



Cooperation and competition among employees: Experimental evidence on the role of management control systems



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ABSTRACT

This article reviews experimental studies that investigate the influence of management control systems on competitive and cooperative interactions among employees. It begins by describing the role of experiments in improving theory specification, by improving construct definitions, documenting the causal processes that link management controls and performance, and identifying contextual factors that influence these processes. The article then analyzes experimental research on the role of management control systems in the social comparisons and tournament incentives that generate competition in organizations, and in the teamwork and reciprocity processes that support cooperation. A number of open questions and directions for future research, both experimental and non-experimental, are identified.

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1. Introduction

Much accounting research on management control systems (MCS)¹ has focused on hierarchical relations between superiors and subordinates or principals and agents; but managing horizontal relations of cooperation and competition among employees within an organization is also an important role for MCS. Researchers and managers are interested in questions like the following: How can internal competition be used as a motivating device without turning employees against each other (or against upper-level management)? Can MCS influence employees to cooperate more effectively with each other, other than by costly, detailed monitoring and enforcement?

Experimental research in recent decades has provided considerable insight into the complex processes by which MCS manage horizontal cooperation and competition and thus influence organizational performance. The goal of this article is to analyze what we have learned on this topic from the experimental literature in management accounting (MA), in a way that could be valuable for non-experimental MA researchers as well as experimentalists.

The experimental and non-experimental literatures in MA have become increasingly interconnected in recent years.² MCS experiments rely on formal principal-agent models (e.g., Evans et al., 2001; Towry, 2003; Rankin, 2004), while formal principal-agent models incorporate insights from experiments (e.g., Mittendorf, 2008; Fischer and Huddart, 2008). Experiments explore the individual and small-group processes that can explain organizational-level observations in archival and survey studies or widespread anecdotal evidence in the business press (e.g., Drake and Haka, 2008; Chen et al., 2012; Choi, 2014), while archival and survey studies use field settings to test the robustness of experimental results (e.g., Ittner et al., 2003; Chen and Sandino, 2012; Berger et al., 2013). Thus interconnections among these different research approaches have prompted significant research in recent years, but much unrealized potential remains.

The cooperation-competition theme offers opportunities for realizing more of this potential because it has generated a critical mass of high-quality experimental studies in accounting, and this critical mass reassures us about the robustness of the results in multiple ways. First, the existence of replications assures us that the results of single studies are robust in the laboratory.³ Second,

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² This paper follows Chenhall (2003) in defining management accounting (MA) as “a collection of practices such as budgeting or product costing”, MA systems as “the systematic use of MA to achieve some goal”, and management control as “a broader term that encompasses MAS and also includes other controls such as personal or clan controls”.

³ For empirical research, this is primarily true of quantitative, hypothesis-testing studies; connections with qualitative field studies remain relatively underdeveloped.

⁴ Although replications are rare in the sense of new studies that do *nothing but* repeat a prior study, they appear fairly frequently in the experimental literature in the sense of new studies that replicate prior results incidentally, in the course of identifying limits to or influences on the original study's results. Quasi-replications

the basic phenomena addressed in the experiments—though not all their MCS implications—have been documented in natural environments (see the following sections for detailed evidence), increasing our confidence that the experimental results are not mere laboratory artifacts. Third, the critical mass means that there has been some (not complete) exploration of the boundaries within which specified effects are likely to occur.

The remainder of this article is organized as follows. Section 2 comments on what experiments can (and cannot) contribute to MCS research, with a view both to addressing some of non-experimentalists' concerns about the limitations of experimental research, and to offering suggestions for experimentalists about the kind of MCS questions that can (and cannot) best be answered with experimental methods. Section 2 also defines the scope of the particular experimental studies chosen for more detailed analysis in the remainder of the article. Sections 3 and 4 present in more detail what we have learned from experiments about performance effects of intra-organizational competition and cooperation; these sections also suggest questions for future research. Section 5 concludes.

2. Contributions and scope of experiments

What can experiments do to contribute to our understanding of the relations between MCS and organizational performance? Non-experimentalists must ask this question when deciding when—if at all—to consider experimental studies as relevant to their own research.

Experimentalists must also ask the question, first in order to determine whether a laboratory experiment is an appropriate way to address a particular research question, and then to decide what claims they can make about the generalizability of an experimental study.

Comparisons of experimental and archival or survey methods⁴ are sometimes clouded by an assumption that these methods are primarily to be seen as (imperfect) substitutes for each other. I argue here that the more important role for experiments is to *complement* archival and survey studies: each method can provide an essential contribution that research using the other method often needs but cannot provide. An argument for the complementarity of the methods has three parts. First, both experiments and “real-world” empirical studies of MCS face serious questions about generalizability. Second, a primary reason that these questions remain unanswered is inadequately specified theory. Third, experiments and archival or survey studies provide different contributions to improving the specification of theory; and each approach can enhance the power of the other. These three steps in the argument are presented in more detail below.

2.1. Generalizability concerns

Questions about the generalizability of laboratory experiments to “real-world” settings arise because these experiments often use participants, tasks, or settings that differ in some respects from their counterparts in natural environments. Comparable concerns arise about the generalizability of archival and survey research,

that test identical theory in different settings are also fairly frequent. Examples appear in Sections 3 and 4 below.

⁴ Archival and survey studies rather than qualitative field studies are used as the “real world” counterparts to compare with experiments in this section. Qualitative field studies are no less relevant to our understanding of MCS; but they are more difficult to compare to experiments because their theory base and methodological assumptions are often more distant from experiments than the theory base and methodological assumptions of quantitative hypothesis-testing studies using archival or survey data.

because studies conducted within a single organization or industry or region often cannot provide much assurance that their results will generalize to other organizations, industries, or regions. Studies based on more diverse samples aim at more assured generalizability but have often produced inconsistent—that is, non-generalizing—results (e.g., Shields and Shields, 1998; Otley and Fakiolas, 2000; Van der Stede et al., 2005).

It is reasonable to expect some degree of generalizability in MCS research, unless we believe that every instance of MCS and its effects is wholly unique and uninformative about other instances. Patterns of comparable behavior can be expected to exist; but it is often far from straightforward to identify exactly what constitutes a generalizable pattern of behavior or to identify the contextual factors that make the occurrence—and non-occurrence—of the pattern more likely.

2.2. Inadequately specified theory

When we are concerned about the generalizability of a laboratory study or a single-firm archival study, simply testing the same hypotheses over and over in different settings is not an efficient way of resolving the concern. Multiple instances of an x – y association do not tell us very much about generalizability unless we are reasonably assured that (a) x and y are sufficiently well defined that other instances that fit the definition will actually be similar enough to behave in the same way; (b) there is a causal process explaining the x – y association: it is not a spurious correlation created by some additional factor that may well not be present in other instances; and (c) the causal process linking x and y is not dependent on the presence of some contextual factor that may fail to appear in other instances.

A well-specified theory provides the definitions of x and y that help us to determine whether different instances are sufficiently similar in ways that matter to the x – y relation. It also describes relevant causal processes—“plausible accounts of how the actions of real humans could produce the associations predicted and observed” (DiMaggio, 1995, 392). These accounts can guide the search for evidence to distinguish between causal and spurious correlations. Finally, a well-specified theory includes “careful attention to the scope conditions of [its] account” of how x relates to y (DiMaggio, 1995; 391): that is, it identifies contextual variables that are more or less likely to matter to the relation and thus helps to define the limits of generalizability.⁵ In contrast, it is difficult to claim or evaluate generalizability when the theory underlying a study's predictions is inadequately specified—that is, when we are uncertain about the definition of constructs, the nature of the relevant causal processes, or the identity of important conditioning factors.

2.3. Toward improved theory specification

Experimental and archival or survey studies can complement each other in improving the specification of theories that link MCS and organizational performance. Specification is improved through testing theories, modifying theories as needed by (for example) checking their logic, extending (or shrinking) their domain, or adjusting their construct definitions, and then testing the modified theory. In this process we might say that archival

⁵ The quote is from DiMaggio (1995)'s definition of “theory as narrative”. Alternative definitions identified by DiMaggio are “theory as covering law,” which specifies empirical regularities without attempting to explain why they occur, and “theory as enlightenment,” a more humanities-oriented approach that does not aim at generalization. The “theory as narrative” approach plays a particularly large role in social science of the kind that is represented in quantitative, hypothesis-testing MCS research (see also Sutton and Staw, 1995).

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