondents overestimated their measurement system use. However, the distribution of the dependent variable values was approximately normal. For the independent variables, we also used specific survey items that asked for more objective facts (for example whether or not an organization is required to have a certificated management system), rather than attitudinal items operating at the level of perceptions. This reduces the likelihood that a potential desirability bias distorts the estimated relationships. Therefore, we are confident in the results of the present study.

Third, one should bear in mind that our study investigates quality management practices in specialized and rather small nonprofit organizations in Switzerland. Although the study is based on a complete survey in different human service domains and achieved an adequate response rate, one should be careful in generalizing the study's findings to the public sector and other countries with different quality requirements. More comparative research is necessary to reveal whether differences and similarities exist between different contexts and regarding the effects of country-specific quality management mandates or enforcement models. However, we are convinced that the case of Switzerland is a good example for a continental European and federal administrative context. The study also considers key environmental aspects of nonprofit organizations. Many nonprofits in Europe and beyond are facing increasing pressure from external stakeholders, operate with limited resources, and encounter many challenges when attempting to measure their intangible services. Therefore, we believe that our findings are of greater relevance for scholars and practitioners outside of Switzerland interested in the opportunities and challenges of quality management approaches in a nonprofit human service context.

Finally, we caution that the current study focused on a limited type of feedback information. In future, studies focusing on quality management practices might also consider less systematically collected information, such as feedback from learning forums, quality circles, or case reviews.

2.6 Conclusion

To conclude, our research has provided important explanations for the divergent application of quality models with a strong focus on micro-level issues such as organizational capacities and intermediate outcomes. By considering three potential moderating effects, the study primarily contributes to a better understanding of the conditions under which human service organizations follow quality management requirements imposed by public authorities.

In sum, our findings suggest that many nonprofits do what they can to meet the legislative and administrative requirements for quality management. Consequently, quality measures do indeed play a certain role in the management of human services today. All of the above, however, should not disguise the fact that the contemporary requirements for quality management are not suitable for boosting the utilization of quality indicators for service improvement. In their current form, they tend to overstrain small organizations with limited capacities. Furthermore, they first and foremost increase the quantity of feedback information, but not the quality and relevance thereof for internal management. Therefore, executive managers' commitment to quality measurement – which is one of the key success factors for the effective use of quality measurement systems, remains unaffected by external demands. We conclude from this that public authorities ought to provide more support in the implementation process and undertake more proactive attempts to bolster managers' internal motivation for quality management. We also hope that our analysis may encourage further research into accountability mechanisms through which such objectives can be realized.

2.7 Note

¹ We compared the demographic characteristics of respondents in our sample to those in other studies. No substantial differences emerged from these analyses. For instance, Gmür (2009) reported a proportion of 22% women in the highest management level of Swiss nonprofit organizations, which is only slightly less than the female share in our sample (28%). According to Bürgisser (2012), the average age of executive directors is 51 years, which corresponds roughly with our values (54 years). Finally, according to official statistics, human service organizations serve around 60 clients on average (BFS, 2015). This is comparable with the facilities in our sample (60 – 79 clients), although small organizations seem to be slightly underrepresented.

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APPENDIX 1: STUDY MEASURES

Measurement system adoption ($\alpha = .82$)

Please indicate the extent to which your organization has implemented each of the following

(1 = “not at all”; 7 = “fully implemented”):

- Development and documentation of quality indicators
- Systematic procedures for measuring service quality
- Procedures for periodic and systematic measurement of client satisfaction
- Procedures for periodic and systematic measurement of employee satisfaction
- Procedures for measuring other employee-related indicators, such as turnover and absences
- Obtaining a regular external review of service quality by an outside accreditation organization

Measurement system utilization (Implementation) ($\alpha = .80$)

Please indicate to what extent you agree, or disagree with these statements concerning

quality measurement and management in your organization (1 = “strongly disagree”; 7 = “strongly agree”):

- I use our quality measurement system for the continuous improvement of our services.
- Our quality measurement system is of little help for quality development. (R)
- I regularly use quality indicators to make better informed decisions.
- Quality measurement is an indispensable element of my planning and management instruments.
- External audits and reviews of service quality help us improve the services we deliver.

External quality requirements

Please indicate whether external requirements, enforced by law or administrative regulation, require the following activities (binary scale, number of activities required):

- Introduction of a quality management tool
- Development and documentation of quality indicators
- Reporting of quality indicators to public authorities
- Obtaining an external review of service quality by an outside accreditation organization
- Certification of a quality management system

Resources ($\alpha = .70$)

Please indicate to what extent your organization has resources for collecting and analyzing measures of performance and service quality (1 = “strongly disagree”; 7 = “strongly agree”):

- We lack time and money for the measurement of performance and quality. (R)
- We lack assigned staff who are knowledgeable about gathering and analyzing measures of performance and quality. (R)
- We have adequate resources to do our job.

Information quality ($\alpha = .91$)

How do you assess the quality of the performance information in your organization as regards the following dimensions (1 = “very poor”; 7 = “excellent”)?

- Tangibility
- Steering relevance
- Reliability
- Timeliness
- Overall quality

Commitment to quality measurement ($\alpha = .90$)

Please indicate to what extent you agree, or disagree with these statements concerning the measurement of performance and service quality (1 = “strongly disagree”; 7 = “strongly agree”):

- I believe that steering with performance and quality indicators is important.
- I believe that performance and quality measures can help decision-makers to improve their organization.
- I believe performance and quality measures create more costs than benefits and therefore create more problems than they solve. (R)
- I believe that quality measurement improves management and thereby leads to better performance.
- I believe that quality measurement is ultimately favorable for our clients.

Governance effectiveness ($\alpha = .88$)

Please indicate the extent to which the following statements apply to the board of directors of your organization (1 = “strongly disagree”; 7 = “strongly agree”).

- The board and executive director have a good working relationship.
- The board provides sufficient direction and overall leadership for the organization.
- The board has difficulty making clear decisions. (R)
- The board provides sufficient support to reach our goals and objectives.

Note: (R) Reverse worded.

APPENDIX 2: PROPERTIES OF THE MEASUREMENT MODEL

Constructs and indicators	Loadings ^a	Z-value	Error variance ^b	IR	CR	AVE (\sqrt{AVE})
Measurement system adoption					.835	.532
ADOPT1	.804		.354	.646		(.729)
ADOPT2	.705	13.148	.503	.497		
ADOPT3	.708	16.973	.499	.501		
ADOPT4	.673	12.893	.547	.453		
ADOPT5	.573	12.265	.672	.328		
ADOPT6	.586	13.320	.657	.343		
Measurement system utilization					.817	.514
USE1	.940		.116	.884		(.717)
USE2	.865	28.894	.252	.748		
USE3	.646	12.760	.583	.417		
USE4	.512	12.237	.738	.262		
USE5	.511	11.296	.739	.261		
Resources					.714	.460
RESRC1	.761		.421	.579		(.678)
RESRC2	.717	11.392	.486	.514		
RESRC3	.535	8.936	.714	.286		
Information quality					.914	.681
INFO1	.905		.181	.819		(.825)
INFO2	.851	25.717	.276	.724		
INFO3	.819	25.871	.329	.671		
INFO4	.791	21.664	.374	.626		
INFO5	.752	20.982	.434	.566		
Commitment to quality measurement					.902	.650
COMMIT1	.848		.281	.719		(.806)
COMMIT2	.879	21.847	.227	.773		
COMMIT3	.844	19.632	.288	.712		
COMMIT4	.816	20.464	.334	.666		
COMMIT5	.618	13.033	.618	.382		

**APPENDIX 2: PROPERTIES OF THE MEASUREMENT MODEL
(CONTINUED)**

Governance effectiveness					.886	.660
GOV1	.879		.227	.773		(.812)
GOV2	.840	17.992	.294	.706		
GOV3	.773	20.836	.402	.598		
GOV4	.752	14.007	.434	.566		

^a Loadings are standardized ($p < 0.001$ for all).

^b calculated as 1 minus the indicator reliability (IR)

3 Performance Information Use under Financial Stress: How do Public, Nonprofit, and Private Organizations Differ?

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Abstract

Performance management is becoming increasingly important in long-term health care because of rising quality standards and scarce resources. The ongoing Coronavirus pandemic illustrates the dynamic nature of emerging events in the health sector and underscores the importance of managing for results in suboptimal conditions. This study investigates whether managers in public, nonprofit, and private sector nursing homes differ in how they use performance information when their organizations are under severe financial stress. Based on survey and archival data for 579 organizations in Switzerland, this study reveals substantial cross-sector differences in the use of performance information for managing efficiency and service quality. Our key findings suggest that managers in all three sectors utilize performance information differently when under financial stress. While financial stress hampers managers' use of performance information for managing efficiency in the public sector, it fosters greater use in the nonprofit and private sectors, with the latter being even more responsive. Nonprofit organizations give more attention to preserving the quality of care, apparently fearing that increased emphasis on efficiency could undercut quality. The implications for theory and practice are discussed.

3.1 Introduction

The severe economic downturn in 2008 and the resulting fiscal shortfalls led to prolonged periods of financial stress for most Western governments and exacerbated the dilemma of how to reconcile growing demands for service with a balanced budget (Douglas et al., 2019; Scorsone & Plerhoples, 2010). In the subsequent period, governments at all levels faced growing pressure for reforms to enhance efficiency, contain costs, and prevent noticeable deterioration in the quality of publicly-funded services (Hood, 2010). The emergence of the Coronavirus pandemic has reinforced the importance of managing for results, as governments everywhere face unprecedented challenges in responding to the crisis while maintaining normal operations and servicing their long-term commitments.

Such challenges for the financing and provision of vital services are likely to further propel the adoption of business-style management practices in the public and nonprofit sector. In particular, experience to date suggests that performance management becomes a priority during periods of austerity when governments are challenged to ensure that public funds are spent efficiently and effectively (Bjørnholt et al., 2016; Hou et al., 2011; Moynihan et al., 2012). Consequently, in the aftermath of the Great Recession and on the brink of another significant downturn due to the Coronavirus pandemic, scholars have again called for greater reliance on performance management systems in order to better cope with financial stress (see Douglas et al., 2019; Mohr et al., 2020). This advice is consistent with the generic management assumption that adopting business-like management tools will improve performance and service quality regardless of whether the services are delivered by public, nonprofit, or for-profit organizations (Hvidman & Andersen, 2014).

But just how useful can we expect performance management systems to be in public service domains characterized by resource scarcity and funding problems, such as health care? While much of the existing literature suggests that financial stress is an important driver for the

adoption of performance management systems at different levels of government, far less is known about how individual managers use the collected information when financial resources are scarce (see Jimenez, 2016; Raudla & Savi, 2015). In addition, while previous research has provided evidence of distinct managerial practices across the public, nonprofit, and private sectors (Amirkhanyan et al., 2018; Johansen et al., 2018), little is currently known about whether there are differences in the way financial stress affects managerial decision-making across sectors. To address these gaps in the literature, the present study investigates whether managers in the public, nonprofit, and private sectors differ in how they use performance information to manage efficiency and service quality when their organizations are under severe financial stress. The article thus contributes to the literature on the utilization of performance information by deepening our understanding of the impact of financial stress and the strategies it evokes in different work sectors. Thus, this is one of the very few studies that compares performance management practices across the sectors.

The paper is structured as follows: in the next section, we review the literature on performance management practices and performance information use and integrate the findings on cross-sector differences. This review converges in several hypotheses on how the distinct features of public and private organizations may shape performance data usage and managerial responses to severe financial stress. This is followed by a description of our research methods and procedures. Next, we report the results of our empirical analysis, which is based on survey and archival data from 579 nursing homes in Switzerland. The implications of our findings for practice and future research are discussed in the concluding section.

3.2 Literature Review and Hypotheses

In recent years, substantial efforts have been made to implement new accounting and financial management systems to help public managers make better resource allocation decisions,

enhance financial discipline, and improve cost-efficiency (Moynihan & Andrews, 2010; Mohr et al., 2020). In addition, many publicly and privately funded organizations have implemented performance management systems to strengthen their internal capacities (i.e., strategic planning, people management, and asset control) and improve outputs, such as service quality and citizen satisfaction (Talbot, 2010). Both initiatives aim to increase the availability of information concerning various aspects of performance. They rest upon the assumption that additional information enables better external oversight, facilitates learning processes, and provides decision-makers with reliable feedback on organizational activities and achievements, which may result in more informed decisions and improved performance (Kroll, 2015; Moynihan et al., 2012).

Previous research has identified a range of factors that foster the use of performance information. According to a systematic review by Kroll (2015), there is strong empirical evidence showing that internal organizational characteristics – such as the presence of a sophisticated measurement system, strong leadership (support), a development culture, goal clarity, and committed resources for measurement – are important drivers for the use of performance information. Second, scholars have stressed the importance of the institutional environment and an organization’s diverse stakeholders (e.g. de Lancer Julnes & Holzer, 2001; Johansen et al., 2018; Kim et al., 2020; Moynihan & Hawes, 2012). In this context, studies have shown that external interest groups can make a decisive contribution to managers’ use of performance information when the former are committed to results-oriented management, care for information, and provide resources for sustained measurement. Likewise, Holzer et al. (2019) argue that performance information is useful only when it fits the institutional context well. Third, studies have focused on managers’ individual characteristics and proved that there are positive links between performance information usage and favorable attitudes toward

performance measurement, a managerial identity, and prosocial motivation (see Moynihan et al., 2012; Pfiffner, 2019).

3.2.1 Performance Information Use Under Conditions of Severe Financial Stress

Hood (1995, p. 105f.) argued that the motive behind many public management reforms is to conserve resources in times of acute financial stress. This relates to the so-called *financial stress hypothesis*, which assumes that governments experiencing financial difficulties are more likely to introduce management reforms. Financial stress refers to a financial situation of acute resource scarcity that arises when available resources are insufficient to cover the growth in expenditure over a period of time (Schick, 1980). Under such conditions, the financial stress hypothesis suggests that government organizations will search for ways to cut public expenditures without significantly reducing the quantity and quality of services provided (see also Hood, 2010). From this perspective, tight budgets thus provide an opportunity to improve current performance levels through better management. This makes performance management attractive because it provides strategic direction for improving such situations (Boyne, 2010; Douglas et al., 2019).

Contrary to this assumption, scholars have claimed that a lack of resources undermines an organization's ability to learn and improve. Moynihan and Landuyt (2009) argue that chronically inadequate funding puts organizations in a reactive situation; having already wrung out any inefficiencies, they shift from long-term considerations towards pressing short-term problems created by resource scarcity. They also have less slack for learning processes and the maintenance of sophisticated measurement systems, hampering their utilization of performance information (Bjørnholt et al., 2016; Holzer et al., 2019; Kroll, 2015).

Apart from these constraints, an incrementalist perspective on decision-making emphasizes that focusing on performance information may create conflict in times of severe financial stress. Performance measurement first and foremost requires agreement on goals and

targets (Boyne, 2010), but in public organizations with numerous goals and multiple principals, pressure for consensus on performance targets may prove too polarizing in an already tense environment (Douglas et al., 2019; Raudla & Savi, 2015). Hence, public managers might be prompted to avoid such discussions when financial difficulties intensify. Another common aspect in such situations is that there is simply no time to clarify goals or analyze performance information (Jimenez, 2016). Furthermore, as the financial situation worsens, external pressure from multiple interest groups is likely to increase, pulling an organization in different directions simultaneously (Nelson, 2012). This can serve as a further constraint on rational decision-making processes in performance management.

Thus far, however, only a limited number of empirical studies have explored the impact of financial stress on performance information collection and use, and the results of those studies are mixed. Based on a survey of senior-level managers in 19 European countries, Douglas et al. (2019) provided some evidence for a modest increase in the relevance of performance information in the wake of the last fiscal crisis. Growing importance was reported among countries that were moderately affected by the crisis, and in which decision-making authority had been centralized as a result of the crisis, as well as for large organizations with easily measurable objectives. Similarly, Pasha and Poister (2017) found in their study of U.S. transit agencies that managers turned to performance measurement in the wake of the economic downturn in 2008, mainly in order to avoid decision errors at that critical time. What must be considered, however, is that the investigated agencies have objectives that are relatively easy to measure and, moreover, exhibit some characteristics of private firms (see Pasha & Poister, 2017, p. 506).

By contrast, most other studies are less optimistic about the usage of performance information in times of severe financial crises. For instance, Jimenez (2016) observed that, during the Great Recession from 2007 onwards, budgetary decisions in U.S. cities were more

likely to be decoupled from performance information when the cities were severely hit by the crisis. Based on this, he argued that rational management techniques such as performance measurement are particularly difficult to implement during periods of decline because public organizations in such situations face strong pressure from multiple stakeholders and complex trade-offs between efficiency and other public values. Similarly, Hou et al. (2011) demonstrate that U.S. state governments use performance-based budgeting more frequently during periods of a strong economy rather than during economic crises. The authors reasoned that financial stress typically reduces the availability of incentives that can be used to reward good performance and further noted that public organizations generally have less financial support in decline situations, regardless of their performance levels. The political nature of the budgetary process, along with time pressures, provide additional reasons for declining performance information use during periods of acute resource scarcity (Bjørnholt et al., 2016; Raudla & Savi, 2015).

To summarize, most of the empirical research concludes that decision-makers in financially stressed organizations encounter many obstacles for pursuing deliberate change and when trying to use performance information effectively. This is especially true in small public organizations severely hit by the crisis and those providing complex services with intangible outcomes, such as nursing homes. Given this background, we assume that severe financial stress brings further constraints such as restricted analytic capacity, increased political pressure, and limited incentive structures that impede the use of performance information by nursing home directors, irrespective of whether the measures are used for managing efficiency or service quality. A major difficulty for implementing performance management systems in the public sector is precisely that the organizations often have numerous goals and multiple principals. As a result, achieving these goals entails difficult trade-offs such as the choice between promoting efficiency or quality (Hou et al., 2011; Jimenez, 2016). This makes it very difficult for public

organizations to develop a coherent strategy for performance improvement and to focus on one particular performance dimension (Amirkhanyan et al., 2018), especially when the financial situation markedly deteriorates and political pressure from competing stakeholders increases. Under such conditions, political demand may increase and impede or prevent rational decision-making processes in the public sector. In view of this, we hypothesize:

H_{1a} Financial stress is negatively associated with performance information use for increasing efficiency in public nursing homes.

H_{1b} Financial stress is negatively associated with performance information use for improving service quality in public nursing homes.

3.2.2 The Use of Performance Information Across Sectors

The literature suggests that public, nonprofit and private sector organizations have different features and societal functions and, therefore, pursue distinct goals and management approaches (Amirkhanyan et al., 2018; Hvidman & Andersen, 2014; Johansen & Zhu, 2014; Kim et al., 2020). Given that elderly care services are provided by public, nonprofit, and private for-profit nursing homes, the question is whether these organizations also differ in the emphasis they place on various aspects of performance, particularly when resource scarcity forces them to set priorities and make trade-offs.

Researchers have identified three important dimensions of differences between public and private organizations that shape managerial behavior: ownership, funding, and control (Bozeman, 1987). The purpose of private organizations, which are owned by individuals or institutional shareholders, is to generate revenue and profits through market sales and user charges; as such, private organizations are influenced more profoundly by economic markets than by government supervision, although they often experience such supervision in the form of business regulation. Market forces may also play a role when private for-profit or nonprofit

organizations compete with other firms for government funding and contracts. From an economic perspective, higher exposure to economic forces strengthens the incentives to reduce costs and improve efficiency in the private sector and among some nonprofit organizations (Johansen & Zhu, 2014).

By contrast, economic incentives are less important for government-owned organizations because they often have a dedicated revenue stream from the government treasury (Johansen et al., 2018). Public organizations obtain their resources through a politically-driven appropriations process and they are predominantly controlled by political forces (Bozeman 1987). Relatedly, public organizations are subject to the demands of multiple stakeholders and, compared to private organizations, experience greater political oversight and control over their operations and decision-making processes (Andrews et al., 2011; Boyne, 2002). These contextual characteristics are widely believed to obfuscate public sector goals and constrain the flexibility of public managers in making decisions and initiating change.

In the performance management literature, the features used to distinguish public and private organizations are also seen as important factors affecting the utilization of performance information (Hvidman & Andersen, 2014; Johansen et al., 2018; Kim et al. 2020). For instance, Moynihan and Pandey (2010) have shown that there is a positive link between a higher level of decision-making flexibility and performance information use. Swiss (2005) also stressed the importance of autonomy and sufficient incentives to act on information. If managers are restricted by a large number of constraints and see no need to foster change, he argues, they are unlikely to use performance information. Hence, it is plausible that the context, especially the institutional sector managers work in, affects the relevance and use of performance information. In particular, we expect that public sector managers, who are less susceptible to market forces and have a lower degree of managerial capacity, will use performance information to a lesser extent than their private sector counterparts. From a theoretical point of view, it is also plausible

that managers in nonprofit organizations, which represent an intermediate or hybrid form (Evers & Laville, 2004), will use performance information less than private sector managers but more than public managers.

Looking at hospital managers' reported data usage, Johansen et al. (2018) have demonstrated that public managers, compared to their private sector counterparts, use performance information to a significantly lesser degree in their decision-making, including day-to-day decisions, decisions to improve efficiency, and decisions relating to personnel. Furthermore, the study showed that nonprofits behave more like public than private organizations regarding their usage of performance information. Hence, we hypothesize:

H_{2a} The level of performance information use for increasing efficiency will be lower in public and nonprofit nursing homes than in private facilities.

H_{2b} The level of performance information use for improving service quality will be lower in public and nonprofit nursing homes than in private facilities.

3.2.3 The Impact of Financial Stress on Performance Information Use Across Sectors

For the reasons cited above, the increasing number of for-profit residential care facilities is based upon the hope of realizing efficiency gains in the system, but it has also raised concerns about for-profit nursing homes chasing profits at the expense of service quality (Amirkhanyan et al., 2018). Indeed, empirical analyses have found that private health care providers are more profitable and efficient than public providers (Weech-Maldonado et al., 2012), and that private managers prioritize managing service costs and increasing efficiency more than their public sector counterparts (Johansen & Zhu, 2014). Studies also show that private ownership is associated with more deficiencies and a lower quality of care (Amirkhanyan et al., 2008; Hillmer et al., 2005; O'Neill et al., 2003). Thus, the evidence suggests that private for-profit organizations are more likely to prioritize efficiency over service quality, but that public

organizations are more likely to emphasize better service quality, *ceteris paribus*. However, we could not find any studies that investigated how these different priorities affect the use of performance information under conditions of financial stress.

We assume that private managers have greater incentives to use performance information to manage efficiency rather than service quality. When severe financial stress occurs, their focus on efficiency may even increase. Since private organization must sell goods and services in a profitable manner, solving financial problems will likely be their top priority, meaning that the pressure to improve efficiency will override concerns about service quality (Eggleston & Zeckhauser, 2002). Resource scarcity may thus intensify private organizations' emphasis on efficiency and prompt managers to use performance information to improve efficiency, while displacing or limiting efforts to improve service quality.

By contrast, public managers act under less persuasive economic incentives and are more constrained in their ability to make decisions (Johansen & Zhu, 2014). Under conditions of severe financial stress, public managers face less pressure to improve efficiency than private sector managers and weaker incentives to use performance information to achieve this goal. Political considerations and the presence of multiple stakeholders also make it less likely that public managers will prioritize efficiency at the expense of other concerns due to social equity and the public interest (Andrews et al., 2011; Hou et al., 2011; Jimenez, 2016). The weight of rules and regulations imposed by external forces may hamper public managers from making quick, consistent moves to become more efficient, but may also prevent them from neglecting service quality. Hence, financial stress will probably have a small impact on the utilization of performance information for managing efficiency and service quality.

Finally, as stated above, nonprofit organizations can be viewed as an intermediate or hybrid form between public and private, profit-seeking organizations (Evers & Laville, 2004). On one hand, they are privately owned and compete in a market-like environment for charitable

contributions, government funding, and clients; thus, nonprofit organizations are partly exposed to market forces (Johansen & Zhu, 2014). Nonprofits also operate in an environment with multiple stakeholders, although not as numerous and diverse as public organizations. Nonprofit stakeholders include governing boards and other interested parties in both the public and private sectors, and their clientele. This provides more supervision and oversight than some private for-profit organizations receive, and it creates more uncertainty in securing revenues compared with the public sector (Wollebaek, 2009). Nonprofit managers must, therefore, strive for efficiency. On the other hand, nonprofits are mission-driven and cannot generate and distribute profits to residual claimants (Amirkhanyan et al., 2008). Furthermore, their tax-exempt status is one reason why nonprofits are subject to a relatively high degree of scrutiny and accountability. Nonprofits must therefore deliver a high level of service quality and demonstrate their achievements in order to sustain public trust and secure revenues (McLaughlin, 2004). For these reasons, nonprofit managers have fewer incentives than private managers to use cost-cutting strategies that might sacrifice service quality (Amirkhanyan et al., 2008; Eggleston & Zeckhauser, 2002). This will likely result in a higher level of performance information use for improving service quality in times of financial stress. Therefore, we derive the following hypotheses:

H_{3a} The relationship between financial stress and performance information use for increasing efficiency will be stronger in nonprofit nursing homes than in public facilities, but weaker than in private facilities.

H_{3b} The relationship between financial stress and performance information use for improving service quality will be weaker in public and nonprofit nursing homes than in private facilities.

3.3 Data and Method

3.3.1 The Study Setting

Data were collected in 579 nursing homes in Switzerland. In accordance with the Swiss Federal Law on Health Insurance, nursing homes are required to implement a cost accounting system and to collect and report performance indicators following standardized criteria (Nies et al., 2010). Quality control and management are statutory obligations for all in-patient long-term care facilities in Switzerland. The Federal Law further stipulates that primary authority to regulate long-term care resides at the state level (cantons), resulting in heterogeneous statutory requirements, as well as varied monitoring and enforcement regimes (Farsi & Filippini, 2004). Despite their differences, these regional approaches all emphasize meeting a minimum level of efficiency and service quality. The associated performance measures and reporting requirements in each jurisdiction are based on standardized, centrally defined indicators, such as pressure sore rates, rate of decline in older people, and average cost per resident day. The choice to exceed the minimum standards is left to individual service providers and their umbrella associations.

3.3.2 Data

The population of interest for this study is 1,492 organizations in the German- and French-speaking parts of Switzerland. Given that some nursing home managers were responsible for two or more facilities at the same time, we excluded 136 organizations (the smallest unit in each case) in order to prevent surveying these executives more than once. In April 2015, an online survey was sent to 1,356 nursing home directors. Although the survey was addressed to these individuals, it primarily requested information on organizational characteristics and practices, such as performance information use by the executive board. A total of 579 completed responses were received after three reminders, providing a final response rate of 43 percent. Of these responses, 27.5 percent are public organizations, 49.9 percent are nonprofit organizations,

and 22.6 percent are private organizations. According to official statistics (BFS, 2015), this breakdown corresponds closely with population parameters (29.7, 43.3, and 26.9 percent, respectively).

The survey data were merged with the operational measures of Swiss nursing homes published by the Federal Office of Public Health. The administrative register data includes detailed information on the provider's clients, employees, capacity, and ownership status. It also includes relevant parts of the official cost and activity accounting reported to the Federal Statistical Office. For the three years preceding our survey (2012-2014), these statistics show that more than 40 percent of all nursing homes ended their fiscal years with budget deficits (BFS, 2015). These deficits are likely due to revenue shortfalls and/or unexpected cost increases. Either way, this statistic confirms that a significant proportion of the organizations investigated in this study are operating under moderate to severe financial pressure.

3.3.3 Measures

The two dependent variables in this analysis were constructed from survey items that asked the respondents to report (1) how much the executive board relies on performance information to assess and improve efficiency and (2) to what extent it uses performance information to assess and improve service quality. Four items for each type of *performance information use* were combined to form two composite scales (Cronbach's alpha = 0.91 and 0.93, respectively) that closely resemble measures used in previous studies (Bourdeaux & Chikoto, 2008; Kroll, 2012; Moynihan et al., 2012). By asking respondents to report on performance information use by the executive board, we took a slightly different approach than these studies, which focused on a single manager's use of performance information. The main reason for this difference in approach is that quality management in nursing homes applies to many different aspects of the organization such as direct care, personnel, support processes and facility management, which are usually the responsibility of several managers rather than just one. Key decisions are

therefore often prepared and taken collectively by the executive board, and we were particularly interested in what relevance performance information would have in such decision-making processes.

Financial stress is the independent variable of interest and reflects a nursing home's inability to meet its spending obligations without incurring a deficit. In this study, we pooled the three most recent years of operating data to produce a mean measure of financial stress. To calculate the intensity of financial stress, we divided an organization's total revenue over this three-year period by its total expenditure. We then created a grand mean-centered variable with standard deviation scores, then reversed it so that positive values would indicate the extent of an organization's operating deficits compared to its revenues.

The moderator variable *ownership* is also derived from the archival data source. Here, "public" refers to governmental organizations that are directly integrated into the local public administration infrastructure and therefore have no separate legal status. Nonprofit corresponds to privately-owned foundations or associations that are precluded by law from distributing profits to residual claimants. Private refers to business firms organized as corporations (e.g., limited companies) that are legally allowed to accrue profits and distribute them to residual claimants.

In addition, the study includes four control variables: the *availability of performance information* captures the extent to which an organization has implemented the most common instruments in long-term care for measuring organizational activities and results. *Information usability* measures the clarity, reliability, and overall quality of the existing performance information (Kroll, (2012)). The dummy variable *management system requirements* indicates whether or not the state care laws require the facilities to set up and maintain a certified management system. Finally, we control for the *size* of the nursing homes by including their number of beds. A list of all items and scales used in this study is shown in the appendix.

Responses to all Likert-type scale items ranged from 1 to 7. Because participants were German- and French-speaking, all survey measures were first translated by professional translators from the source language (English) to the target languages. Two other bilingual persons then back-translated to English, following the procedure recommended by Brislin (1980). The resulting survey instrument was then pre-tested on eight nursing home directors and discussed with them afterwards in two-hour interviews to ensure clarity and relevance for the long-term care sector.

3.3.4 Data Analysis

Two regression models are estimated as follows: (1) the managing efficiency model, where the dependent variable is the reported use of performance information for increasing efficiency; and (2) the managing service quality model, where the reported use of performance information for improving service quality is the dependent variable. We include an interaction term to test the moderation hypotheses.

Both models are fitted using the seemingly unrelated regression (SUR) estimator because they are structurally interrelated. Unlike an ordinary least square (OLS) approach, SUR estimates the parameters of both underlying equations simultaneously, so that the contemporaneous correlation of the error terms is taken into account (Zellner, 1962). This results in more efficient parameter estimates. When both equations contain the same set of regressors, however, the SUR estimator is not applicable (Zellner, 1962, p. 351). This is why we first fitted both models by OLS and then specified two sub-models in which dispensable explanatory variables were removed. These adjusted models, which no longer had the same regressors, were then estimated by SUR using the “systemfit” package in R. For both models, the unadjusted estimates of the slopes are reported.

3.3.5 Preliminary Analyses

Confirmatory factor analyses (CFA) was used to assess the distinctiveness of the four latent constructs. Using the “lavaan” package in R, the hypothesized measurement model was specified, and all items were loaded on their expected construct. The model fit indices confirmed that the model fit the data well ($\chi^2 = 279$; $df = 136$; $RMSEA = 0.043$; $SRMR = 0.047$; $CFI = 0.975$; $TLI = 0.969$). All the standardized factor loadings were significant at the $p < 0.001$ level and ranged from 0.57 and 0.96. The factor scores obtained from the hypothesized CFA-model were used for further analysis.

Fitting the regression models by OLS and SUR revealed that the residuals derived from two separate single-equation estimations are strongly interrelated ($r = 0.59$), which confirmed the need to use SUR. Hence, we specified two sub-models with an unequal set of explanatory variables and re-estimated them simultaneously using the SUR estimator. In the preceding OLS estimation, the explanatory variables “size” and “management system requirements” had a coefficient with a marginal level of significance larger than 0.90. Therefore, omitting these predictors does not impair the precision of our estimates. An F-test confirmed that the resulting sub-models are not significantly worse than the “full” models. The whole equation system had a good overall fit, indicated by a McElroy- R^2 of 0.402.

Some potentially influential cases were identified using a leverage versus residual-squared plot and Cook’s Distance. The removal of these observations with both large residual and large leverage did not alter the results (thus, they were not omitted). The independent variables were then assessed for multicollinearity. The variance inflation factors ranged from 1.10 to 4.85. Hence, there was no indication that multicollinearity affects the robustness and variance of the estimated coefficients. Next, the normal distribution of residuals was checked with the aid of histograms and normal Q-Q Plots. Because the visual examination showed some deviation from the norm at the lower quantiles, we used a Box-Cox transformation up the ladder

of powers ($\lambda_{me} = 1.5$, $\lambda_{mq} = 1.5$) to correct the negative skew in both dependent variables and make the errors less skewed (cf. Fox & Weisberg, 2011, p. 140ff.).¹ Using the power-transformed variables in the regression models resulted in the normalization of the distribution of the residuals.

3.3.6 Descriptive Statistics

Table 1 reports the descriptive statistics for each variable and the correlation matrix. The Pearson correlation between the two dependent variables is 0.77, indicating a strong positive relationship between the two constructs. Apparently, executive boards that tend to use performance data to manage efficiency are also likely to use it to manage quality. We observe that there is almost no bivariate correlation between financial stress and reported performance information use.

In addition, we examined whether the reliance on performance information varies across sectors. A one-way analysis of variance shows that there is a significant effect of ownership on data usage for both managing efficiency [$F(2,576) = 4.16$, $p = 0.02$] and managing quality [$F(2,576) = 6.17$, $p < 0.01$]. Post hoc comparisons using the Tukey HSD test indicate that public organizations ($M = 10.1$, $SD = 4.8$) use performance information to manage efficiency to a significantly lesser degree than private facilities ($M = 11.7$, $SD = 5.07$), but they do not differ from nonprofits in this regard ($M = 10.7$, $SD = 4.49$). The same is true with respect to managing service quality, for which public sector managers ($M = 7.4$, $SD = 3.56$) reported a significantly lower use of performance information than their private sector counterparts ($M = 8.63$, $SD = 3.54$). Managers in nonprofit nursing homes ($M = 7.5$, $SD = 3.08$) do not significantly differ from public sector managers in this regard.

Table 1. Descriptive Statistics and Correlation Matrix

Variables	Mean	S.D.	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. PI use for increasing efficiency ¹	10.79	4.47	0.01	17.62									
2. PI use for improving quality ¹	7.73	3.36	0.01	13.55	.77**								
3. Financial stress	0.00	0.09	-0.49	0.43	.01	.00							
4. Public	0.28	0.45	0	1	-.08*	-.06*	.25**						
5. Nonprofit	0.50	0.50	0	1	.00	-.06	-.03	-.61**					
6. Private	0.23	0.42	0	1	.09*	.13**	-.23**	-.33**	-.54**				
7. PI availability	0.00	0.92	-2.68	1.38	.64**	.66**	-.02	-.04	-.01	.06			
8. PI usability	0.00	0.91	-3.15	1.40	.43**	.43**	-.03	.03	.00	-.04	.47**		
9. Management system requirements	0.22	0.41	0	1	.18**	.18**	.06	.00	-.03	.04	.27**	.05	
10. Size	67.48	48.12	7	334	.11*	.06	.04	.20**	.07	-.29**	.20**	.13**	.01

Notes: N = 579, S.D. = standard deviation, PI = performance information, ¹ = transformed by Box-Cox powertransformation, *p < .05, **p < .01

3.4 Main Results

3.4.1 Managing Efficiency Model

To test research hypotheses 1a, 2a and 3a, a first multiple regression model was specified with performance information use for managing efficiency as the dependent variable. The results are shown in table 2, columns 2 - 4. The model accounts for 48 percent of the variation in the response variable. Given that we use survey data and merge it with archival data, the model has fairly high explanatory power.

The findings offer strong support for the first hypothesis, which predicts that financial stress will hinder the use of performance information for managing efficiency in public organizations. The coefficient for financial stress ($B = -7.732$, $p < 0.05$) confirms this negative relationship. As predicted, the slope indicates that financial stress has a significant and negative influence on performance information use for managing efficiency in the public sector.

The results further indicate that nonprofit ownership has no significant effect ($B = 0.221$, $p = 0.547$) on performance information use when the facility has a balanced budget (i.e., when fiscal stress is zero), while a significantly higher use of performance data is reported for private nursing homes compared to public facilities under similar conditions ($B = 1.206$, $p < 0.01$). Hence, private ownership clearly has a stronger effect on data usage for managing efficiency than nonprofit ownership. This is in line with the results from the analysis of variance showing that private sector managers, overall, reported the highest level of performance information use. On these grounds, hypothesis 2a can be confirmed.

Table 2. Seemingly Unrelated Regressions on Performance Information Use

Independent variables	<i>Managing efficiency model</i>			<i>Managing quality model</i>		
	<i>B (SE)</i>	<i>t</i>	<i>Sig.</i>	<i>B (SE)</i>	<i>t</i>	<i>Sig.</i>
Financial stress	-7.732 (3.764)	-2.067	.040	-1.981(2.713)	- .730	.466
Nonprofit	.221 (.367)	.603	.547	- .103 (.248)	- .415	.678
Private	1.206 (.441)	2.736	.006	.716 (.306)	2.337	.020
Information availability	2.776 (.183)	15.161	.000	2.222 (.121)	18.325	.000
Information usability	1.019 (.179)	5.698	.000	.689 (.120)	5.755	.000
Management system requirements ¹	.249 (.294)	.848	.397			
Size (beds) ²				- .003 (.002)	-1.742	.082
Financial stress*Nonprofit	9.974 (5.003)	1.994	.046	6.965 (3.361)	2.072	.039
Financial stress*Private	14.767 (4.819)	3.064	.002	2.164 (3.238)	.668	.504
N	579			579		
R ²	.482			.533		
RSE (df)	3.436 (570)			2.308 (570)		

Note: SE = standard error; RSE = residual standard error; df = degrees of freedom; correlation of residuals: $r = .59$; overall fit of equation system: McElroy-R2 = .402. Unstandardized coefficients (B) are reported. Significant parameter estimates ($p < .05$) are shown in bold type. ¹ omitted variable (not significant, $p > .90$) in quality model; ² omitted variable (not significant, $p > .90$) in efficiency model.

But does the effect of financial stress on performance information use differ in nonprofit organizations compared with public and private facilities as predicted in hypotheses 3a? This question can be answered by looking at the interaction effects. The results demonstrate that the effect of financial stress on the use of performance information is positively moderated by nonprofit ownership ($B = 9.974, p < 0.05$) and even more clearly by private ownership ($B = 14.767, p < 0.01$) compared to public organizations. Thus, the data confirms hypotheses 3a relating to the moderating effect of ownership.

Figure 1 depicts how the slopes for financial stress based upon ownership interaction differ across the three sectors. Financial stress has a negative impact on the use of performance information for managing efficiency in public nursing homes. By contrast, there is a modest, positive relationship between financial stress and performance information use in nonprofit facilities. It appears that the relationship between financial stress and performance information use is significantly more pronounced for profit-seeking organizations than for their nonprofit counterparts. This means that with higher levels of financial stress, the executive boards in nonprofit nursing homes use performance information more intensively than boards in public facilities, but less than boards in private organizations.

Of the control variables, information availability and information usability are positively associated with performance information use for managing efficiency at the 0.01 level of significance. The other variables (size and management system requirements) are not significantly related to information usage. These results indicate that the quantity and quality of performance information affect the extent to which the information is used, even more so than organization and management context.

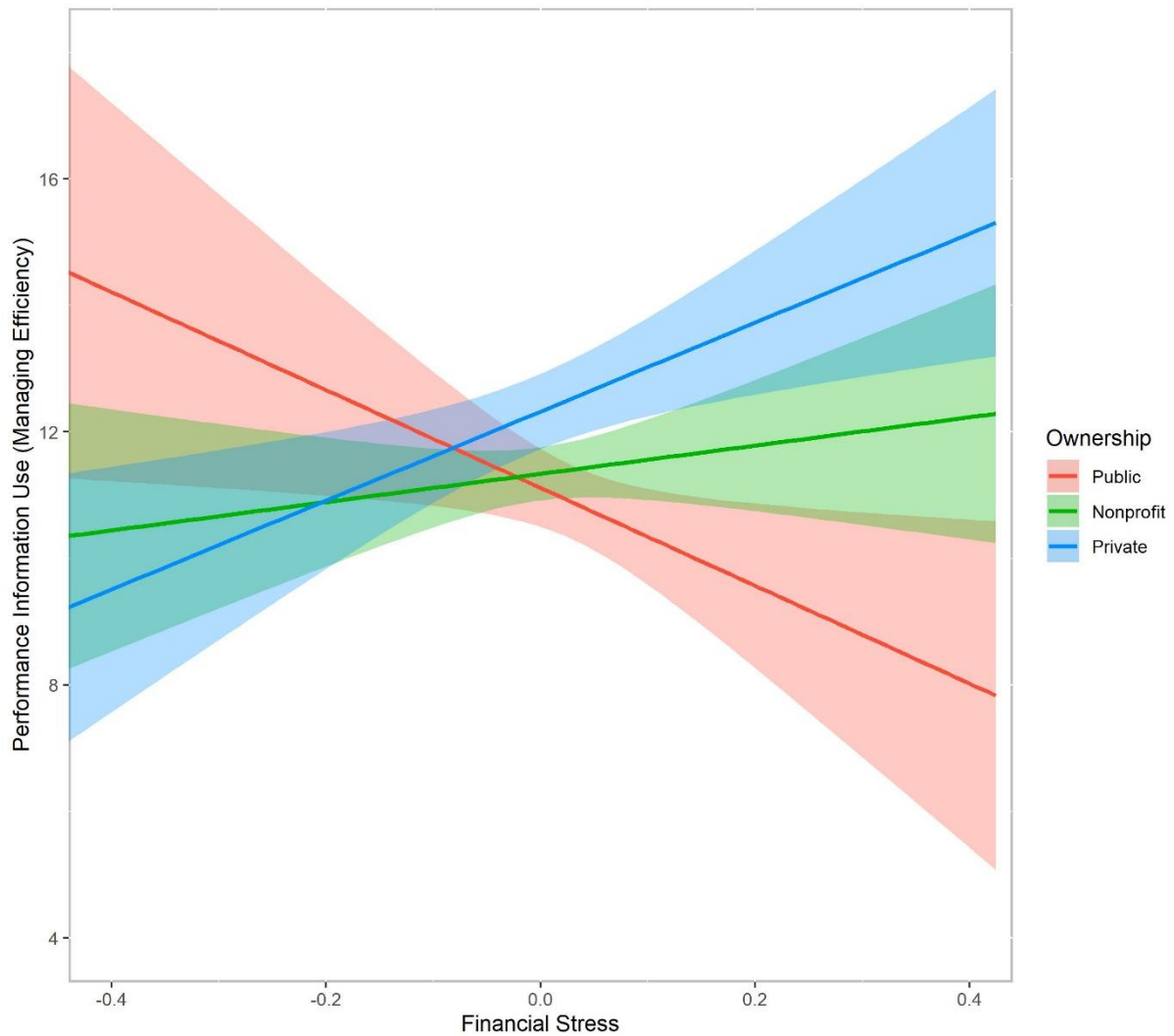


Figure 1. Effect Display for the Interaction between Financial Stress and Ownership in the Managing Efficiency Model

3.4.2 Managing Quality Model

To test the remaining research hypotheses, a second multiple regression model was specified with performance information use for managing service quality as the dependent variable. The results are shown in table 2, columns 5 - 7. The explanatory variables together account for 53 percent of the variance in performance information use for managing service quality.

We assumed that financial stress would be negatively associated with executive boards' reliance on performance information for managing service quality in public nursing homes

(H1b). However, the findings do not confirm this assumption: while the coefficient is negative as predicted, the results are not statistically significant ($B = -1.981$, $p = 0.466$).

Compared to public sector managers, respondents from nonprofit nursing homes state a slightly lower level of performance information use for managing service quality in the absence of financial stress, but the difference is not statistically significant ($B = -0.103$, $p = 0.678$). By contrast, the results indicate a significantly higher use of performance information under this condition for private nursing homes compared to public facilities ($B = 0.716$, $p < 0.05$). Again, this finding is consistent with the analysis of variance which demonstrated that private sector managers reported the highest level of data usage, regardless of the financial situation. Overall, this provides support for hypothesis 2b.

Hypothesis 3b postulates that the relative impact of financial stress on performance information use will be stronger for profit-seeking facilities than for public and nonprofit nursing homes. Contrary to our assumption, the interaction effect of financial stress and private ownership is insignificant ($B = 2.164$, $p = 0.504$), indicating that private ownership does not, in times of financial stress, diminish the use of performance information for improving service quality when compared to public ownership. Furthermore, private managers compared to their public sector peers report significantly higher scores on performance information use when the organization has a balanced budget ($B = 0.716$, $p < 0.05$). Both findings indicate that hypothesis 3b must be rejected.

A different pattern is seen among nonprofit nursing homes. Nonprofit ownership does not appear to increase or decrease the use of performance information under a balanced budget ($B = -0.103$, $p = 0.678$). However, as financial stress increases, nonprofit managers use performance information more than their public counterparts. The effect of financial stress on performance information use is thus positively and significantly moderated by nonprofit ownership compared to public ownership ($B = 6.965$, $p < 0.05$). This interesting finding also

contradicts hypothesis 3b, as financial stress shows the strongest effect in the nonprofit sector rather than in the private sector.

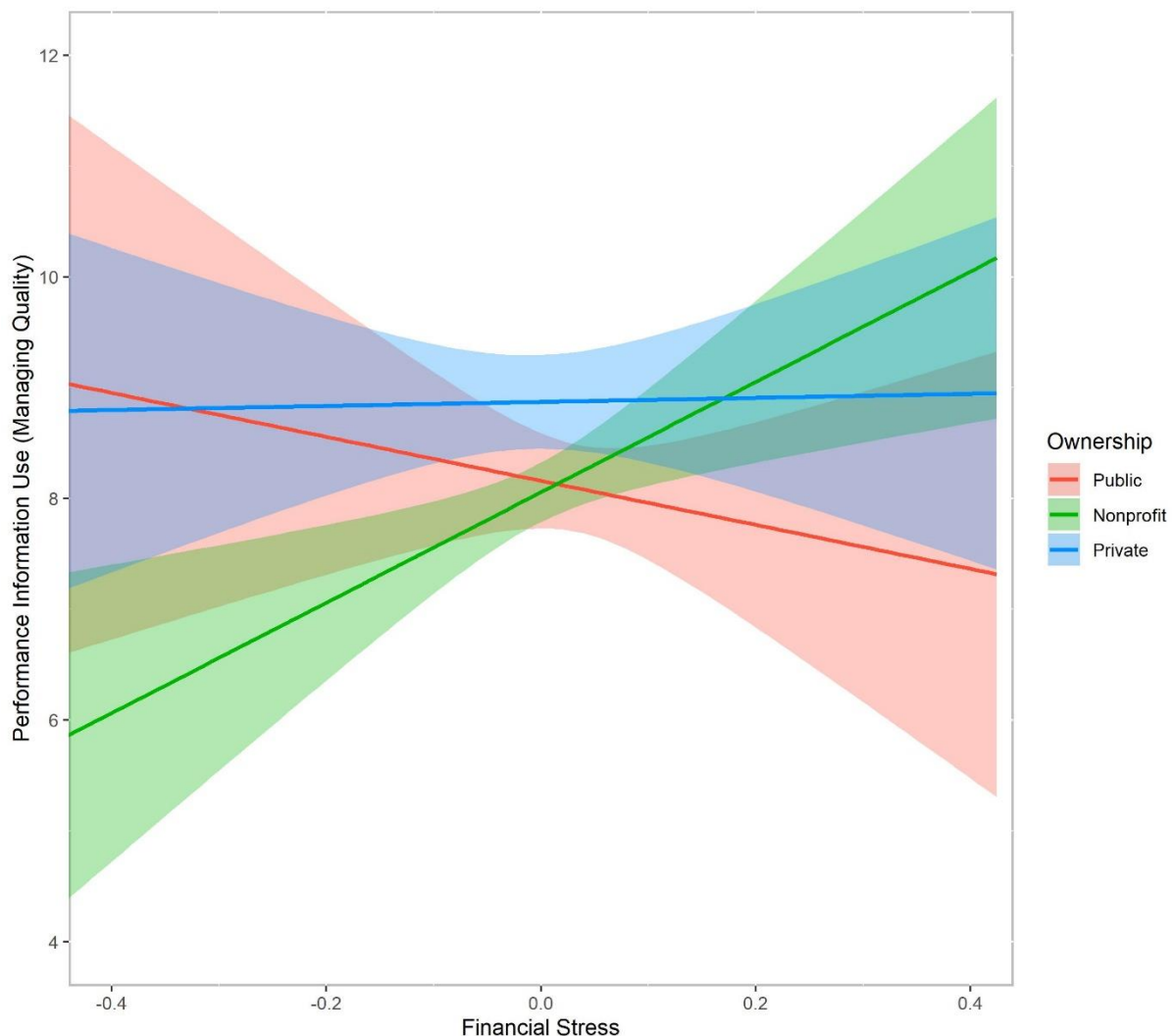


Figure 2. Effect Display for the Interaction between Financial Stress and Ownership in the Managing Service Quality Model

Figure 2 illustrates the differential association between financial stress and performance information use for public, nonprofit and private nursing homes. Again, we observe substantial cross-sectoral differences in the use of performance information for managing service quality under financial stress. In particular, managers in nonprofit facilities adapt to conditions of financial stress and place greater emphasis on using performance information for managing

service quality when resources are scarce. In private organizations, performance information use does not decrease as expected.

3.5 Discussion and Implications

Contemporary accounting and performance management reforms are linked to expectations that more or better performance information will help decision-makers to identify problems, achieve greater efficiency, and improve effectiveness (Kroll, 2015; Moynihan et al., 2012). A key question is whether this information does indeed support managers in bolstering performance when resources are scarce. The present study addressed this understudied issue by examining the use of performance information in Swiss nursing homes experiencing conditions of severe financial stress. Unlike most previous studies that focused on single managers' use of performance information, we were interested in the relevance of such information at the executive board level, where many nursing home decisions are taken. These decisions are rendered by groups or committees based upon systematic feedback information to support the joint setting of targets and measures for improvement. At the same time, the use of performance information by executive boards is challenging because several people must agree on the meaning and implications of the information available to them. This may be one reason that performance information is not always used as expected, especially in difficult times that demand broad consensus and swift action.

Our key findings suggest that managers in all three sectors change their reliance on performance information during times of severe financial stress, but in different ways. Financial stress appears to result in greater use of performance information for increasing efficiency than for improving service quality. As expected, acute resource scarcity hampers managers' use of performance information for managing efficiency in the public sector, while it fosters greater usage in the nonprofit and particularly in the private sector. This confirms that managers in each

sector face different incentives for using performance information to manage efficiency, and that financial stress reinforces these differences. However, when managing service quality under conditions of severe financial stress, we found that only managers in the nonprofit sector respond differently. As their focus on efficiency increases with tightening financial conditions, nonprofit managers increase their use of performance information for managing service quality. This indicates that they search for ways to improve efficiency without reducing quality of care. Private sector managers also show concern for service quality, but they place greater emphasis on increasing efficiency.

The results of the present study contribute to the existing literature in a number of ways. They first demonstrate that financial stress reduces public managers' ability to identify and solve efficiency problems based upon analytical input and evidence of performance. This observation adds to the literature showing that financial stress raises barriers and impedes the effective use of performance information systems, which leads to more challenging conditions for managing performance in the public sector (Bjørnholt et al., 2016; Jimenez, 2016; Moynihan & Landuyt, 2009; Nelson, 2012; Raudla & Savi, 2015). Second, the current study confirms previous research that demonstrated distinctive managerial incentives and behaviors in the various different sectors (Amirkhanyan et al., 2008; Hvidman & Andersen, 2014; Johansen & Zhu, 2014; Kim et al., 2020; Nutt, 2006). In particular, our research confirms the observation made by Johansen et al. (2018) that private sector managers use performance information to the highest degree, while there are no substantial differences between public and nonprofit organizations under normal financial conditions. A particularly interesting finding of our study is in what happens when resources are very scarce. We demonstrate that, as financial stress increases, nonprofit and private managers use performance information to manage efficiency more than their public counterparts. Thus, on this particular issue, managerial practices in nonprofit nursing homes are more similar to private than to public facilities.

However, when resources are scarce, nonprofit and private nursing homes also pursue different strategies. When faced with higher levels of financial stress, private nursing homes focus primarily on efficiency issues, while quality management efforts remain stable at a relatively high level. Nonprofits, on the other hand, substantially reinforce their efforts to manage service quality when experiencing severe financial stress. Scholars have noted that nonprofit funding is contingent on demonstrating outstanding achievements and meeting the needs of clients (McLaughlin, 2004). Hence, our findings confirm that financial stress forces nonprofit managers to invest more time and effort in quality of care in order to maintain their financial standing.

Our findings have several implications for performance management practice and for actors who promote the use of performance information. Similar to prior research (Johansen et al., 2018; Meier & O'Toole, 2011; Moynihan & Hawes, 2012), our findings draw attention to the importance of the external environment in shaping organizational strategies and managerial practices. Future attempts to motivate public managers to use performance information will probably be more successful when promoters pay more attention to the contextual characteristics of public organizations. They should, for instance, consider that successful performance management requires appropriate incentives and managerial autonomy to make decisions based on performance information. In addition, our analysis implies that an effective use of performance information in the public sector requires adequate resources for sustaining data collection and maintaining analytic capacity. Without such resources, it is unlikely that public organizations can use performance management systems to better cope with financial stress. Importantly, those resources would need to be rigorously protected in austere times when almost everything else is on the chopping block. The larger implication for public-sector reforms is that initiatives should be adequately funded. This can be especially difficult in government because sharp revenue declines are often accompanied by increased service

demands (a counter-cyclical effect), resulting in more intensive financial pressure that can undermine performance management efforts (e.g., Nelson, 2012; van Thiel & Leeuw, 2002). The upshot is that sufficient resources and good performance management are two interrelated factors for public service improvement (Boyne, 2003).

Lastly, this study found no evidence that private nursing homes neglect service quality when responding to financial stress. Nevertheless, privately owned and profit-seeking facilities facing financial stress should expect that efficiency concerns will likely eclipse service quality aspects of their operations; therefore, they should make a concerted effort to protect service quality in times of financial stress.

3.6 Limitations and Conclusion

Although this study deepens our understanding of the link between financial stress and performance information use, it is not without limitations. First, the research findings are based on the perceptions of nursing home directors concerning how their executive boards use performance information. This research strategy has allowed us to obtain a relatively large sample, which would otherwise be very difficult to assemble. Given that it seemed unrealistic to collect data from all members of several hundred executive boards, the applicability of multi-level models for clustered data or the aggregation of individual responses for each nursing home was not a viable option for this study. Both alternatives are problematic when not all responses are received from a small group, raising doubts about the group-mean reliability or within-group variance (Clarke, 2008). On the other hand, studies of performance have long relied on managers as trustworthy informants on organizational practice, if not on performance itself (e.g., Boyne, 2003; Moynihan & Pandey, 2010).

Second, a mean measure of financial stress was used in this study. Data protection regulation limited the availability and choice of indicators we could use. Future research should

therefore include more complex financial indicators and also consider the financial reserves available to an organization that can be used to buffer financial stress. Nevertheless, one strength of our research is that we used an objective measure of financial stress obtained from an archival data source, meaning it is independent from our criterion variables.

Finally, as one of the very few studies that compares managerial responses to financial stress and performance management practices across sectors, the underlying theory of the present study focused on institutional constraints formally created by actors and conditions outside the organizations. One limitation of this approach is that we cannot precisely explain how those constraints caused the observed sectoral differences. Additional research is also needed to explore the precise reasons for heterogeneous managerial responses across sectors. Such research should consider how other important factors relevant for the use of performance information – such as measurement system maturity, goal clarity, leadership support and managers' individual characteristics (see Kroll, 2015) – may differ across sectors and influence managers' use of performance information.

To conclude, this article documents some ways in which severe financial stress affects the use of performance information for managing efficiency and service quality across the public, nonprofit and private sectors. One main insight is that while performance interventions are linked to hopes of conserving resources and ensuring quality of care in difficult times, the recommended practices are particularly difficult to implement in public organizations because of their counter-cyclical nature: increased financial stress is often accompanied by increased demand for services, which can stymie performance management efforts. The question of how best to use existing management systems when they are needed most poses a challenge for managers in all sectors, but particularly in the public sector. A second insight concerns differences in the way public, nonprofit and private managers and their organizations use performance information. This study's findings therefore contribute to the literatures on

performance management and public-private differences. Future research should continue to explore these differences and try to develop more viable strategies for managing organizations experiencing severe financial stress. As the Coronavirus pandemic demonstrates, no organization is immune from financial stress and austerity may become the new normal.

3.7 Note

¹ As with other transformations, Box-Cox transformation works only if all of the data values to be transformed are positive. Therefore, prior to applying the Box-Cox transformation, we first added a constant value to the factor scores that was sufficiently large to make all of the values slightly positive.

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Appendix: *Dependent and Independent Variables*

Index/Variable	Items/Definition
Performance information use for increasing efficiency ($\alpha = 0.91$)	<i>Please indicate the extent to which performance information is actively used by the executive board for managing efficiency (1= "strongly disagree"; 7= "strongly agree").</i> Executive board members <ul style="list-style-type: none"> - use performance information as a basis for discussing efficiency improvements. - regularly use performance information to identify efficiency problems that require attention. - regularly use performance information to learn how to make services more efficient. - use key financial indicators to make better informed decisions.
Performance information use for improving service quality ($\alpha = 0.93$)	<i>Please indicate the extent to which performance information is actively used by the executive board for managing service quality (1= "strongly disagree"; 7= "strongly agree").</i> Executive board members ... <ul style="list-style-type: none"> - use performance information as a basis for discussing quality improvements. - regularly use performance information to identify quality problems that require attention. - regularly use performance information to learn how to improve the quality of services. - use quality indicators to make better informed decisions.
Financial stress	Size of operating deficit expressed as percentage of an organization's budget, 2012 - 2014
Ownership status	1= "public"; 2 = "nonprofit"; 3= "private"
Information availability ($\alpha = 0.83$)	<i>Please indicate the extent to which your organization has implemented each of the following (1= "not at all"; 7 = "fully implemented"):</i> <ul style="list-style-type: none"> - Systematic procedures for measuring service quality - Obtaining a regular external review of service quality by an outside accreditation organization - Procedures for calculating average costs per unit (client, day, care level) and other key financial figures - Procedures for periodic and systematic measurement of client satisfaction - Procedures for periodic and systematic measurement of employee satisfaction - Procedures for measuring other employee-related indicators, such as turnover and absences
Information usability ($\alpha = 0.92$)	<i>How do you assess the quality of all available performance information in your organization as regards the following dimensions (1 = "very poor"; 7= "excellent")?</i> <ul style="list-style-type: none"> - Understandability - Meaningfulness - Reliability - Timeliness - Overall quality
Management system requirements	<i>Please indicate whether external requirements, enforced by law or administrative regulation, require the following activities (1 = "yes"; 2 = "no"):</i> <ul style="list-style-type: none"> - Certification of management system <p>Note: This question was one of several. Items not included in the analysis were related to mandatory external reporting duties, auditing requirements, and management system requirements.</p>
Size	Number of beds

5 Selbstständigkeitserklärung

„Ich erkläre hiermit, dass ich diese Arbeit selbständig verfasst und keine anderen als die angegebenen Quellen benutzt habe. Alle Koautorenschaften sowie alle Stellen, die wörtlich oder sinngemäss aus Quellen entnommen wurden, habe ich als solche gekennzeichnet. Mir ist bekannt, dass andernfalls der Senat gemäss Artikel 36 Absatz 1 Buchstabe o des Gesetzes vom 5. September 1996 über die Universität zum Entzug des aufgrund dieser Arbeit verliehenen Titels berechtigt ist.“

Ort / Datum

Name

Bern, 7.11.2020

Handwritten signature in blue ink, reading "Roger Pfister".