An examination of management control systems in not-for-profit research institutions: A literature review on current situation and future directions

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ABSTRACT

This study is motivated by the increasing importance of management activities in not-for-profit organizations because of macro factors, such as government resource cuts. In addition, many authors have been argued that it is more difficult to manage professionals (e.g., doctors, lawyers, and accountants) than non-professionals because the former have professionalism, which is likely to conflict with organizational norms. The purpose of this study is to critically investigate existing frameworks and empirical findings of management control, to identify their issues of dispute, and to consider future research directions in not-for-profit research institutions, especially in terms of the motivation and performance management systems. This study applies a literature review, and specifically selects various canonical journals in the fields of management accounting and psychology. The study mainly focuses on European countries because of their advanced management practices in public and not-for-profit organizations. As a result, it raises the following point: although it has been agreed that output-based control systems cause conflict with professionals and/or not-for-profit organizations, the organizations might use any type of control system if there are ways to mitigate negative effects of such systems. Furthermore, to clarify detailed factors and contexts that affect the relationship between management control systems and individual/organizational outcomes (e.g., managers’ experiences and eagerness, organizational size, and organizational structure), this study encourages more case and field studies. The findings of this study could contribute to the development of performance management practices in not-for-profit and/or professional organizations and to the advancement of academic research on those organizations’ management.

Keywords: research activities, autonomous motivation, performance management, management control systems

INTRODUCTION

Performance management has been of interest to management accounting researchers and practitioners over the years. It is closely related to the concept of a management control system (MCS). Various frameworks have been established and a lot of empirical research has been accumulated to date.

Although management accounting research had developed using the assumption of for-profit companies, performance management in not-for-profit organizations has
become important since the 1980s. The main background of this movement is new public management (Hood, 1995) in Organisation for Economic Co-operation and Development (OECD) countries and the accompanying cutting of resources by governments in many countries (Parker, 2012). Traditionally, it is very difficult to apply financial measures to not-for-profit organizations. In addition, it has been argued that professionals have to be controlled in different ways from non-professionals, because for example, professionals tend to conflict with organizations (Abernethy & Stoelwinder, 1995; McGregor, Killough, & R. M. Brown, 1989; Shafer, L. J. Park, & Liao, 2002) mainly due to their professionalism. For this reason, it would be fruitful to focus on performance management of not-for-profit research institutions, as representative organizations with performance management difficulties.

In fact, many scholars have investigated management accounting practices in not-for-profit and/or professional organizations. When we consider organizational control, one of the most important questions is “what do we have to control?” In terms of control objects, it generally has been considered that professional and not-for-profit organizations can come into conflict with output-based control systems. For example, in higher educational organizations, including universities, research outputs are the number of publications and citations while teaching outputs are the number of degrees conferred and courses (Deem, 2004; Kuoppala, 2005; Ter Bogt & Scapens, 2012). Some authors have found that performance evaluation based on the outputs has negative effects, especially on autonomous motivation (K.-M. Kallio & T. J. Kallio, 2014; Ter Bogt & Scapens, 2012). On the other hand, there is evidence that negative effects of output control can be mitigated by implementing performance evaluation that values autonomous motivation of evaluated people (Sutton & D. A. Brown, 2016). Given the results of such prior studies, examination of current research on MCSs in not-for-profit and/or professional organizations is significant for the following three reasons. First, in contrast to for-profit organizations, it is usually difficult to apply financial control to not-for-profit organizations. Examining alternative control systems in such circumstances would contribute to management practices in these organizations. Second, the applicability of control systems that have been considered to cause conflict with professionals and/or not-for-profit organizations can be proposed. Finally, as mentioned above, environmental changes around not-for-profit organizations have intensified the importance of performance management in those organizations.

In light of these motives, this study employs a literature review as its research method. Revealing the conflicting evidence from existing studies and considering future research directions are important for both research and practice. For the literature review, the target areas are management accounting and psychology, because the evidence on MCSs for professionals has been complemented with that from psychology. The target years are principally from the 1980s, because the importance of performance management began to be stressed in this era. Target nations are mainly European countries, because these countries are advanced in new public management and accompanying performance management.

The remainder of this paper is composed of four sections. The next section describes the theoretical frameworks and empirical findings on MCSs. The two sections thereafter focus on the prior literature on performance management systems in not-for-profit research institutions including universities and other professional organizations, and
examine several factors that affect MCSs in those organizations, respectively. The last section discusses the findings and concludes with future research directions.

THEORETICAL FRAMEWORKS AND EMPIRICAL EVIDENCE ON MCSS

The purpose of management control is the implementation of strategies (Anthony & Govindarajan, 2007). Anthony and Govindarajan (2007) proposed that “management control involves a variety of activities, including planning what the organization should do, coordinating the activities of several parts of the organization, communicating information, evaluating information, deciding what, if any, action should be taken, and influencing people to change their behavior” (p.7).

There are various frameworks in prior research on management control. First, it is necessary to consider what should be controlled. This study refers to two studies to describe the objects of management control (Osterloh, 2010; Ouchi, 1979). Ouchi (1979) developed a framework by considering two conditions: the ability to measure outputs and knowledge of means–ends relationships. His framework is illustrated in Table 1.

Knowledge of the transformation process represents means–ends relationships. When the relationships are clear, effective control could be achieved by having someone watch the behavior of employees and the workings of machines. In Table 1, therefore, it is argued that behavior control is suitable if knowledge is perfect. Ability to measure outputs means that desired outputs can be measured with some precision. When this ability is high, output control is likely to be appropriate. If the ability is low and knowledge is imperfect, clan control would be encouraged. Clan control is exercised through ritual and ceremony, which communicates organizational values and beliefs. Ouchi (1979, p.845) stated that “many organizations, particularly those in relatively stable manufacturing industries, fit the requirements for behavior control or for output control,” whereas “organizations in the public sector, in service industries, and in fast-growing technologies may not fit these specifications and perhaps should have cultural or clan forms of control instead.”

<table>
<thead>
<tr>
<th>Ability to measure outputs</th>
<th>Knowledge of the transformation process</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfect</td>
</tr>
<tr>
<td></td>
<td>Imperfect</td>
</tr>
<tr>
<td>High</td>
<td>Behavior or output measurement</td>
</tr>
<tr>
<td></td>
<td>Output measurement</td>
</tr>
<tr>
<td>Low</td>
<td>Behavior measurement</td>
</tr>
<tr>
<td></td>
<td>Ritual and ceremony, “clan” control</td>
</tr>
</tbody>
</table>

Source: Ouchi (1979, p.843)

Subsequently, Osterloh (2010) developed a control objects’ framework for academia based on Ouchi’s (1979) framework. Osterloh (2010) considered two conditions. The conditions are knowledge of output measurability and/or attributability, and knowledge of appropriate processes or rules to be applied. According to her, performance evaluation in research is increasingly based on numbers of publications, citations, and impact factors but such output control is usually used without considering some preconditions. She proposed output, process, and input control and then argued that the adaptability of these control mechanisms depends on the extent of the ability and knowledge. The three controls and examples of each task are presented in Table 2.
Osterloh (2010) described the following preconditions. First, the output indicators are clear-cut and stable, and measure research performance unambiguously. Second, the measurement of research output motivates researchers not to have unintended side effects of measurement compensating the intended performance increases. Third, the research institution can allocate resources in an optimal way to produce the desired output in the future. As presented in Table 2, it is necessary to have high levels of output measurability and/or attributability when organizations apply output control.

Table 2. Control modes and task characteristics

<table>
<thead>
<tr>
<th>Knowledge of output measurability/attributability</th>
<th>Knowledge of appropriate processes/rules to be applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Output and/or process control</td>
<td>Output control</td>
</tr>
<tr>
<td>= ratings, rankings</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Process control</td>
<td>Input or personnel control</td>
</tr>
<tr>
<td>= peer control</td>
<td>control</td>
</tr>
<tr>
<td></td>
<td>= selection, socialization, placement</td>
</tr>
</tbody>
</table>

Source: Written by author based on Osterloh (2010, p.269)

Process control needs in-depth knowledge about the processes and/or rules to be applied, but it does not need as much output measurability/attributability. Osterloh (2010, p.269) pointed out that “the preconditions are that evaluators (a) have the appropriate knowledge of cause-effect relationships or appropriate methodologies to be applied, and (b) use their knowledge without biases and malevolence.” Process control in academia takes the form of peer control. Process control is similar to behavior control in the framework of Ouchi (1979).

Input or personnel control is applied when the preconditions of output control and process control are not met. The intent of the control is to ensure that individuals have internalized norms and professional standards even when there is no feasible output or process control. The control is synonymous with clan control in Ouchi (1979).

Finally, the circumstances that fit output and/or process control are those that can be controlled by outputs and/or well-defined processes. Such tasks refer to simple tasks apart from research and are not relevant in academia. Osterloh (2010) mentioned that practically, these types of control are used in combination, and optimal combination of control types should be selected depending on the type of the task and the knowledge of the evaluator about the task characteristics. However, she emphasized the importance of input or personnel control, because it helps with heterogeneity of various academic views and it aids scholars to internalize professional norms and standards.

Ouchi’s (1979) framework was developed by focusing on the R&D environment (Rockness & Shields, 1984). Rockness and Shields (1984) investigated the relationships between the importance of controls and four task characteristics (i.e., knowledge of the transformation process, measurability of the output, dependence, and complexity) by conducting survey questionnaires for 10 organizations located in the U.S. The authors’ empirical study was exploratory, but had significant implications. In other words, not only task characteristics but also the organizational context should be taken into account when considering appropriate control systems.
In addition, the literature has discussed the nature, issues, elements, and effectiveness of four controls, namely, results, action, personnel, and cultural controls (Merchant & Van der Stede, 2012). First, results controls influence behavior and decision-making, because they make employees consider their behavior and the consequences of decision-making. Employees pursue a behavior aiming to maximize their chances of producing the organization’s desired results, even without direct supervision or interference from superiors. Typical results controls are pay for performance. They are useful when definition and measurability of the desired results are satisfied, and when the employee can control the measured results sufficiently.

Action controls ensure that employees perform (do not perform) certain actions known to be beneficial (harmful) to the organization. They are effective when organizations can determine (un)desirable actions, and when organizations are able to ensure that (un)desirable actions (do not) occur. Personnel controls foster employees’ natural tendencies to control or motivate themselves. Personnel controls might be executed through selection, placement, training, job design, and resourcing. “In other words, finding the right people to do a particular job, training them, and giving them both a good work environment and the necessary resources is likely to increase the probability that the job will be done properly” (Merchant & Van der Stede, 2012, p.88).

Finally, cultural controls are designed to encourage a powerful form of group pressure on individuals who deviate from group norms and values. They are most effective when organizational members have social or emotional connections with others. Organizational cultures can be shaped by example as well as in words. For instance, codes of conduct, group rewards, intra-organizational transfers, physical and social arrangements, and tone at the top shape organizational cultures. The cost related to personnel and cultural controls is often lower than more salient forms of controls are, and the controls might be expected to produce fewer harmful side effects. Therefore, the controls could be used in almost every setting. Abernethy and Brownell (1997), a notable study that applied these perspectives, examined the role of accounting and non-accounting (i.e., behavior and personnel) controls in an R&D setting. The authors distributed survey questionnaires and conducted interviews to collect data. The subjects were 150 senior research officers in the R&D divisions of a large Australian industrial company and a major US scientific organization. Given task uncertainty and the number of exceptions, the three controls had different effects on performance. The results revealed that reliance on personnel controls had positive effects on performance but reliance on accounting and behavior controls had significantly negative effects on performance in environments in which task uncertainty was high. In addition, the authors found that accounting and behavior controls were not suitable to environments that have many exceptions.

As mentioned earlier in this section, traditional frameworks have considered only organizational characteristics. However, for example, an MCS affects individual attitudes and also is affected by environmental characteristics. Thus, simply applying these frameworks to empirical research might lead to distorted conclusions. It is necessary to consider individual and/or environmental dimensions when we examine and describe the actual conditions of MCS practices in real organizations. In particular, since the employees of professional and not-for-profit organizations have distinct natures (e.g., professionalism) and environments (e.g., prevalence of performance-based funding without regard to difficulty of measuring output), it is important to scrutinize the effectiveness of the frameworks in different circumstances.
Another perspective of the frameworks (Malmi & D. A. Brown, 2008; Simons, 1995) is notable, namely, the idea that an MCS has several components. This study summarizes the concept of Malmi and D. A. Brown (2008) and Simons (1995). Specifically, the study of Malmi and D. A. Brown (2008) is used as the framework of Sutton and D. A. Brown (2016), which yields very important findings for this study. Simons (1995) proposed four levers of control: beliefs systems, boundary systems, diagnostic control systems, and interactive control systems. “A beliefs system is the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose, and direction for the organization” (Simons, 1995, p.34). Boundary systems delineate the acceptable domain of activity for organizational participants. By using belief systems together with boundary systems, active opportunity exploration within an acceptable domain would be expected.

“Diagnostic control systems are the formal information systems that managers use to monitor organizational outcomes and correct deviations from preset standards of performance” (Simons, 1995, p.59). In addition, interactive control systems “are the formal information systems managers use to involve themselves regularly and personally in the decision activities of subordinates” (Simons, 1995, p.95). These four levers of control are all linked to corporate business strategies. They are illustrated in Figure 1.

Simons’ (1995) levers of control framework has been applied and developed by many scholars to date. Tessier and Otley (2012) developed Simons’ (1995) framework by reclassifying the types (i.e., social and technical), levels (i.e., strategic and operational), and purposes (i.e., performance and compliance) of controls. In addition, Simons’ framework has underpinned empirical investigations on, for example, the relationship between interactive control systems and innovation (Bisbe & Otley, 2004), the introduction of a new interactive performance measurement system in a case firm (Tuomela, 2005), the relationship between diagnostic and interactive use of performance measurement systems and organizational capabilities (Henri, 2006), and the benefits and costs of control systems (Widener, 2007). In general, these studies reveal that interactive control systems require and consume much attention, but they work more effectively for performance improvement in uncertain environments.

![Figure 1. Four levers of control](source: Simons (1995, p.7))
Malmi and D. A. Brown (2008) conducted a literature review and pointed out that an MCS does not operate in isolation. They developed an MCS package made up of five components: planning, cybernetic controls, reward and compensation, administrative controls, and cultural controls. Figure 2 represents their framework. First, planning directs effort and behavior by prescribing the goals of the functional areas of the organization. Long-range planning and action planning are included in planning. The former provides the goals and actions for the medium and long run, while the latter determines the goals and actions for the immediate future, usually a 12-month period or less.

Cybernetic controls “can either be an information system or control system contingent upon how it is used” (Malmi & D. A. Brown, 2008, p.292). Specifically, they would provide information and support decisions if managers were to detect unwanted variances by themselves and modify their underlying behavior or activity that influences the variance without others’ involvement. However, cybernetic controls would be a control system when linking behavior to targets and establishing accountability for variations in performance. Cybernetic controls include budgets, financial measures, non-financial measures, and hybrids that contain both financial and non-financial measures—for example, the Balanced Scorecard.

Reward and compensation, especially introduction of results-oriented systems, promote motivation and increase the performance of individual employees (Shima, Kawai, Hashimoto, & K. Park, 2010). Administrative controls enable organizations to direct the behavior of employees through the arrangement of organizational members, monitoring behavior, and specification of the way in which tasks are to be performed. Administrative controls encompass governance structure, organization structure, and policies and procedures. Finally, cultural controls include clans, values, and symbols. Although culture is usually viewed as a context for an organization, it would be a control system when used to regulate behavior. Cultural controls can be viewed as a parallel concept of beliefs systems (Simons, 1995) and clan control (Ouchi, 1979).

<table>
<thead>
<tr>
<th>Planning</th>
<th>Cybernetic controls</th>
<th>Reward and compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-range planning</td>
<td>Financial measurement systems</td>
<td>Hybrid measurement systems</td>
</tr>
<tr>
<td>Action planning</td>
<td>Non-financial measurement systems</td>
<td></td>
</tr>
<tr>
<td>Budgets</td>
<td></td>
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</table>

**Cultural controls**

<table>
<thead>
<tr>
<th>Clans, values, symbols</th>
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</table>

<table>
<thead>
<tr>
<th>Administrative controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance structure</td>
</tr>
<tr>
<td>Organization structure</td>
</tr>
<tr>
<td>Policies and procedures</td>
</tr>
</tbody>
</table>

**Figure 2. MCS package**

Source: Malmi and D. A. Brown (2008, p.291)

With regard to the two frameworks, this study suggests that it is still unclear how we should combine some components to increase organizational effectiveness in each setting.

**MANAGEMENT CONTROL IN PROFESSIONAL AND NOT-FOR-PROFIT ORGANIZATIONS**

This section summarizes existing main findings about MCSs and the consequences of these findings in not-for-profit research institutions, including universities, and
complementally refers to management accounting research on other professional organizations and not-for-profit institutions. Performance management systems are a control framework that attempts to ensure that certain ends are achieved and particular means are used to attain these ends (Broadbent & Laughlin, 2009).

Managers should take some characteristics of not-for-profit organizations into account when applying an MCS to their organizations. There are nine features of not-for-profit organizations. First, there is the absence of a profit measure. Second, there are different tax and legal considerations. Third, there is a tendency to be service organizations. Fourth, there are greater constraints on goals and strategies. Fifth, there is less dependence on clients for financial support. Sixth, there is dominance of professionals. Seventh, there are differences in governance. Eighth, political influences are important. Finally, there is a tradition of inadequate management control (Anthony & D. W. Young, 2003, p.53).

There are critical studies on research performance management. These studies focus on work motivation, stress, anxiety, productivity, and quality as consequences of the use of performance management. As for motivation, particularly various conclusions have been obtained. K.-M. Kallio and T. J. Kallio (2014) analyzed the impact of management-by-results (MBR) on academics’ work motivation with internet-based survey questionnaires for 2870 Finnish academics. Their study showed three main results. First, only 2.5% of respondents evaluated their own work performance only or mostly quantitatively, whereas 49.7% of them reported that their university evaluated them only or mostly on quantitative criteria. These results implied that the respondents were strongly in favor of qualitative evaluation. Second, with regard to respondents’ satisfaction with and the effects of the current MBR evaluation, “only 15% of the respondents were satisfied with their respective systems” but “over 40% expressed their dissatisfaction with the current systems” (K.-M. Kallio & T. J. Kallio, 2014, p.579). In addition, the effects of quantitative evaluation and qualitative evaluation differed significantly. Specifically, “although as many as 40.7% of the respondents indicated that quantitative evaluation lowered their work motivation, only 16.7% reported the same effect in the case of qualitative evaluation” (K.-M. Kallio & T. J. Kallio, 2014, p.581). Furthermore, approximately 35% of the respondents stated that qualitative evaluation had positive effects on their work motivation. Third, as many as 77.7% of the respondents agreed that emphasis on especially quantitative MBR reduced the quality of research in universities. This result did not differ between the respondents’ characteristics (e.g., status, university, and faculty). Therefore, the result represents extensive dissatisfaction with quantity-oriented evaluation systems.

Ter Bogt and Scapens (2012) investigated three questions through field studies in accounting and finance departments within two universities located in the Netherlands and England: (1) the way in which judgmental performance evaluation systems are used in universities, (2) the way in which the systems are used to evaluate the performance of individual academics, and (3) the effects of these judgmental performance evaluation systems on individual academics at the department level. The authors mentioned that performance evaluation in universities had been traditionally developmental, but in recent years, judgmental types of evaluation had been increasing, that is, the purpose of performance evaluation had changed from the improvement of individual future performance to the quantitative measurement of performance in the past.

Although the two universities differed in countries, regions, cultures and environments, the effects of the use of judgmental performance evaluation on individual
staff were similar in both universities. Specifically, anxiety and stress of individual members of staff increased because of uncertainty of the meanings of performance evaluation and pressure to perform tasks with scarce resources. Ter Bogt and Scapens (2012) were concerned with performance evaluation, which relies excessively on journal rankings and the number of publications in journals. Such performance indicators are objective but excessive reliance on them creates a tendency to follow the preferences of top journals and to avoid high-risk research that needs longer periods.

As such, MBR systems are likely to be interpreted as a violation of academic freedom and might cause much resistance in practice (K.-M. Kallio & T. J. Kallio, 2014). K.-M. Kallio and T. J. Kallio (2014) stressed that MBR systems need to be designed carefully so as not to suffocate intrinsic work motivation, because professionals have much interest in job content and relatively low interest in monetary compensation.

On the other hand, Sutton and D. A. Brown (2016) demonstrated that individual autonomous motivation might be varied depending on the design and use of an MCS. The authors relied on self-determination theory and implemented exploratory case studies in two faculties within a university to investigate how universities manage research activities without threatening the autonomous motivation of their researchers. They conducted interviews for a research administrator, senior researchers, middle-career researchers, and early-career researchers in each faculty. The contents of interviews were recorded based on Malmi and D. A. Brown’s (2008) MCS package.

Consequently, the importance of motivation in research activities was confirmed. There were three types of researchers’ motivation. First, some researchers exhibited their motivation stem inherently from their discipline, and the actual content and ideas of their research. This type of motivation was labeled as “interested” by the authors. Second, many researchers expressed their interest in the technical process of performing research tasks. This type was categorized as “technicians.” Third, some researchers were motivated by their position as public intellectuals, that is, their contribution to society by providing research outcomes. This type was labeled “idealists.”

Like other institutions, the two faculties used funding and promotion systems based on output and subjected to the consequences of performance evaluation. Although it is assumed that tangible external rewards undermine motivation in self-determination theory, Sutton and D. A. Brown (2016) observed some characteristics that prevent negative effects of these incentives. For example, unlike periodic performance evaluation, “researchers can choose whether to participate in the incentive system or not” (Sutton & D. A. Brown, 2016, p.593). In addition, in contrast to evaluation that requires outcomes within shorter periods, the length of evaluation periods could span several years or even an entire career in their study. Performance evaluation with longer periods reduces researchers’ perceptions that they are controlled. These characteristics mitigate dysfunctions pointed out by Ter Bogt and Scapens (2012). As highlighted by Pop-Vasileva, Baird, and Blair (2011) who studied job-related attitudes of Australian academics through survey questionnaires, the characteristics of performance management systems are crucial factors that influence attitudes. Attitudes are significant for developing performance management systems for better performance, providing accurate performance evaluation and fruitful feedback to individuals, improving motivation, and so on (Pop-Vasileva, Baird, & Blair, 2011).

On the other hand, in terms of productivity and quality, Kuoppala (2005) analyzed the effects of MBR on university management through case studies implemented in four
universities in Finland. Since the end of the 1980s, MBR has been implemented and universities have been viewed as entrepreneurial units in Finland. Economic recession and cuts in funding from the government to higher education institutions occurred in the same period, whereas external funding increased approximately four times between early 1990s and 2002. Kuoppala (2005) noted that MBR expanded the direct authority of top management and improved academic productivity, such as the number of degrees conferred and the number of study credits.

The findings of the abovementioned studies are mapped in Figure 3. Positive or negative signs in the figure represent the directions of influence of performance management systems. However, as described by Sutton and D. A. Brown (2016), the proposition that performance management systems have negative impact on motivation might be questionable. It is possible that performance management systems protect and/or improve individual intrinsic motivation.

**Figure 3. Mapping of main results**

It goes without saying that we must consider the purpose of performance management, especially performance measurement. Simultaneous realization of efficiency and flexibility is achieved by exploiting enabling control, which encourages efficient coping with contingencies (Jørgensen & Messner, 2009). Chiesa, Frattini, Lazzarotti, and Manzini (2009) conducted multiple case studies in 15 Italian technology-intensive firms and indicated the firms had diverse objectives of R&D performance measurement (e.g., motivating researchers and engineers, assessing profitability of R&D projects, and stimulating organizational learning). Hence, making the purposes and styles of performance management known to organizational members is important for increasing the effectiveness of performance management.

Furthermore, it would be meaningful for this study to extract main findings from studies that focus on other professionals and not-for-profit organizations. For example, medical professionals who have higher professional orientation conflict with bureaucratic norms and values where output control is dominant (Abernethy & Stoelwinder, 1995). In addition, conflicts between organizations and professionals explain large parts of job satisfaction and turnover intentions (McGregor et al., 1989; Shafer et al., 2002). Moreover,
relationships between human and physical inputs, production processes, and effectiveness/efficiency outcomes in knowledge workers’ performance management were investigated (Abernethy, Horne, Lillis, Malina, & Selto, 2005). Professionals link their knowledge to outcomes. Therefore, this causality needs to be further detailed by considering some variables that have impacts.

In a professional context, individual involvement in designing and implementing management accounting systems is noteworthy. Shields and S. M. Young (1994) found that cost budget participation and cost knowledge are required to improve the cost consciousness of R&D professionals. Participation is more important than knowledge for consciousness. Eldenburg, Soderstrom, Willis, and Wu (2010) analyzed the effects of physicians’ participation on the development of hospital accounting information systems. Their result suggests that physician involvement has an impact on their behavior. Specifically, the physicians redeployed resources toward sicker patients, led cost containment, and ultimately improved financial performance (Eldenburg et al., 2010).

Involvement in the development and implementation of the systems could be important in a non-professional setting too. In particular, the consequences of participative budgeting have been widely investigated (Chong, Eggleton, & Leong, 2006; Shields & S. M. Young, 1993). For example, there is evidence that participation in a standard setting reduces the job-related stress of automobile design engineers (Shields, Deng, & Kato, 2000).

MAIN FACTORS AFFECTING MCS IN RESEARCH INSTITUTIONS

Existing concepts of motivation

As noted earlier, existing frameworks of management control consider only organizational characteristics and not external and individual characteristics. This is problematic because there is a relationship between motivation and performance. As discussed in the previous section, motivation is highly important in research activities (Sutton & D. A. Brown, 2016; Ter Bost & Scapens, 2012). Self-determination theory has been widely quoted in management accounting research (Kunz, 2015; Kunz & Linder, 2012; Sutton & D. A. Brown, 2016; Wong-On-Wing, Guo, & Lui, 2010). While intrinsic motivation and extrinsic motivation are typical classifications, self-determination theory delves into extrinsic motivation in assessing the degree of autonomy.

Deci, Vallerand, Pelletier, and Ryan (1991) employed self-determination theory and referred to intrinsic and extrinsic motivation in education and learning activities (Deci et al., 1991). Ryan and Deci (2000) suggested “Intrinsically motivated behaviors, which are performed out of interest and satisfy the innate psychological needs for competence and autonomy, are the prototype of self-determined behavior” (p.65). By contrast, extrinsically motivated behavior is instrumental to some separable consequence. Extrinsic motivation can be classified into four types according to the extent to which it represents self-determination.

Table 3 is a replication of a taxonomy table of human motivation described by Ryan and Deci (2000). “At the far left of this table is amotivation, which is the state of lacking intention to act” (Ryan & Deci, 2000, p.61). Individuals feel low competence and perceive non-contingency in this state. Just to the right of amotivation is the least autonomous form of extrinsic motivation, a category labeled external regulation. The person performs behavior to achieve an external demand or to obtain an externally imposed reward in the condition.
Next, introjection is more self-determined than external regulation but less self-determined than identification. When introjected, individuals act in order to obtain approval from themselves or others. “A more autonomous, or self-determined, form of extrinsic motivation is regulation through identification” (Ryan & Deci, 2000, p.62). In this state, the individual recognizes the personal importance of activity. Finally, integration is the most autonomous form of extrinsic motivation. “Integration occurs when identified regulations have been fully assimilated to the self” (Ryan & Deci, 2000, p.62). At the far right of the table is intrinsic motivation, which is a prototype of self-determined activity.

The findings based on self-perception theory can be expected to strengthen this argument. For example, a study employing self-perception theory (Calder & Staw, 1975) predicts that intrinsic and extrinsic motivation do not combine additively. Rather, they might operate interactively. Calder and Staw (1975) made male college students solve puzzles in their experiments, in which either blank puzzles or picture puzzles with or without rewards were assigned to subjects. The dependent variables of the experiments are task satisfaction and motivation. The results show that subjects had lower intrinsic motivation for blank puzzles and their interest increased with the introduction of monetary rewards. On the other hand, picture puzzles induced higher intrinsic motivation and subjects’ interest decreased with the introduction of monetary compensation. These findings demonstrate the interaction between intrinsic and extrinsic motivation (Calder & Staw, 1975).

<table>
<thead>
<tr>
<th>Regulatory styles</th>
<th>Associated processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amotivation</td>
<td>Perceived non-contingency, low perceived competence, non-relevance, and non-intentionality</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>Salience of extrinsic rewards or punishments, compliance/reactance</td>
</tr>
<tr>
<td>External regulation</td>
<td>Ego involvement, focus on approval from self or others</td>
</tr>
<tr>
<td>Introjection</td>
<td>Conscious valuing of activity, self-endorsement of goals</td>
</tr>
<tr>
<td>Identification</td>
<td>Hierarchical synthesis of goals, congruence</td>
</tr>
<tr>
<td>Integration</td>
<td>Interest/enjoyment, inherent satisfaction</td>
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<td>Intrinsic motivation</td>
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Source: Written by author based on Ryan and Deci (2000, p.61)

Interest in motivation has also been growing in management accounting research. For example, in recent years, the relationship between objective and subjective performance evaluation and autonomous motivation has been investigated (Kunz, 2015). The results show that the measures themselves are independent of autonomous motivation, but when assessing the extent of measures’ accuracy, autonomous motivation changes significantly. In addition, Kunz and Linder (2012) investigated the interplay of rewards and intrinsic/extrinsic motivation by implementing a vignette experiment. Adler and Chen (2011) attempted to understand the compatibility of creativity and control. As psychologists stress, both intrinsic and autonomous extrinsic motivation are related to managerial performance, job satisfaction, trust, and well-being in workplaces (Gagné & Deci, 2005). In general, although the importance of motivation in any activity is acknowledged, there is room for further research on the process by which motivation leads to performance.
Change of internal and external environments. It is inevitable that we consider the change of environments when we discuss performance management in the not-for-profit sector. In particular, new public management (Hood, 1995) and worldwide cuts in resources by governments (Parker, 2012) have made not-for-profit organizations more management oriented. The aim of new public management is to achieve activation and quality improvement of the public sector with introducing philosophy, methods, and success cases of private sector management. The concept prevailed in the 1980s in OECD countries (e.g., England and New Zealand). Hood (1995) proposed seven items related to new public management, such as promoting competition between the public and private sectors, controlling resource usage.

These changes have caused significant transformation. This paper picks up universities as an example of organizations whose internal and external environments have changed dramatically. For example, in the UK, an expansion policy increased the number of universities from 25 to 45 in the 1960s (Deem, 2004). However, the expansion tendency has reversed since 1979 after the Conservative Party’s election. The Conservative Party in the UK cut public expenditure, thereby exposing the public service and professionals engaged in public services to quasi-markets and systems of for-profit private sectors (Deem, 2004). Even though academics are originally knowledge workers, they have been required to achieve good performance based on short-term outcome measures, such as publication and teaching evaluation from students in recent years. Consequently, so many scholars are involved in the role of management and they are required to accomplish generating revenue and monitoring expenditure as well as increasing academic achievements (Broadbent, 2011; Deem, 2004).

Accompanied by universities’ commercial orientation, students have been treated as customers, teaching and research programs have been treated as products, and external environments have been treated as markets (Parker, 2012). Recently, universities have embarked on the formulation of financial strategies, endeavored to accumulate research for acquire resources, and restructured less profitable teaching programs (Parker, 2013). However, some differences remain between universities’ peculiar cultures and those of companies (Christopher & Leung, 2015). Christopher and Leung (2015) conducted qualitative interviews and used secondary data to demonstrate characteristics that cause tensions in the transition to corporate cultures in Australian public universities. As a result, the authors found 10 aspects that lead to tensions, for example, risk-averse culture, tenured workforce, and resistance to corporate performance management systems. These facts imply that performance management needs to be designed taking inherent cultures into account.

While this study specifically focuses on universities as an example of research institution, the phenomena discussed in this paper can be observed in other not-for-profit organizations, including hospitals, research institutions, and local government. Since not-for-profit research institutions face uncertainty of outcomes, management control of the organizations would be remarkably difficult. Nevertheless, it is increasingly crucial to analyze the trends of performance management systems that improve organizational and individual effectiveness.

DISCUSSION AND CONCLUSION

This study, motivated by the question of whether output control can be applied to professional and not-for-profit organizations, organized existing findings of performance
management, or more broadly, management control of research activities. Since research institutions, including universities, are often not-for-profit and can be considered professional organizations, this study took the perspective of professionals and not-for-profit organizations as the main objects of the literature review.

As presented in the frameworks of controls, traditionally it has been argued that output control does not fit research activities. In fact, empirical research on MCSs in universities and other professional organizations suggests that quantitative performance management has negative effects on autonomous motivation and/or brings about conflicts between professionals and organizations. Precisely, some authors have revealed that means–ends relationships are imperfect and their ability to measure outputs is low in such organizations. In addition, output control might fundamentally conflict with intrinsic autonomous motivation.

However, the conventional frameworks that this study refers to hardly have considered individual dimensions, such as motivation. The effects of MCSs on motivation have been widely investigated. According to prior literature, individual motivation might typically improve through participation in designing and implementing management accounting systems. Since professionals often have more autonomy than non-professionals do, professionals’ involvement in management control should be encouraged more in the future.

Furthermore, environmental changes demand that not-for-profit organizations apply performance management that relies on outputs and/or outcomes for the purpose of promotion and fund allocation. Thus, we might have to consider how to apply and utilize output control rather than avoid its application, because it will be increasingly inevitable for not-for-profit environments in the future. The result of this review has a beneficial implication, namely, that output control might be applicable to organizations, which is contrary to the prior literature, which deems output control to be incongruent with organizations.

Two limitations of this study should be considered when interpreting its results. First, this study does not consider differences of institutional context in each country and/or region. Indeed, there is evidence that research evaluation systems influence design and use of an MCS within universities in the UK (Agyemang & Broadbent, 2015). In Japan, national universities’ corporatization and the accompanying introduction of operating expense grants (un-eihi koufukin in Japanese) have forced national universities to implement effective and efficient performance management (Yamamoto, 2004). In summary, adaptability and necessity to adapt output and/or other control might be contingent upon institutional context. Therefore, effectiveness of output control in one country might not be available in another country.

Second, there could be some factors that impact the design and use of MCS other than those referred to in this study. In practice, there are many determinants of the effectiveness of an MCS. For example, beliefs and culture might have significant influences on an MCS (Malmi & D. A. Brown, 2008; Merchant & Van der Stede, 2012; Simons, 1995). Hence, other individual and organizational characteristics (e.g., managers’ experiences and eagerness, organizational size, and organizational structures) should be considered to find evidence that is closer to practice.

Despite these limitations, this study makes several academic and practical contributions. From the academic perspective, this study contributes to the development of the series of MCS studies on not-for-profit organizations and professional organizations.
It is noteworthy that conventional frameworks on control systems should be employed and interpreted by adding individual and environmental characteristics. Communicating the purpose of performance management is important because control systems require organizational members’ understanding. From a practical perspective, this study contributes to advancing MCS practices in professional and/or not-for-profit organizations. Compared to commercial companies, business administration in these organizations is developing. This study provides some clues for more successful MCS practices in these organizations by reviewing the existing evidence and identifying some important features that impact MCSs.

In conclusion, the following propositions can be derived from this study. When organizations apply an MCS, they also have to focus on other than their task characteristics. In this regard, this study encourages the use of case and field studies for future research development. Case studies and field research would enable us to observe detailed contexts that interact with MCSs. For example, in Japan, field studies in management accounting have continued to develop (Yokota et al., 2010). Although case and field studies are poor with regard to generalizability, they are expected to elaborate theories beyond simply describing unique cases. Others can utilize superior management accounting practices in some organizations through case description from various perspectives.

REFERENCES


