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MANAGING PROFESSIONALS

MANAGING PROFESSIONALS:

An Examination of Management Control Systems in Professional Service Firms



H. KLOOSTERMAN

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An Examination of Management Control Systems in Professional Service Firms

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. ir. K.I.J. Maex

ten overstaan van een door het College voor Promoties ingestelde

commissie, in het openbaar te verdedigen in de Agnietenkapel

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Embarking on a PhD is a selfish thing. It is a commitment to yourself and your own desire for intellectual pursuits. For me this most selfish period of my life intersected with the least selfish period of my life, becoming a mother- twice. And so I had three babies to care for and nurture: a dissertation and two sons.

Being a PhD student and a parent creates much of the same emotions. It can be confusing. It can be rewarding. It can make your feel brilliant and mediocre all at once. Sometimes you are lost. Sometimes you wonder why you ever started on this course in the first place. The road is long and the days are short. Some days you take steps back rather than moving forward. Sometimes you feel lonely. Sometimes you get the feeling that you are doing this all by yourself. Nothing is further from the truth of course.

Your dissertation becomes an entity. It takes the empty seat at dinner parties, it lies dormant and then escapes unsolicited from your mouth when you've had too much to drink. It sits like a monkey on your shoulder throughout your day. People ask about your children and your dissertation out of courtesy. While you try to limit discussion of both, since no one really cares to hear about either, you often cringe as you find yourself showing people pictures of your children on your smartphone and discussing the finer points of survey research at a friend's engagement party. You can't help but express your excitement, frustration and wonderment at this thing that is happening to you.

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PREFACE

Professional service firms are special. They engage in solving customized, complex problems together with an involved clientele (Jones et al., 1998). Unlike manufacturing firms, their main production input is human capital rather than plant, property and equipment (Ulirch, 1998; Fitzgerald et al., 1991) making them almost solely dependent on their professional employees as their main source of competitive advantage (Teece, 2003). Professionals, in turn, are highly-trained experts (Armbrüster, 2004; Starbuck, 1992) who are self-motivated and goal-driven (Maister, 1993). While highly committed to their profession (May et al., 2002), professionals' loyalty to the employing organization has been repeatedly questioned as their strong preference for autonomy (Von Nordenflycht, 2010) is considered to be in conflict with bureaucratic tenants of control such as hierarchy of authority, division of labor, and organizationally-determined rules and procedural specifications (Alexander, 1981). As such, the challenge of managing professionals is often referred to as "herding cats" (Jones et al., 1998; Løwendahl, 1997; Von Nordenflycht, 2010) as professional service firms seek to find a balance between administrative control and professional autonomy.

Much of the academic literature and the popular press on the management of professionals has focused on maximizing the work autonomy of professionals and avoiding bureaucratic forms of control. Managing professionals through bureaucratic forms of control is to be avoided as rules limit choices, decrease trust, and stifle creativity and insightful thinking (Kruse, 2016). Professionals don't "need in-house procedures or time-study analysts to tell them how to do their jobs" they "know what they have to do and just do it" (Mintzberg, 1998, p. 140). Application of management techniques focused on "standardization, supervision and marketing of repetitive tasks and products, are not only inapplicable in the professional sector but may be dangerously wrong" (Maister, 1993; p. XV). Our best option for managing professionals may be to "Do Nothing" (Murnighan, 2016) as the very "absence of rules" is the source of success (Kruse, 2016).

However, while some are urging us to manage less, the literature also suggests that professional service organizations may increasingly be managing more. Cooper et al. (1996) describe the archetypical shift from the collegiality based professional partnership model rooted in individual autonomy, egalitarianism and consensus-based governance to the more rational and bureaucratic based Managed Professional Business model. Recent case studies of professional service firms question whether there is a "return to the machine bureaucracy?" (Kärreman et al., 2002) and examine ways in which bureaucratic forms of control may benefit professional service firms.

Given these opposing viewpoints, how are we to understand the use of bureaucratic control measures in professional service firms?

Increasingly, scholars have begun to advocate not for the abrogation of bureaucracy, but the building of better bureaucracies (Adler, 1999) and the creation of the "right" rules and incentives to guide and nudge rather than command professionals in the direction of organizational goals (Malhotra et al., 2006). Rather than prescribing blind obedience to organizational rules, this "softer" form of bureaucracy focuses on providing guidance and clarifying responsibilities to assist individuals in performing their jobs more effectively (Adler and Borys, 1996). These two forms of bureaucracy have been conceptualized as opposing roles, or uses, of the MCS, with the decision-influencing role, also referred to as the coercive or controlling role of MCS, providing for consistency, efficiency and formality versus the decision-facilitating, or enabling role, allowing for adaptability, transparency and information sharing (Ahrens and Chapman, 2004; Davila, 2000; Van der Stede, 2001; Zimmerman, 2011).

The purpose of this thesis is to reconcile these opposing viewpoints of bureaucracy by examining management control in professional service firms both theoretically and empirically. More specifically, we aim to examine whether PSFs balance their need for flexibility and their need for control by allowing for flexibility in the way control measures are used. Professional services provide a unique environment in which to explore these opposing viewpoints as these firms represent an extreme example of the increasing complexity, turbulence, and opaqueness of 21st century firms (Huber, 1984). These firms have a greater need for flexibility and adaptation and may be less likely to benefit from the coercive model of control with its rigid imposition of bureaucratic rules.

This thesis is organized in three chapters. In Chapter 1, we outline the unique characteristics of professional service firms and the management control challenges these characteristics represent. We suggest that based on the controlling role of MCS, the use of bureaucratic forms of control in professional services is assumed to be limited due to two assumptions in the literature. First of all, the complex nature of professional work may limit the ability of firms to apply bureaucratic forms of control and secondly, even if the organization is able to apply bureaucratic forms of control, professionals will be unwilling to cooperate with these measures. We term these assumptions the nature of the work challenge and the nature of the individual challenge, respectively. We then argue that these two assumptions have shaped theories of management control in professional service firms despite empirical evidence suggesting that these assumptions may be erroneous or overstated. Utilizing case studies on management control in professional service firms, we show that PSFs may benefit from the use of bureaucratic forms of control particularly if these controls

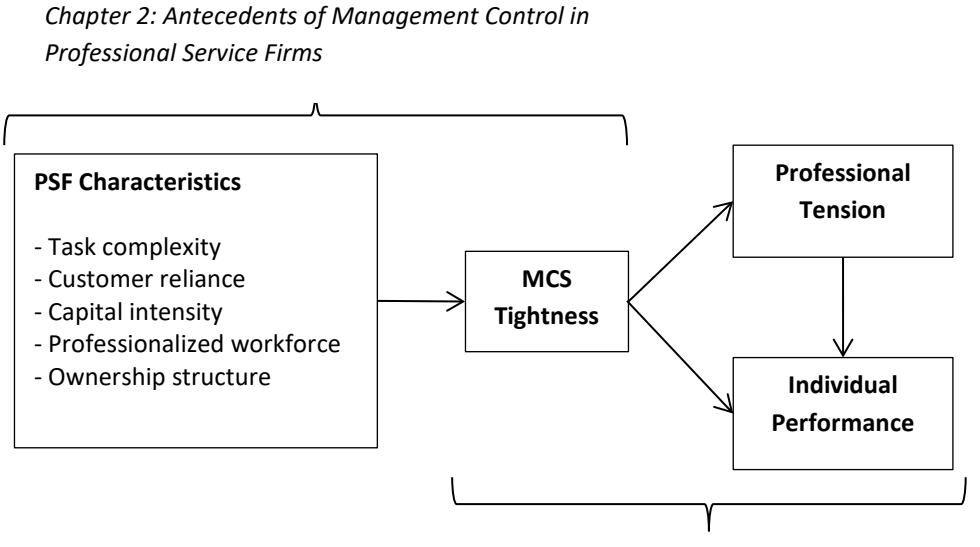


Figure I: Structure of the Empirical Chapters

are exercised in a flexible manner. We conclude the chapter with suggestions on how to facilitate empirical progress on the study of management control in professional service firms.

In Chapter 2, we empirically examine the effect of PSF characteristics on MCSs in professional service firms (see Figure I). Our goal here is twofold; first of all, we aim to provide the first broad-based empirical research on the antecedents of management control in professional service firms. We examine whether the heterogeneity in the distinctive characteristics of professional service firms such as task complexity, customer reliance, capital intensity, professionalized workforce and ownership structure result in decreased use of bureaucratic forms of control and increased use of personnel and cultural control as suggested by the controlling role of MCS. Secondly, we examine how professional service firms balance their need for flexibility with their need for control. We distinguish between two forms of control tightness, explicit control, which refers to the extent and scope of the control system and implicit control, which refers to degree of tolerance for deviation allowed by the control system. We propose that the use of bureaucratic forms of control in professional

services may partially be explained through the introduction of increased flexibility in the use of these controls in response to PSF characteristics.

Finally, in Chapter 3, we empirically examine the consequences of MCS in professional service firms on both individual performance and the negative attitudinal outcomes of employees. Empirical literature on the impact of MCSs on performance in professional service firms is limited. The coercive role of MCSs suggests that the use of bureaucratic forms of control may damage individual performance both directly and indirectly through the creation of negative attitudinal outcomes, which we term professional tension (See Figure I above). However, the enabling role of MCS suggests that more flexible use of bureaucratic forms of control may be less likely to lead to negative attitudinal outcomes and may improve individual performance by increasing job-related information and improving coordination. To address these inconsistencies in the literature, we develop a typology of control tightness, which allows us to test whether introducing greater flexibility into the MCS results in improved individual performance both directly, and through improved attitudinal outcomes.

Throughout this thesis our primary focus is on bureaucratic forms of control, since these forms of control are thought to be most problematic for professional services: they form the basis of the controlling versus enabling roles of MCSs and they may potentially yield the greatest improvements from rigid versus flexible application of control. However, we cannot ignore the abundance of literature which stresses the importance of hiring practices and culture as important features of management control and drivers of performance in PSFs (Campbell, 2012; Løwendahl, 1997; Maister, 1993). These less obtrusive forms of control do not present the same difficulties as bureaucratic forms of control, and therefore, flexible application of these types of control may also produce different consequences than flexible application of bureaucratic forms of control. We therefore examine rigid and flexible use of behavior, results, personnel, and cultural controls. We refer to behavior and results controls interchangeably as bureaucratic controls, bureaucratization, formal controls or formalization more generally, as this reflects the varied history and the broad range of literature which examines these types of controls. Similarly, personnel and cultural controls are also referred to as non-bureaucratic or informal controls.

While the empirical chapters in this thesis investigate both the antecedents and consequences to management control, they are designed to be read as self-contained articles. While this leads to some overlap in the chapters, including text repeated verbatim, especially in parts of the methodological sections, we feel the benefits of allowing readers to independently consider either the antecedents or consequences of MCS in professional service firm outweighs the inconvenience caused by these repetitions in text.

CHAPTER 1
How did we get here?

Definitions, models, and assumptions of management control systems in professional service firms

1 Introduction

Professional services make up the most rapidly growing, profitable and significant sector of the global economy (Empson et al., 2015). Services account for about two-thirds of GDP in developed countries and almost one-half of GDP in developing countries (Aharoni, 1993) with the professional services sector generating more than US$ 3 trillion in revenues globally (Empson, 2013). The sector has drawn considerable research interest in that it is generally believed that professional services represent a distinct category of firms which require different management approaches and principles than other types of firms (Greenwood et al., 2005; Løwendahl, 1997; Maister, 1993).

While the literature has long acknowledged the difficulties in managing professionals, and management of professionals by managers has been referred to as everything from a “clash of cultures” (Raelin, 1985) to “herding cats” (Løwendahl, 1997), the literature examining management control in PSFs remains fragmented (Von Nordenflycht, 2010). Systematic analysis of the MCS in these organizations has been limited. Though there is consensus that the management difficulties in the firms stem from the fact that the service interaction is complex (Mills and Margulies, 1980) and

the workforce prefers to define and monitor its own work activities (Friedson, 1994), there has been little empirical evidence regarding the specific managerial challenges encountered by PSFs in the management of their operations (Brandon-Jones et al., 2016). The literature has not succeeded at developing a generic framework which distinguishes PSFs from manufacturing firms (Greenwood et al., 1990) and while some work has drawn attention to the heterogeneity within the PSF sector (e.g. Covaleski et al., 2003; Malhotra and Morris, 2009; Morris and Empson, 1998; Reed, 1996; Suddaby and Greenwood, 2005; Von Nordenflycht, 2010; Von Nordenflycht et al., 2015), empirical research comparing management control systems within and between PSF sectors is still limited. A number of factors help to explain the deficiencies in the literature.

First of all, PSFs are difficult to define. In the absence of a clear definition, scholars often choose to focus on industries which can unequivocally be considered PSFs (law, medicine, accounting) which may hinder our understanding of PSFs as a whole, or they focus on the differences between PSFs and mass services, rather than on PSFs themselves (Auzair and Langfield-Smith, 2005). While this approach may be useful in contrasting PSFs to other types of firms, it does little to deepen our understanding of the heterogeneity within PSFs. Research often fails to examine the heterogeneity between PSFs as it is generally limited to single PSF (a law firm) (Hitt et al., 2001) or a single PSF sector (accounting, architecture) (Cooper et al., 1996; Greenwood and Hinings, 1993; Greenwoood et al., 1990, 2002, 2005; Malhotra, 2003; Malos and Campion, 2000; Morris and Pinnington, 1998; Pinnington and Morris, 2002, 2003; Von Nordenflycht, 2007).

The lack of a clear definition of PSFs has also limited comparability of existing studies making it difficult to come to a general theory of management control in these firms. Research on professionals and professional service firms has traditionally been dominated by the fields of sociology and psychology and to a lesser degree organization science. Management accounting researchers have drawn from all of these fields in an effort to explain management control in professional service firms. Rather than increasing our understanding of management control in PSFs, the resulting diversity of frameworks, theories, and definitions of management controls in the PSF literature has hindered the creation of a generalizable framework.

Secondly, research on management control in PSFs has been hampered by the application of theories and assumptions which may no longer be valid in today's business environment. Significant changes in the PSF business environment, such as

increased competition and customer sophistication may have modified the incentives for management control, but rather than empirically exploring how these changes affect management control in these firms, much of the research continues to rely on potentially outdated assumptions in the literature.

Thirdly, many of the characteristics ascribed to PSFs have traditionally been considered as innate, that is, the organization has no control over the intensity or degree with which it experiences the characteristic but must simply endure its presence. More contemporary literature on these characteristics has shown that organizations have the ability to change and control these characteristics to suit their unique situation. For example, customization has traditionally been considered a hallmark of professional services, but case studies appear to indicate that some PSFs limit customization and instead choose to focus on a standardized, modularized service offering which limits customer choice and allows professionals to reuse existing knowledge with minor modifications (Canavan, 2013; Jaakkola, 2011; Maister, 1993). Similarly, while increased customer contact can create additional uncertainty in service provision, actively encouraging the customer to participate in service provision can serve as an additional source of monitoring and control (Jaakkola, 2011; Mills, 1986) and provide employees with social support and task guidance (Bowen, 1983).

Recently, academics have suggested that advancing our understanding of PSFs is not dependent on a clear definition of these firms, but an understanding that these firms share many common characteristics (Sciulli, 2005; Von Nordenflycht, 2010). Von Nordenflycht (2010) creates a taxonomy of some of these characteristics and the management problems and opportunities that they create and expands on this taxonomy in further work (Von Nordenflycht et al., 2015).

The goal of this paper is twofold. First of all, we aim to create a synthesis of the literature which examines PSF characteristics and looks at the heart of the control issues which they create. Secondly, we aim to highlight how changes in the business environment have impacted the basic assumptions upon which management control is professional service firms is based.

Our goal is not to provide a systematic and complete overview of the literature on management control in professional services. Instead, we seek to address the common assumptions of management control in professional service firms. By addressing the validity of these assumptions based on empirical studies, we seek to draw attention to common themes emerging from the literature in order to enable theory formulation on management control in professional service firms.

The remainder of this paper is organized as follows. We begin with a discussion of the definition of a professional service firm and the unique characteristics of the professional service firm. In section 3, we discuss how each of these characteristics is related to PSFs and the management control challenges and opportunities they present. In section 4, we address that factors that have led to changes in the PSF business environment and how these changes may have impacted the nature pf management control challenges in PSFs. Finally, in section 5, we discuss how these findings can be used to advance the theory of management control in professional service firms.

2 What is a Professional Service Firm?

There is little consensus in the literature about what a professional service firm is. Although much of the PSF literature is based on industries considered to be the archetypal examples of professional services such as law and accounting firms (Alvehus and Spicer, 2012; Aranya et al., 1981; Hitt et al., 2001; Hitt et al., 2006; Sorensen and Sorensen, 1974), other literature has classified everything from social work agencies to engineering as professional services (Evans, 2016; Malhotra and Morris, 2009). The inconsistency and ambiguity of the definition of a PSF limits our ability to clearly delineate PSFs from other types of firms and from each other (Empson et al., 2015; Von Nordenflycht, 2010). While definitions of PSFs almost always include the traditional professions of law, accounting and architecture as examples, deviating just slightly from this basic archetype immediately generates questions of what should and should not be included under the umbrella of professional service firms. While limiting our definition of PSFs to just those of the traditional archetype may provide some clarity, such a narrow definition may exclude firms which could provide valuable insights in comparative analysis. Research has attempted to establish boundary conditions which distinguish PSFs from non-PSFs, but which allow examination of the considerable heterogeneity among different types of professional service firms. Attempts to define these boundary conditions typically classify PSFs based on 1) the type of firm providing the service, 2) the type of person providing the service or 3) the type of service provided. Each of these attempts at classification presents its own challenges.

Much of the existing literature defines the PSF by the type of firm providing the service. That is, rather than actually defining what a professional service firm is, a list of firms considered to be professional services is provided. These firms may include “law firms, software firms, data mining firms, computer firms, accounting firms, business consulting firms, advertising agencies, etc.,” (Sahin, 2011; p. 413), “lawyers, scientists, engineers, economists, and auditors”(Uhl-Bien and Graen, 1998; p. 340).

These lists are problematic not only because the firms included under the term PSF vary from article to article but because the logic of defining one firm as a PSF but not another is often not discussed and the basis for including one type firm or excluding another is not apparent. In a small sample of articles on PSFs, Von Nordenflycht (2010) found over 30 different sectors being described as "professional services".

Table 1.01 Characteristics of Professional Service Firms

	Task Complexity	Knowledge Intensity	Low Capital Intensity	Autonomy	Professionalized Workforce	Customization	Customer Reliance	No Outside Ownership
Abernethy and Stoelwinder (1990)				X	X		X	
Abernethy and Stoelwinder (1991)				X	X			
Abernethy and Stoelwinder (1995)	X	X		X	X			
Bol and Leiby (2011)		X						
Briscoe (2007)		X					X	
Brivot (2011)		X					X	
Chang and Birkett (2004)		X				X	X	
Clark (1993)	X					X		
Ditillo (2004)	X	X			X			
Empson et al. (2015)		X		X		X	X	X
Goodale et al. (2008)		X		X	X	X		
Greenwood et al. (2005)	X	X						
Groen et al. (2012)	X	X					X	
Hinings et al. (1991)								X
Hitt et al. (2001)		X						
Hitt et al. (2006)		X						
Homburg and Stebel (2009)	X						X	
Jaakkola (2011)	X					X	X	
Lewis and Brown (2012)		X			X	X	X	
McDonald and Stromberger (1969)		X						X
Mills and Posner (1982)	X		X				X	
Morris and Empson (1998)	X	X						
Nachum (1996)		X					X	
Segal-Horn and Dean (2007)		X					X	
Stumpf, Doh, Clark (2002)		X			X		X	
Von Glinow (1985)		X						
Von Nordenflycht (2007)								X
Von Nordenflycht (2010)			X					
Von Nordenflycht et al. (2015)		X	X		X	X	X	
Winch and Schneider (1993)	X	X				X		
Young et al. (2012)		X			X			

We encounter a similar problem when we try to define PSFs based on the type of person providing the service. A PSF could be defined as an organization "in which members of one or more professional groups play the central role in the achievement of the primary organizational objectives" (Scott, 1965; p. 65), but this still leaves the problem of defining a profession, which some scholars have argued is not possible to define satisfactorily (Friedson, 1983). Larson (1977) argues that professionals produce 'products' which are sufficiently intangible to prevent them from being traded as

commodities, yet sufficiently standardized to allow them to be differentiated from services provided by others, and therefore, traded widely. However, this definition includes many of the organizations labelled as PSFs in the literature (i.e. accounting, architecture) but it also excludes organizations often listed as professional services (biotechnology, R&D labs) while including organizations which are not normally classified as PSFs (i.e. physician practices) (Empson et al., 2015).

To get around these problems of definition, some scholars have advocated defining the PSFs based on the type of service provided (Løwendahl, 1997). This approach, while relieving us of the burden of having to define professionals and professions still requires us to characterize the services provided by professional service firms, and here too, there is little consensus (see Table 1.01). Though part of these differences may be explained by the fact that many articles examine only a single type of PSF (e.g. law firm) and the characteristics different types of PSFs may differ, even scholars who attempt to provide a general definition of PSFs name different characteristics. For example, in his taxonomy, Von Nordenflycht (2010) only includes knowledge intensity, low capital intensity and professionalized workforce as distinctive characteristics. Empson et al. (2015) include knowledge intensity, professionalization, autonomy and customization in their model, but also discuss client contact, low capital intensity and intangible outputs as falling under these four broad characteristics.

Many of the characteristics appear multiple times (client contact, customization, knowledge intensity), while others are mentioned less frequently (no outside ownership, capital intensity, autonomy). The motivation for selecting certain characteristics and excluding others varies. Authors examining a single professional service sector (accounting, architecture) often choose to focus on the characteristics most relevant to that sector (Greenwood et al., 2005). Others focus on the characteristics which have attracted the most attention in the literature, while still others choose the characteristics which they see as most likely to create management challenges within the firm.

Even when the reasoning for choosing characteristics is the same, the characteristics chosen may still differ. For example, Maister (1993) focuses on a high degree of customization and strong customer interaction as the two aspects of PSFs which create special management challenges, while Von Nordenflycht (2010) argues that knowledge intensity, low capital intensity and professionalized workforce are the characteristics creating the most management difficulty. While one could argue that Maister (1993) implicitly includes knowledge intensity as a PSF characteristic, Von Nordenflycht intentionally excludes customization because, he argues, it does not have any distinct management implications from knowledge intensity and is therefore deemed redundant.

One of the few areas of agreement regarding PSFs is that what makes them unique is that that they possess a combination of the above characteristics to a varying intensity or degree (Empson et al., 2015; Von Nordenflycht, 2010, Silvestro et al., 1992). PSFs are often classified in reference to other service firms and thought to possess characteristics of service firms to a greater degree than non-professional firms. However, opinion differs on what exactly these characteristics are and whether in order to be labelled a PSF the firm must possess all of the selected characteristics (Empson et al., 2015) or just a few (Von Nordenflycht, 2010). Once again, the inclusion or exclusion of one characteristic or another is at the author's discretion and it is often not clear why characteristics are included or excluded.

Though the characteristics used to describe PSFs are numerous, the majority of these characteristics point to two separate MCS related issues. The first issue is that the work performed in PSFs is (assumed to be) poorly suited to the use of bureaucratic types of control. We will refer to this MCS challenge the "nature of the work challenge" (or work challenge for short). Secondly, even if the organization is able to design (effective) formal controls, professionals are often unwilling to cooperate with these types of measures (Hower and Orth, 1963; Schriesheim et al., 1977). We refer to this as the "nature of the individual challenge" (or individual challenge). Therefore, it is often suggested that bureaucratic controls are ineffective in PSFs because 1) the measures themselves are not effective/useful for the work performed or 2) the measures are made ineffective by the employees performing the work. Both of these challenges suggest that PSFs should/may have to rely on alternative mechanisms of control such as cultural, personnel, and self-control.

In order to better understand these difficulties, we now discuss each of the characteristics in Table 1.01 in turn. We first define each of the characteristics in Table 1.01 conceptually. We pay special attention to the perceived intensity of these characteristics compared to other types of firms as well as the potential for heterogeneity in these characteristics within the PSF sector itself. In section 3, we then discuss the potential implications of these characteristics on the management control system. We borrow the terms management challenges and opportunities from Von Nordenflycht (2010) to represent features of these characteristics which increase management control problems (challenges) or decrease management control problems (opportunities).

2.1 Task Complexity

Task complexity refers to how intricate or complicated a task is to perform. Though task complexity has been extensively explored in goal-setting and decision-making literature, researchers have failed to reach a consensus regarding its meaning or the measurement of the construct (Bonner, 1994; Campbell, 1988; Liu and Li, 2012;

Ryan et al., 1992; Wood, 1986; Wood et al., 1987). Task complexity has been defined by the characteristics of the task, the characteristics of the task performer, the interaction between the characteristics of the task and the task performer and by the characteristics of the environment (Campbell, 1988; Liu and Li, 2012). Since we consider characteristics of the task performer and the environment separately in this paper, we will limit our discussion to characteristics of the task itself, sometimes called the structuralist perspective (see Campbell, 1988; Liu and Li, 2012 for a more detailed overview).

The structuralist perspective views task complexity based on the structure of the task, where intricacy is determined by a number of properties that make up the task and how these elements are related (Van Vijfeijken et al., 2002). Though a vast number of task properties have been used to study task complexity, many of them fall within the model developed by Campbell (1988). Campbell (1988) defined four complexity attributes which affect the information processing demands of the individual: 1) multiple paths to arrive at a desired end-state, 2) multiple desired end-states 3) conflicting interdependence among paths of multiple desired outcomes and 4) the presence of uncertain or probabilistic linkages among paths. The complexity of the task is determined by the total number of the above attributes (yes/no) contained in the task and by the degree to which (high/low) the attribute is incorporated in the task. In other words, task complexity arises from the presence of a number of potential actions to perform a task though only one of these actions leads to goal attainment (i.e. efficiency), the presence of multiple goals to be attained, the inability to attain all goals at once since attainment of some goals precludes the attainment of other goals and finally, the degree of uncertainty between the actions taken and the desired goals. As a result of these complexity attributes, complex tasks are “often ill-structured, ambiguous, and difficult” (Campbell, 1988, p. 45). The task performer is subject to greater amounts of differing types of information which may change frequently and has to process and evaluate more information in order to perform the task.

Literature on professional service firms often assumes that professionals perform complex tasks (Abernethy and Stoelwinder, 1995; Derber and Schwartz, 1991; Mills and Margulies, 1980), and mentions complexity only passing, “professionals are employed in settings to accomplish complex tasks” (Abernethy and Stoelwinder, 1995, p. 1-2). This assumption is supported by the abundance of literature which examines task complexity encountered by, for example, accountants (e.g. Abdolmohammadi and Wright, 1987; Asare and McDaniel, 1996; Bonner, 1994; Tan and Kao, 1999; Tan et al. 2002), and physicians (e.g. Chinburapa, 1993). However, the findings of research on task complexity in PSFs are more nuanced. While some of the tasks professionals

encounter are complex, empirical evidence suggests that the work of auditors actually consists of a mixture of structured, semi-structured, and unstructured tasks (Abdolmohammadi and Wright, 1987). Similarly, studies of lawyers have also indicated that they view their work as consisting of both complex and routine tasks (Kuhlthau and Tama, 2001). This would suggest that there is more variation in the task performed by professionals than initially thought.

2.2 Knowledge Intensity

Much like a firm may be labeled capital of labor intensive, a firm which predominantly relies on a complex body of knowledge to produce its outputs in considered knowledge intensive.

We define knowledge intensity as the extent of knowledge contained in human capital, or "the overall skill, expertise, and knowledge levels (Subramaniam and Youndt, 2005, p. 455). Based on this definition, professional service firms are expected to possess high levels knowledge intensity since they employ individuals who have undergone a long period of formal education as well as on-the-job training in order to gain the necessary expertise and experience to perform the work. However, some heterogeneity within PSFs may still exist since the attainment of the necessary education and experience is independent of the quality of that education and experience. Therefore, organizations that employ better quality candidates can still attain higher levels of knowledge complexity as compared to other professional service firms. In addition, knowledge intensity may vary based on the type of firm employing the individual. The "overall" levels of knowledge of the organizations employees may vary with the type of employing organization such that organizations made up mostly of other professionals, such as a law firm, may have higher knowledge complexity than organizations where professionals only make up a part of or a department of the overall organization, such as a lawyer working in the legal department of a manufacturing firm.

2.3 Low Capital Intensity

Capital intensity is related to, but distinct from, knowledge intensity. While knowledge intensity looks at "the overall skill, expertise, and knowledge levels of an organization's employees" (Subramaniam and Youndt, 2005, p. 455), capital intensity looks at the degree to which the firm relies on (physical) capital relative to human capital to produce outputs. Capital intensity is generally measured relative to the degree of knowledge intensity, where the degree of capital intensity is a ratio of physical capital to human capital.

Professional service firms are generally assumed to require relatively low amounts of nonhuman capital (factories, equipment) in order to carry out their work activities. Human capital rather than plant property and equipment is the main production input (Ulirch, 1998; Fitzgerald et al., 1991). Furthermore, while a professional service firm may use capital in its service provision, this physical capital is generally not the core of the relationship between the firm and the client. For example, most firms make use of computers and other technology as part of their service provision, but this capital is used to help produce the service provision; it is not the end product delivered to the customer. In general classifications of services, capital intensity is also often discussed in terms of a continuum from people-based to equipment-based services (Kotler and Armstrong, 2010; Thomas, 1978) where people-based services are low in capital intensity and equipment-based services employ relatively more capital in the performance of the service. For example, in professional firms such as law, accounting and management consulting, human capital rather than plant property and equipment is the main production input (Ulrich, 1998; Fitzgerald et al., 1991) and levels of human capital are high while levels of physical capital are relatively low. For other professional services, such as medicine, performing the work activities may require significant levels of physical capital (CAT scan machines, labs for analysis of bloodwork) and human capital (using the results of the lab work to arrive at a diagnosis).

2.4 Autonomy

Autonomy broadly defined is the right of a person to make his or her own decisions. In the context of professional service firms, three aspects of autonomy are important. The first is the individuals' own preference for autonomy. This is an attitudinal characteristics of autonomy, or "the feeling that the practitioner ought to be able to make his own decisions" (Hall, 1986, p. 93) or the perceived right to make choices (Barber, 1963; Engel, 1969; French, 1970; Goldner and Ritti, 1967; Greenwood, 1957; Hall, 1968; House and Kerr, 1973; Hughes, 1963; Kornhauser, 1962; McNaul, 1969; Miller, 1967; Perruci and Gerstl, 1969; Snizek, 1972; Strauss, 1963; Wilson, 1963). The second type of autonomy, work autonomy, is a job characteristic which refers to the latitude the individual is allowed in doing his/her work (Breaugh, 1999). We view this type of autonomy primarily as an outcome of the management control system and therefore only discuss it briefly in this section, with a more detailed discussion to follow in section 3.1.2. The final type of autonomy, the autonomy of the profession, is the extent to which the profession is a self-regulated monopoly (Friedson, 1994; Larson, 1977), which we discuss further in the section on professionalized workforce.

All humans have a psychological need for autonomy (deCharms, 1968; Deci, 1975; Maslow, 1954; Porter, 1963), but professionals are assumed to have a greater preference for autonomy as compared to non-professionals. Indirect evidence suggests that the greater attitudinal preference for autonomy among professionals partly stems from a degree of self-selection into professional jobs. The high level of cognitive ability required to perform professional work has been linked to a greater preference for autonomy and discretion (Halaby, 2003). This attitudinal preference for autonomy may also explain why some professionals choose to work in organizations dominated by professionals, while others choose to work in industry. For example, Roach and Sauermann (2010) find that science and engineering PhD students with a greater desire for independence are significantly more likely to choose careers in academia and significantly less likely to choose a career in an established firm or a start –up.

In addition, the expertise required to perform professional work generally takes place through a long period of formal education often followed by a practicum or apprenticeship. This long period of education and training serves as a socialization process and coordinating mechanism which gives rise to a number of attitudinal characteristics of professionals, including autonomy, which influences their behavior and work (Hall, 1968). Accordingly, years of schooling is also positively associated with a greater preference for autonomy and discretion (Halaby, 2003). The greater preference for autonomy is also influenced by the investment required to obtain the necessary education, experience, and expertise to practice in a given field. If the individual has had to invest a lot of time, effort, and money to obtain the qualifications necessary to perform in the field, then they expect to be compensated for this investment by greater autonomy on the job (Davenport, 2005).

Some of the indirect evidence presented rests on the assumption that PSFs offer a greater degree of work autonomy than non-professional firms, and therefore, individuals with a greater attitudinal preference for autonomy will self-select into PSFs. Work autonomy, as mentioned above, is the actual degree of autonomy afforded to the professional in the practice of his or her own work. The literature often assumes that professional service firms allow the individual a considerable level of work autonomy (Abernethy and Stoelwinder, 1990, 1991, 1995; Goodale et al., 2008) Typologies of service organizations also endorse this assumption. In his model of professional bureaucracy, Mintzberg (1993), describes the professional bureaucracy as consisting of a core of highly skilled and specialized professionals who have considerable autonomy and power over their work. Decision making in the professional bureaucracy is decentralized and control is achieved through standardization of skills. Lovelock (1983) categorizes professional services as those

where customer contact personnel can exercise judgement in meeting customer needs. Silverstro et al. (1992), adapt this idea to define the degree of discretion, where PSFs are assumed to have a high degree of discretion "where the front-office personnel can exercise judgement in altering the service package or process without referring to superiors" (p. 67). However, studies which examine autonomy in professional service firms also find considerable variation in perceived autonomy within and between PSF occupations (Colarelli et al., 1987; Kipping and Kirkpatrick, 2013).

2.5 Professionalized Workforce

Professionalized workforce, or professionalization, refers to the level of formalization and institutionalization of the profession. Professions can be thought of as having both structural attributes which describe characteristics of the occupation and attitudinal characteristics which reflect the manner in which professionals view their work (Hall, 1968). Wilensky (1964) argued that occupations pass through as sequence of stages on the way to becoming professions, Hall (1968) summarized these structural attributes as:

1. **Creation of a full time occupation**-this involves the performance of functions which may have been performed previously, as well as new functions, and can be viewed as a reaction to needs in the social structure.

2. **The establishment of a training school**- this reflects both the knowledge base of a profession and the efforts of early leaders to improve the lot of the occupation. In the more established professions, the move is then followed by affiliation of the training school with established universities. In the newer professions, university affiliation is concurrent with the establishment of training schools.

3. **Formation of professional associations**-the formation of such associations often is accompanied by a change in the occupational title, attempts to define more clearly the exact nature of the professional tasks, and efforts to eliminate practitioners who are deemed incompetent by the emergent professionals. Local associations unite into national associations after a period of some political manipulations. As stronger associations are formed, political agitation in the form of attempts to secure licensing laws and protection from competing occupations becomes an important function.

4. **Formation of a code of ethics**-these ethical codes are concerned with both internal (colleague) and external (clients and public) relations. They are designed to be enforced by the professional associations themselves and, ideally, are given legal support.

Professions may vary in the degree to which they possess each of these structural attributes leading to varying degrees of professionalization. For example, on one end of the continuum, are the archetypical professions such as accounting, law, medicine and architecture. These occupations are highly institutionalized and formalized with education often taking place in separate programs in universities with their own admissions criteria, membership in the professional organization is required in order to practice the occupation. There is general only one professional organization which represents the whole of the occupation and membership to the professional organization typically requires an additional period of apprenticeship and/or passing an exam separate from university education. The occupation requires the individual to not only complete the initial education to become certified in that field, but to also complete additional education to maintain membership in the field. Membership, licensing and disciplinary action is in the hands of the professional organization and at the hands of other professionals and the professional organization has the power and ability to define and set standards in the field. At the other end of the continuum are occupations which may have some formal external associations to represent the occupation, but these associations tend to be numerous and individually they lack the power to control the occupation as a whole. For example, membership in these organizations is typically voluntary and not required in order to practice in the field. Continuing education may be mandatory for association membership, but since membership itself is voluntary, continuing education is essentially also voluntary. These associations are also generally not responsible for disciplinary actions (though they might remove members for poor conduct) and only have the power the make recommendations for standards in the field. Education in these fields, while also extensive, tends to vary more from institution to institution due to the lack of a single powerful governing body. Many occupations strive to become professions and thus, we can also view movement along the continuum from low professionalized workforce to high professionalized workforce as occupations become more professionalized over time.

Differences in the degree of structural attributes can also impact the degree to which professionals adopt the attitudinal characteristics of professions such as (Hall, 1968):

1**. The use of the professional organization as a major reference**-this involves both the formal organization and informal colleague groupings as the major source of ideas and judgments for the professional in his work.

2. **A belief in service to the public**-this component includes the idea of indispensability of the profession and the view that the work performed benefits both the public and the practitioner.

3. **Belief in self-regulation**-this involves the belief that the person best qualified to judge the work of a professional is a fellow professional, and the view that such a practice is desirable and practical. It is a belief in colleague control.

4. **A sense of calling to the field-**this reflects the dedication of the professional to his work and the feeling that he would probably want to do the work even if fewer extrinsic rewards were available.

5. **Autonomy**-this involves the feeling that the practitioner ought to be able to make his own decisions without external pressures from clients, those who are not members of his profession, or from his employing organizations

The combination of these differences in structural and attitudinal characteristics can lead to inter- and intra-occupational variations in professionalization (Hall, 1968). For example, inter-occupational variation in the formation of professional associations may impact the use of the professional organization as a major source of reference. In archetypical professions such as medicine and accounting the presence of a single professional organization may encourage its members to view it as a major source of reference, while in occupations such as consulting, the presence of multiple competing professional organizations may limit the ability of the professional organization to be seen as a major source of reference.

These differences in attitudinal characteristics may impact the professionals' behavior in the firm, and intra-occupational variation may result from differences in work environment which may limit the ability of the professional to adopt attitudinal characteristics of the profession. For example, a lawyer employed in a law firm may be afforded greater autonomy than a lawyer working as in-house council in a large manufacturing firm. Over time, this may result in the lawyer working in the law firm to have a greater expectation of autonomy. Thus the degree of structural

professionalization may impact attitudinal professionalization, and treating each of these dimensions as a separate continuum can create both inter- and intra-occupational variation.

2.6 Customization

Customization refers to the degree to which the service process is adapted to suit the needs of the individual customer. Customization is often conceptualized as a continuum with no customization at one end and pure customization at the other end. Within these two extremes, customization has been conceptualized in a variety of ways. We adopt the classification of Lampel and Mintzberg (1996) and define five separate types of customization (see Figure 1.01).

Pure standardization is essentially mass production in that the buyer has no control over the design, fabrication, assembly or distribution of the product. In this extreme form, the firm designs and manufactures a single “one size fits all” product which it then makes available to customers as is. There is essentially no customization or choice of any kind. For example, early tract housing involved an architect who designed and built a single type of home which the customer can purchase move-in-ready.

Under segmented standardization, the buyer is given more choice in terms of the end product that he purchases, but he continues to have no direct influence over design or production decisions. In this case, more options are provided, but the product is still built to inventory. To illustrate, architects of modern tract or “cookie-cutter” housing may offer customers a choice of homes with different lay-outs, paint colors, tiles, kitchens, etc., but these houses are still purchased ready-made with no influence from the customer. As both pure standardization and segmented standardization require building inventory, they do not provide a service in the strict sense since they lack the intangibility characteristic of services (Zeithaml et al., 1985).

Conversely, under customized standardization or mass customization, the choices (modules) available to customers are still standardized, but instead of being built to inventory, the modules are assembled based on customer needs (Pine, 1993). Under this scenario, the customer places an order for a house with a particular set of options, and the house is then built based on their specifications.

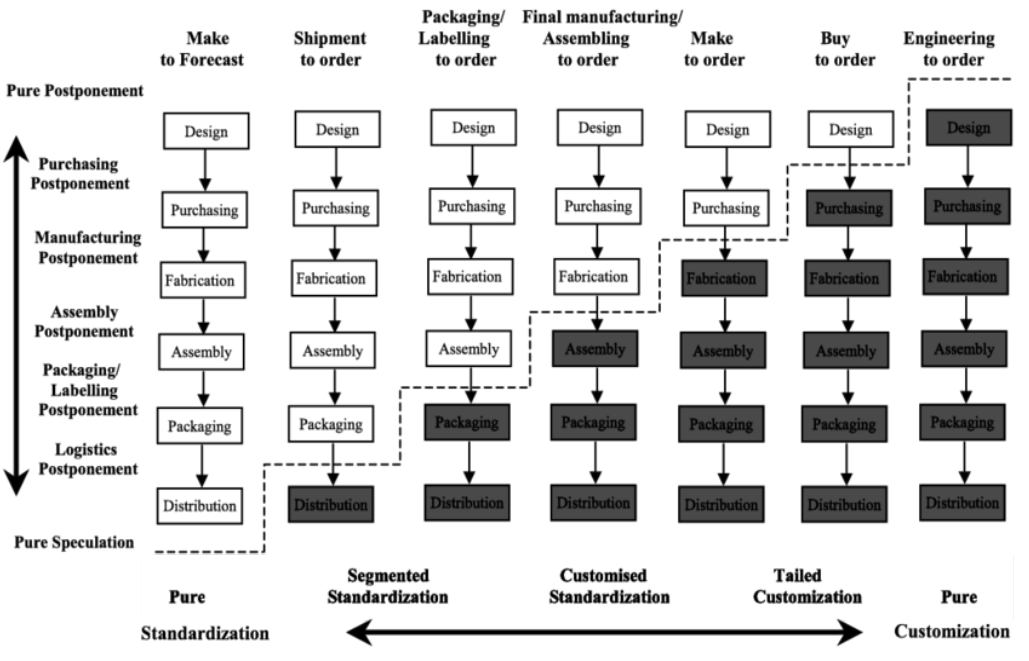


Figure 1.01: A Continuum of Customization Strategies
Source: Lampel and Mintzberg, 1996, p.24

The above forms of customization all represent scenarios where the product options are fixed and therefore the degree of customization remains constrained by degree of discretion that the service provider has to alter the characteristics of the service they deliver (Lovelock, 1983). An additional degree of customization can result from the service provider's ability to adapt to the varying needs of the customer and design new services or modify existing services to suit the client's specific needs.

The remaining two categories defined by Lampel and Mintzberg (1996) represent situations where the available modules can be further customized based on a clients' wishes. Under tailored customization, the customer is able to request changes to the product outside of an available menu options. Thus, for example, if the house the customer wants is available with a two, three or four bedroom layout and the customer asks for a 5 bedroom layout, if the firm is able to modify the house to the 5 bedroom format requested by the customer then the firm is engaged in tailored customization. Finally, under pure customization the product is fully made to order to the customer's specifications. The customer has influence on all of phases of product

design and production. The firm essentially creates a one of a kind product that meets all of the client's specifications. For example, a customer shows up at the architect's office and describes the house that they envision living in, which the architect then drafts to their specifications.

In typologies of services, professional service firms are typically classified as high customization services (Schmenner, 1986, Silvestro, 1992). The services they provide as assumed to be "customized for individual customers' unique needs" (Jaakkkola, 2011, p. 221), providing "a one-time solution to specific clients' problems" (Nachum, 1999, p. 4). Lampel and Mintzberg (2009) argue that while much of the work PSFs do can be described as tailored customization it also contains highly routinized elements which represent pure standardization. More recent research in professional services also appears to indicate that service offerings may be less customized than originally thought (Lewis and Brown, 2012) and contingent on variables such as regulatory standards and norms (Amonini et al., 2010), power differences between major stakeholders (Harvey, 1990) information asymmetry between the client and the professional, commercial pressures imposed by the client/market and customer self-selection (Lewis and Brown, 2012). Hansen et al. (1999) suggest that PSFs can be split into two "reuse economics" or "expert economics" logics, where "reuse" involves a lower degree of customization and a reapplication of knowledge assets, whereas "expert economics" are highly customized and provide solutions to unique problems. These findings suggest that there may be more heterogeneity in customization in PSFSs than originally thought.

2.7 Customer Reliance

Unlike manufacturing firms, service firms usually involve some degree of contact with the client consuming the service. The service literature has long acknowledged the importance of the involvement of the client in the production of the service (Chase, 1978; Kotler and Armstrong, 2010; Larsson and Bowen, 1989; Mills and Morris, 1986; Solomon et al., 1985). The involvement of the customer in the service process has been called customer contact, customer presence, customer participation, customer interaction, customer influence (Kellogg and Nie, 1995), customer involvement, customer influence and customer co-production in the literature, and these terms are often used interchangeably though they have slightly different meanings. What the terms all have in common is that they each relate to "the degree to which the customer is involved in producing and delivering the service" (Dabholkar, 1990, p. 484).

In the early literature, customer contact was largely seen as something firms had to endure and work around, and minimizing customer contact was thought to provide the greatest opportunity to achieve maximum efficiency (Chase, 1978). Consistent with this view, early conceptualizations of customer contact refer to the physical presence of the customer in the service system[1] and focus on the amount of contact (in minutes and seconds), the subject of contact (back office or front office personnel) and the mode of contact (direct [face-to-face] contact, indirect contact (through media such as telephone, e-mail and fax and no contact where there is no direct contact with the client) between the customer and the service system. This conceptualization makes no inferences about the behavior or motivation of the client and is purely a situational construct; the client is either in contact with the system or not (Silpakit and Fisk, 1985).

More recently, research has focused on a more active behavioral concept of customer contact which looks at how to best actively involve the customer in the process of service production in order to maximize benefits such as customer loyalty and service quality. The terms customer participation, customer interaction and customer co-production are often more reflective of this view. Here the customer is viewed as an "active participant" or "partial employee" with Lengnick-Hall et al. (2000, p. 359) defining customer co-production as "engaging customers as active participants in the organization's work".

The degree of customer co-production is typically determined by the amount of effort the customer must expend as part of the service process, which has been operationalized in a variety of ways. The organization may choose to strategically position itself as requiring more or less customer effort. For example, while a fast food restaurant may require patrons to order at the counter, fetch their own drinks and dispose of their waste, a full service restaurant may hire servers to take care of all these tasks. As a result, the customer at the fast food restaurant has to expend more effort for their meal then the customer in the full-service restaurant, and this increased effort is compensated with a lower price.

Services also differ in the degree to which customer input is necessary for service provision. This is often referred to as integrativity, or the degree to which the service provision is dependent on outside resources (Fließ and Kleinaltenkamp, 2004; Homburg and Stebel, 2009). Customer integrativity then, is the degree to which the organization relies on the customer to provide the outside resources necessary for

[1] Chase (1978) refers specifically to system contact and not human contact, so indirect contact through the phone or other media is also considered customer contact.

service provision. These resources may include physical objects (machines in need of repair), human resources (employees of the customer delegated to the project or a patient in need of treatment), use or rights or licenses (in a legal dispute), nominal goods and information (used for provision of the service) (Engelhardt et al., 1993; Kleinaltenkamp and Jacob, 1997). These resources can only be provided by the customer and only for the duration of the service process (Kleinaltenkamp and Haase, 1999; Maleri, 1997). As a result, failure to provide these resources can affect service quality or result in service failure.

Though the degree of both customer contact and customer co-production can be controlled by the organization as part of their strategic positioning (Skaggs and Youndt, 2004), in typologies of services, professional service firms are generally classified as both high customer contact and high customer co-production services. Service delivery in professional service firms typically requires substantial interaction with the client firm representatives involved (Løwendahl, 1997) with strong face-to-face interaction (Maister, 1993). In the professional service firm "the service provider and customer work together to define, produce and deliver" the service package (Kellog and Nie, 1995; p. 326). Clients are considered essential inputs into the service provision of PSFs, and their involvement is often critical to the quality of service provision (Ramirez, 1999).

2.8 Ownership Structure

Ownership structure refers to the legal form of governance in the firm. Ownership structure can take a variety of legal forms, such as partnerships, limited liability partnerships, private corporations, limited liability companies, professional limited liability companies, and public corporations. Greenwood et al. (2007) differentiate these legal forms based on 1) the locus of ownership (i.e. is ownership internal or external to the organization?) and 2) the scope of ownership liability (broad or narrow). We add two subcategories to the locus of ownership, which we term dispersion of ownership and cohesiveness of ownership. Dispersion of ownership refers to the extent to which the ownership is widely (dispersed) versus closely (concentrated) held. Cohesiveness of ownership separates outside ownership that is restricted to individuals in the same field (high cohesiveness) to outside ownership with no such restrictions (low cohesiveness). For example , a public corporation has shares which are publicly traded (external locus-dispersed), meaning they can be owned by any investor willing to purchase them irrespective of the investor's occupation or employment by the organization (low cohesiveness). Investors owning stock in a public corporation are not personally liable for the corporation action and their liability is restricted to the amount of their investment (narrow scope).

A professional partnership restricts ownership to professionals who work within the firm (internal locus, high cohesiveness, concentrated) and all partners are jointly and severally personally liable for the firm (broad scope), meaning that a claimant may pursue the full amount of an obligation from any partner and it is then up to the partners to decide, amongst themselves, their respective portions of the obligation. Between these two extremes are a variety of legal forms which differ in terms of personal liability and the extent of outside ownership. In some cases, outside ownership is restricted by the legal form itself (i.e. professional partnership); in other cases ownership is restricted by regulations tied to the exercise of a particular profession.

Traditionally, the predominant form of ownership structure in professional service firms has been the partnership (Empson and Chapman, 2006). Historically, the partnership form preceded the advent of the public corporation by several centuries and thus many PSFs organized under this form as a matter of necessity (Forbes, 1986; Lamoreaux, 1995, 1998; Lorsch and Tierney, 2002). However, even after the invention of the public corporation, while the public corporation became the dominant legal form for large organizations in other sectors, PSFs tended to preserve their partnership form of governance (Greenwood and Empson, 2003). While there has been some shift to legal forms which limit personal liability (i.e. LLC, PLLC), in many professional services firms, ownership has stayed in the hands of the professionals working within the firm. Nevertheless, there appear to be differences in ownership structure between PSFs and over time.

For example, if we examine some of the large PSF sectors, we can clearly see a difference in the prevalence of outside shareholders (see Table 1.02). Some of the differences both over time and between PSFs are due to regulatory constraints. The US, Japan and many EU countries have restricted audit firm ownership to include a majority of licensed accountants (IOSCO, 2009). Similarly, the US, Australia and the UK traditionally prevented non-lawyers from gaining ownership in law firms, a regulation that still exists in the US today and was only liberalized in 2004 and 2007 in Australia and the United Kingdom, respectively (Adams, 2013). As we can see from Table 1.02 below, this liberalization has not (yet) appeared to have had much influence on the ownership structure in these archetypical PSFs, as none of the top 100 law firms by revenue are publicly listed and only two of the top accounting firm by revenue are listed companies. However, a small number of law firms (Slater and Gordon, Gateley) have issued IPOs since the liberalization in Australia and the UK.

The shift to outside ownership may also be driven by capital requirements. While architecture firms, another archetypical PSF, has not endured the same degree of regulation as accounting and law firms, it exhibits a greater propensity toward public ownership. However, of the nine publicly listed architecture firms only one (IBI Group) considers architecture as its sole business, with the remainder also focusing on engineering and construction which require more significant capital outlays.

Table 1.02 Forms of Governance in Professional Services Firms Top 100 Firms Globally by Industry Sector

Professional Sector	Firms (number)	Partnerships (%)	Private Corporations (%)	Public Corporations (%)
Law	100	100	0	0
Accounting	100	56	42	2
Management Consulting	100	17	44	39
Advertising	100	0	77	23
Architecture	100	18	73	9

Source: Greenwood and Empson, 2003, p. 911.

Moving beyond the archetypical examples of PSFs, we see, perhaps unsurprisingly, greater levels of outside ownership. For example, among the top 100 advertising firms 23 are publicly traded. Similarly, 39 of the top 100 consulting firms are publicly traded. Unlike the archetypical PSFs, these firms are not subject to ownership regulation constraints, which may explain the greater prevalence of outside ownership, but this does not explain the differences in ownership within these PSFs.

3 Management Control Challenges in PSFs

Management control and management control systems (MCSs) have been defined in a variety of ways in the literature, though the majority of definitions converge around the general notion that management control systems are a collection of mechanisms used to encourage individuals to behave in a manner consistent with organizational objectives (Long et al., 2002; Merchant and Van der Stede, 2007; Otley and Berry, 1980; Ouchi, 1979). While a variety of frameworks have been devised to categorize such mechanisms, including formal and informal controls (Anthony et al., 1992), mechanistic and organic controls (Burns and Stalker, 1961), output and behavior controls (Ouchi, 1977) market, bureaucracy and clan controls (Ouchi, 1979) administrative and social controls (Hopwood, 1976), impersonal and interpersonal controls (Whitley, 1999) this thesis focuses on behavior, results, personnel and cultural controls (Merchant and Van der Stede, 2007) as this delineation clearly

illustrates the distinction between bureaucratic (behavior, results) and non-bureaucratic (personnel, cultural) forms of control. In addition, while management control traditionally focuses on the principal-agent relationship between the manager and the employee as source of conflict, in professional services the involvement of the client is a service specific source of management control challenges and opportunities. Thus, we pay special attention to the impact of the PSF characteristics on management control system design with respect to both the firm and the client. In the sections that follow, we outline these management control challenges and opportunities per PSF characteristic.

3.1 Task Complexity

A key determinant of control is knowledge of the task (Kirsch, 1996). Task complexity presents management challenges for the firm because if knowledge of the task is poor then the behaviors and outcomes that are desirable for the firm are ambiguous. Poor task knowledge limits the suitability and effectiveness of a number of mechanisms of control as formal administrative controls are generally considered to be ill-suited to complex tasks (Abernethy and Stoelwinder, 1991). As a result, when task complexity is high management has a smaller number or mechanisms to pool from, the mechanisms may be less effective, and control may be more costly.

Generally speaking, the choice of efficient control strategy is thought to be determined by the level of clarity regarding the actions which need to be taken in order to achieve organizational goals and the ability to set and measure those goals. Ouchi (1979) refers to this as knowledge of the transformation process (task programmability) and ability to measure outputs, respectively. Similarly, Perrow's (1967) model of technology and structure focuses on the task dimensions of task analyzability and number of exceptions, where task analyzability refers to the existence of well establish methods for performing a task and number of exceptions to the degree of variety encountered when performing a task. If task programmability (analyzability) is limited but the ability to measures outputs is good, then output control is thought to be the more efficient mode of control. If, on the other hand, the ability to measure outputs is limited, but the knowledge of the transformation process is good, then behavioral controls are recommended.

Complex tasks by definition are not programmable and do not have clearly identifiable goals. In this case, neither output control nor behavior control is considered suitable and instead clan control (Ouchi, 1979) or control through mutual adjustment is recommended (Perrow, 1967). Management is thus left with two choices. First of all, they can choose to use behavior and/or output controls even though these may prove less efficient or they can focus on clan controls and mutual adjustment as a form of

control. In this case, management may still choose to use behavior or output controls, they may prove less efficient. Because programmability and ability to measure outputs is poor, these controls may be too rigid to take into account all of the different situations that an employee encounters. This lack of flexibility can result in the application of suboptimal routines and outcomes in some situations which can damage attempts to reach organizational goals. Management can also choose to increase the number of behavior and output control in order to cover all of the possible scenarios that an employee will encounter, but it is unlikely that these controls can cover all possible contingencies and furthermore, creating and maintaining a large number of controls is more costly which may diminish or reverse any benefits obtained from the additional controls. A large number of controls can also lead to information overload and an inability to focus which too can damage attainment of organizational goals. Finally, providing a large number of behavior or output controls still requires the employee to choose the most suitable control for each particular situation, and management has no guarantee that employees can do this effectively. In light of the difficulties in successfully applying behavior and output controls, management can instead choose to focus on alternative control mechanisms such as clan control and mutual adjustment. However, these controls are rarely sufficient on their own and must usually be supplemented with the same problematic behavior and outputs controls (Merchant, 1985; Ouchi, 1979).

Task complexity also presents an additional challenge vis-à-vis the client. Complex tasks create information asymmetries between the client and organization because when the means and ends are ambiguous the client is also limited in their ability to judge the effort of the service provider and the quality of the service rendered (Homburg and Stebel, 2009). Consequently, management must find a way to not only ensure that the individual is behaving in accordance with organizational goals, they must also figure out a way to signal service quality to the client. This is necessary in order to gain the client as a customer in the first place, and to assure them of service quality during and after the provision of the service.

3.2 Knowledge Intensity

Knowledge intensity presents both opportunities and challenges for management. On the one hand, knowledge intensity can alleviate some of the problems of task complexity. Complex tasks are thought to place high cognitive demand on the individual (Campbell and Gingrich, 1986) and individuals with high knowledge intensity can better cope with this demand, since these individuals have been trained to use their education and experience to solve ambiguous problems (Derber and Schwartz, 1991). The knowledge and experience that highly skilled individuals acquire makes them better able to predict and weigh the outcomes of different actions to

arrive at suitable outcomes. Therefore, highly skilled individuals may not need the level of clarity that behavior and output controls can provide suggesting that informal control mechanisms may be sufficient if knowledge intensity is high. Alternatively, if provided with a greater number of output/behavior controls highly skilled individuals may be better able to choose the most appropriate routine/outcome control in a given situation.

On the other hand, knowledge embodied in individuals also presents unique management challenges for the firm because it can create knowledge asymmetries between employees and management/clients as well as difficulties in retaining and directing employees. Information asymmetries can arise from lack of knowledge about the employees actions (as discussed in the section on task complexity), but they can also result from differences in the knowledge base between employees and managers/clients. If task complexity makes verifying the quality of work difficult, than knowledge intensity can make it impossible because management/client simply does not possess the necessary knowledge, skills or experience to judge work quality even after the service is delivered (Broschak, 2004; Empson, 2001; Levin and Tadelis, 2005; Løwendahl, 1997), a situation sometimes referred to as “asymmetry of expertise” or “opaque quality”. This is especially the case in professional service firms with professional managers where the managers often do not have the same education as the employees (i.e. hospitals). Information asymmetry between the professional and the client also tends to be greater in professional service firms which deal primarily with business to consumer rather than business to business clients. While consumers often have little to no knowledge in the field, businesses are more likely to employ their own professionals which might have some knowledge of the field but lack the necessary specialization. Management is thus once again faced with the challenge of signaling service quality to the client, and if there is also information asymmetry between management and employees, then management additionally needs to figure out a way to evaluate quality which it does not fully understand.

Irrespective of whether management can evaluate quality, knowledge intensity presents difficulties in directing and retaining employees. Knowledge is an asset held by the employee. Unlike physical assets, since a firm cannot own its employees it can also not own the knowledge they hold (Coff, 1997). The capital literally “goes down the elevator every night”. Employees’ skills are scare and often transferrable across firms, making the firm dependent on these human assets and putting employees in a strong bargaining position relative to the firm (Teece, 2003). The scarcity and transferability of skills also provides highly skilled individuals with sufficient alternatives for employment in the labor market. This causes the firm to face a high degree of uncertainty with respect to the behavior, tenure and performance of

employees (Coff, 1997). The more easily the individual can switch jobs, the greater these retention and performance problems can become.

Partly due to self-selection and partly as a result of the socialization process highly-skilled individuals undergo during their period of education and experience, highly skilled individuals have strong preferences for autonomy and may be averse to formal organization processes, direction and supervision (Von Nordenflycht, 2010). They may put up with these formal processes for a while, but eventually they will go in search of a job that gives them the autonomy they think they deserve (Shuaib, 2008). Employees who are dissatisfied may underperform or leave the firm, eroding competitive advantage in the former case and possibly devastating the firm in the latter. The challenge the firm faces is that it must actively work to keep employees satisfied all while nudging them in the direction of organizational goals. This suggests that management should be cautious in their application of behavior and output controls and seeks alternative forms of control which are less likely to be met with resistance from the professional.

3.3 Low Capital Intensity

Low capital intensity creates management challenges because it further strengthens the bargaining power of the individual relative to the firm increasing problems of attracting, retaining, and motivating employees. For professional service firms, it is often assumed that capital intensity is low, and human capital is relatively more important to the firm. Under this scenario, the knowledge embodied in the organizations employees is the primary resource of the firm and all of the problems discussed in section 3.2 are exacerbated. The firm is dependent on its employees for service provision and as a result the employees have a significant amount of power relative to the firm and can easily switch jobs if dissatisfied.

However, physical capital can act as a bonding mechanism for the firm (Amit and Schoemaker, 1993). If a significant amount of physical capital is necessary in order to practice a particular occupation (medicine), then the barriers to entry for that profession increase. Job seekers in these occupations are less able to turn to self-employment if they are dissatisfied with their employer. As a result, these individuals are more reliant on their employing organization and retention and motivation problems may diminish. This may especially be the case for organizations where professionals form only a part of the workforce. For example, a manufacturing organization may contain a number of departments which employ professionals, but its physical capital may exceed its human capital and its primary output is not based on professionals. In this case, we would expect professionals in these organizations to have relatively less bargaining power and thus retention problems should be reduced.

3.4 Autonomy

When considering management challenges and opportunities autonomy is interesting in that it is both a characteristic of professionals and professional service firms and a response to the management challenges presented by professionals. As mentioned is section 2.5, there is a degree of self-selection into professional fields by individuals who value autonomy and this preference for autonomy is further strengthened by the socialization process that occurs during the acquisition of knowledge and experience necessary for the job. The challenge for management is to balance this individual preference for autonomy with a degree of work autonomy that satisfies the professionals need for autonomy and provides the flexibility necessary to perform the job while still attaining organizational goals.

Autonomy is often seen as a solution to the management control problems encountered by professional service firms since it can provide a number of opportunities for management. First of all, it can help alleviate some of retention problems created by the professionals' preference for autonomy, knowledge intensity, and low capital intensity. Autonomy is correlated with professional job satisfaction (Pelz and Andrews, 1966), and professionals who are more satisfied are less likely to leave their jobs. Conversely, lack of autonomy is associated with work stress (Hall and Savery, 1986) which can hinder performance or increase job turnover.

Secondly, autonomy has also been linked with improved job performance. Autonomy provides the professional with the sense of challenge and novelty to keep him motivated in his work resulting in greater productivity. Many professionals feel the need to be challenged, hate repetitive work and are "constantly and repeatedly test their skills against unfamiliar problems" (Maister, 1993; p. 168). By formalizing organizational routines, the organization risks creating the sense that the work is routine, potentially damaging the professionals' motivation. Employees may also view a lack of autonomy as a lack of trust in their ability to do the job (Churchill et al., 1985), and low trust has been linked to an increase in dysfunctional behaviors such as concealing data or communication invalid data (Mellinger, 1956; Zand 1972). Finally, autonomy can alleviate many of the control problems caused by increased variability that comes with PSF characteristics such as task complexity, customization, and client contact. The complexity of professional work creates a variety of alternative paths and desirable end states which can often not be determined ahead of time. Extending the professional the autonomy to choose the most appropriate path allows them to utilize their education, skills, and talents to select the most appropriate path, while freeing the organization from designing, implementing and maintaining control systems which cover all of the possible contingencies.

However, autonomy is not without risks. First of all, allowing professionals autonomy in their work also assumes that they have the skills and experience necessary to choose the correct actions in performing their work. Professionals are expected to be able to analyze and interpret the situation and choose the best possible course of action. In addition, the best course of action is defined as the action that is of the greatest benefit to the organization as a whole. In reality, there is still an agency problem where even if the professional is able to come up with the best choice for the organization than in the absence of the proper control system he may still choose to act in his own self-interest rather than that of the firm.

Furthermore, professional norms may dictate a responsibility of the professional to act on behalf of the client or society in general, which can create a conflict of interest between organizational goals and client/societal interests. When faced with this conflict, an autonomous individual may place the interests of the client ahead of those of the firm.

The relationship between autonomy and performance may also not be linear making it difficult for management to determine the optimal level of autonomy. While moderate levels of autonomy may improve performance full autonomy may lead to inefficient behavior due to the expenditure of more cognitive resources (Trudel and Payne, 1995). Experimental research suggests that moderate levels of autonomy result in the same or better performance as full autonomy (Wielenga-Meijer et al., 2011, 2012).

In addition, autonomy may interact with other organizational factors. For example, professional work often takes place in teams, and research suggests that when team trust is high, high levels of individual autonomy may actually hurt performance due to a decrease in mutual monitoring (Langfred, 2004). Thus, while autonomy may help control retention problems and allow professionals to respond to the variable nature of professional work, it can also exacerbate agency problems and potentially hurt performance.

3.5 Professionalized Workforce

Professionalized workforce creates both management opportunities and management challenges for the professional service firm. Much like autonomy, professionalized workforce can be viewed as both as a characteristic of professional service firms and a response to the management challenges presented by PSFs. More specifically, professionalization is sometimes seen as a response to the problems of task complexity and the resulting need for autonomy.

The primary management opportunity created by a highly professionalized workforce is its potential to serve as an instrument of control which can reduce the need for and the cost of management control systems within the organization (Goodale et al., 2008). Professional organizations set out the rules, policies and define the nature and quality of work they perform (Bucher and Stelling, 1969; Sharma, 1997; Wallace, 1995). This process of becoming a professional involves the standardization of skills and normative standards (Friedson, 1994) rather than standardization of work processes (Abernethy and Stoelwinder, 1990). When the standards, skills and theoretical principles and membership in an occupation is in the hands of a strong central governing body, then the professional organization is performing a number of features of the management control system.

First of all, by limiting entry into the profession, the professional organization is essentially serving as a form of personnel control. By limiting practice of the profession to those who have demonstrated competence in the skills and standards set by the profession the professional organization is guaranteeing a level of competence of the individual for the employing firm. This differs for occupations with a strong governing body vs. knowledge intensive occupations, because while knowledge-intensive occupations may also require a degree in the field, the body of knowledge is less clearly defined and education is more variable. Furthermore, in knowledge-intensive occupations there is typically no standardized formal examination and/or certification process so the knowledge of different individuals is expected to be more variable.

Secondly, the power to centrally set the standards and skills within the profession serves as a form of behavior control. Also, because disciplinary action is in the hands of other professionals, the problem of information asymmetry is significantly reduced if not eliminated as those professional should be able to properly judge the quality of the other professionals work. By tying the professional to a professional organization you also encourage mutual monitoring and social control because it is in the best interests of all members of the professional organization to maintain the quality of the members and therefore they have greater incentive to monitor each other. Members of voluntary organizations also have an incentive to monitor members of the same organization, but they have no incentive to monitor the work of non-members which means that social control will be limited to association members only.

However, professionalization also increases retention problems in PSFs. By limiting practice of the profession to certified individuals, the professional organization constricts the labor market for professionals effectively sheltering them from

competition. This lack of competition increases the professionals' power in the labor market relative to hiring firms and requires firms to be more accommodating to employees' needs.

Furthermore, the degree of professionalization may impact the attitudinal characteristics of employees (Hall, 1968). More highly professionalized occupations may socialize professionals to expect greater work autonomy or hold stronger beliefs with respect to public service, which can make professionals in more professionalized occupations more resistance to bureaucratic forms of control and organizational goals focused on commercial (profit) motives rather than service to the public.

3.6 Customization

Customization creates management challenges akin to that of task complexity in that it introduces variability into the service provision. So much so, that Von Nordenflycht (2010) excludes customization from his taxonomy of professional services based on the fact that it only amplifies the challenges of knowledge intensity but does not have any distinct implications. Depending on the degree of customization, this variability may affect only the number of exceptions in service provision but can also affect task programmability/analyzability and ability to measure outputs (Ouchi, 1979;Perrow 1967) making it more difficult to apply bureaucratic forms of control.

Based on Lampel and Mintzberg's (1996) classification of customization, pure standardization, segmented standardization and customized standardization present relatively few challenges to management control since potential modifications to the service provision form a set series of menu options and are determined prior to service delivery. Assuming that these menu options can be codified prior to service provision, traditional bureaucratic forms of control are well suited to these forms of customization and the degree of uncertainty stemming from these types of customization is generally limited to problems of scheduling and capacity. Thus, while these forms of customization may increase the number of exceptions if service provision, they do not affect task programmability or ability to measure outputs.

In contrast, tailored customization and pure customization both include providing services outside of a set menu of options to meet a client's specific wishes which can impact not only the number of exceptions in service provision but also task programmability and ability to measure outputs. These types of customization involve using the professionals' standardized set of skills to modify the service provision the client's specific needs (Lampel and Mintzberg, 1996). The professional must thereby exercise their own professional judgement in order to determine the best means to

achieve the client's wishes which may affect task programmability. In addition, the client's wishes may be difficult to define which can affect the ability to measure outputs. Therefore, much as with task complexity, the models of Ouchi (1977, 1979) and Perrow (1967) would predict that these forms of customization are less suitable for bureaucratic forms of control. Moreover, tailored customization and pure customization are also inextricably linked to higher levels of customer reliance, since it is the client that is driving the change in service provision. As we will see below, this dependence on the client can have additional consequences for management control.

3.7 Customer Reliance

As customers become more involved in the service process they begin to exert more influence on both the timing and the features of the service provision. This creates product variability which can be more difficult to control due to the additional uncertainty in the provision of the service (Bateson, 2002; Chase, 1978, 1981; Mills and Morris, 1986; Skaggs and Youndt, 2004; Tansik, 1990). Management is then faced with the challenge of how to best deal with this uncertainty.

On the one hand, this uncertainty and the corresponding management challenge is akin to that which management faces with a high degree of task complexity or customization in that the increased variability in customer demands creates additional (and perhaps unexpected) outcomes, additional ways in which goals may be attained and may alter the trade-offs between various outcomes. This additional variation once again limits the suitability of administrative controls because the means-ends relationships in the service provision are either unknown or so numerous as to make monitoring prohibitively expensive.

Unlike task complexity, customer reliance presents an additional management challenge in that if customer integrativity is high, and successful service provision is dependent on client effort, then the firm is also forced to manage customer input in order to maintain the quality service provision. Unlike employees, the organization has no formal authority over their customers which can make managing customer behavior particularly problematic (Swartz et al., 1992). The quality of service provision becomes partially dependent on customer characteristics such as perceived clarity of the task, ability and motivation (Bettencourt et al. 2002; Lengnick-Hall 1996; Lovelock and Young 1979; Meuter et al. 2005) and the ability of management to manage those characteristics. First, in order to successfully provide the resources for service provision, the customer must know what is expected of them and what they are expected to contribute. However, because tasks in PSFs tend to be knowledge

intensive and complex, establishing clear expectations for the client may be difficult, especially before the start of the service process. Secondly, the ability of the customer to understand these expectations is also related to his own competence in the field. Customers with no expertise in the provision of the service will require more guidance than those which possess such expertise. Finally, the customer must also be motivated to participate in the service provision. Since participation in service provision requires effort, motivated customers are more likely to provide the resources necessary for service provision.

Customer reliance also creates the additional management challenge of controlling social interaction. Service encounters are social by nature and customers' perceptions of service quality can be influenced by the attitudes and behaviors of contact employees (Bowen and Schneider, 1985). The human interaction component of services has also been found to be important in evaluating professional services (Brown and Swart, 1989; Day and Bodur, 1978; Quelch and Ash, 1981).

In PSFs, the importance of social interaction may be further exacerbated by the intensity of client contact the information asymmetry between the organization and the customer. In absence of a tangible product, customers rely on proxies of service quality to evaluate performance such as the tangible elements of the service provision (Berry, 1980; Flipo, 1984; Lehtinen and Laitamaki, 1985; Levitt, 1981; Shostack, 1977) or the attitudes and behaviors of contact personnel (Hostage, 1975; Rathmell, 1974; Solomon et al., 1985). As a result, the customer may assess quality based on aspects of the service encounter that he can understand or that are tangible, such as responsiveness to enquiries and complaints or the politeness or appearance of employees. Managing tangible aspects of service provision may be possible through the use of behavior controls. For example, organizations can dictate that all customers be greeted or that e-mails and phone calls be returned with a given time. However, managing the social interaction itself is much more difficult. The use of scripts can lead to robotic responses from employees which aim to illicit a positive emotional response from customers.

Despite these management challenges, customer reliance also creates management opportunities for professional service firms by serving as an additional form of governance. The increased interaction between the customer and the organization gives the customer more opportunities to observe and evaluate the service experience as a way of reducing performance ambiguity (Bowen and Jones, 1986). Increasing client contact can also give the customer the feeling of partial ownership of the outcome of service provision which can help address issues of customer motivation and encourage the customer to supply the resources necessary for service provision.

3.8 Ownership Structure

As discussed in section 2.8, many professional service firms continue to operate under a partnership structure, with outside ownership often limited to employees within the firm and significant levels of personal liability. Fama and Jensen (1983) suggest that the persistence of a specific organizational form may be due to its ability to meet customer needs most efficiently. Put another way, the partnership structure may better address some of the managerial issues caused by PSF characteristics than other forms of ownership. The fact that PSFs vary with respect to the intensity of these characteristics, may also partially explain why the partnership form is more persistent in some types of PSFs than others. The choice of ownership form may be a response to the unique combination of characteristics that the organization faces. In addition, the changes in ownership structure in PSFs over time may indicate a response to changing conditions faced by the organization, conditions which may be changing more rapidly in some sectors than in others. We discuss four aspects of the partnership form which may contribute to this efficiency: 1) the locus of ownership (internal/external), 2) dispersion of ownership (dispersed/concentrated), 3) cohesiveness (high/low), 4) the scope of ownership liability (broad or narrow). Organizations choose a legal structure, which differs in each of these four aspects that can influence the design and function of the MCS.

First of all, ownership structures vary based on the locus of ownership they allow. While some structures restrict ownership to internal people working in the firm (i.e. partnership) others allow external ownership (public corporation). The presence or absence of outside owners is relevant to management control because inside owners have distinctly different incentives than outside owners. Agency theory assumes that the individual is self-interested, risk averse and have bounded rationality (Eisenhardt, 1989). When ownership is separated from control the interests of owners (principles) and employees (agents) are likely to diverge and owners must incur external agency costs in order to monitor the agents' behavior and provide incentives and punishments to align it with organization goals. If ownership is restricted to individuals working within the firm, then there is no separation of ownership and control and thereby no external agency problem or external agency costs. All other things being equal, employee owned firms should outperform externally owned firms because they do not incur these costs.

The persistence of internal ownership in (some) PSFs may be related to the magnitude of external agency costs in PSFs. The degree of agency costs is a product of the ability of the principal(s) to monitor the agent's behavior and provide relevant rewards and punishments. Monitoring the agent's behavior may be particularly difficult in PSFs because of the complexity and the knowledge intensity of the work. As mentioned

previously, since complex work has multiple paths and multiple desired end states is lacks programmability and output is difficult to measure. As a result, the work in PSFs is difficult to monitor (Alchian and Demsetz, 1972). Monitoring is further dependent on the capability of the principal to monitor the agent, if information asymmetries between principals and agents are large, monitoring and incentives may not be sufficient in reducing or preventing the agents' self-interest seeking behavior (Richter and Schröder, 2008). Because work in PSFs is highly knowledge intensive and dependent on both knowledge and experience, the principal may simply lack the knowledge and experience necessary to monitor and incentivize the agent properly.

Monitoring also becomes more difficult as ownership dispersion increases. As the number of owners increases, each owner must still incur 100% of the costs of monitoring but receives only the portion of the monitoring benefits equivalent to their ownership stake (Ang et al., 2000; Shleifer and Vishny, 1986). This causes a freeriding problem where each individual owner depends on the other to monitor the agent's activities resulting in less aggregate monitoring and an increase in external agency costs. Moreover, when ownership is dispersed, the external owners may find it more difficult to "put in place appropriate monitoring systems and sanctioning mechanisms to avoid agency costs resulting from opportunistic behavior by employees" (Richter and Schröder, 2008).

If monitoring is difficult or prohibitively costly, an ownership structure which does not separate ownership and control (i.e. partnership) can help to alleviate these agency costs. Inside ownership is preferred because it is seen as the less costly option. While inside ownership can help to eliminate the external agency problem, the internal agency problem (the monitoring of lower level employees by owner/managers) remains. However, inside ownership may also help alleviate some of the internal agency problem by allowing managers more freedom in designing the management control system. Managers may have more freedom to use alternative and less formal control measures which can cater to the professionals need for autonomy (Von Nordenflycht, 2010).

Furthermore, by requiring cohesiveness in insider ownership, the owners' capability to monitor should increase because they have the knowledge and experience necessary to evaluate the agent. Cohesiveness may also contribute to monitoring by ensuring that principals' incentives are aligned. Since professionals in the same field are socialized under the same norms, values and ethics their incentives are more likely to be aligned. This also applies to situations where outside ownership is permitted but cohesiveness is high.

In addition to varying the locus, dispersion, and cohesiveness of ownership, organizations can also impact their MCS by adopting ownership structure which varies in terms of the scope of liability. If ownership structure impacts incentives to monitoring, then the scope of liability can further strengthen or weaken these incentives. Ownership structures where the owners are mutually and severally liable (broad liability) have greater incentives toward mutual monitoring than ownership structures where liability is limited to the amount of the investment. Once again, the incentive to monitor is the result of individuals' net benefit from monitoring. Broad liability increases the costs of not monitoring, thereby creating greater incentives to monitoring. Specifically, when owners are liable for the actions of others owners, and this liability extends to their own personal wealth, they have strong incentives not only to work toward ownership goals themselves but to monitor the actions of other owners and subordinates. Since all owners are fully liable for each other's behavior they may also be more accepting of being monitored by their fellow owners reducing some of the potential negative consequences of the professionals need for autonomy.

4 The Changing Nature of Management Control in PSFs

As discussed in the previous sections, the PSF characteristics create two distinct problems of management control in professional service firms. The nature of the work challenge which suggests that the use of bureaucratic control measures in PSFs is difficult/ineffective due to the complex nature of the work, and the nature of the individual challenge which suggests that professional will be unwilling to cooperate with bureaucratic forms of control because these types of control threaten their (professional) autonomy. While early models of management control in professional service firms focused on the use of non-bureaucratic forms of control to address these control challenges, changes in the business environment have created additional pressure to utilize bureaucratic forms of control. In the section that follows, we briefly outline these early approaches to management control in professional service firms and discuss how changes in the business environment have created an increased need for bureaucratic forms on control. We then discuss how more contemporary models of management control in PSFs have attempted to explain the use of bureaucratic control in PSFs. We argue that these contemporary models continue to rely on assumptions inherent to the nature of the work and the nature of the individual challenges which limit our understanding of management control in professional service firms. Based on our review of the literature, we then present evidence suggesting that these challenges may not be as problematic as once thought.

4.1 Early Models of Management Control in PSFs

Historically, the professionalization of an occupation can be seen as the first attempt at control. The establishment of training schools aims to define the knowledge base and standardize the skills of the profession. Long periods of apprenticeship imbue the necessary experience to apply those skills in a wide variety of situations. Certification requirements backed by the state limit entry to those with the requisite knowledge and guarantee a level of service quality to the public, and codes of conduct and codes of ethics prescribe appropriate behavior with colleagues, clients, non-practitioners and society at large (Goode, 1957).

Early models of management control in professional service firms such as professional bureaucracy (Mintzberg, 1993) and the professional partnership (P^2) (Greenwood et al., 1990) thus relied on the process professionalization to address the nature of the individual and the nature of the work challenges. These models placed emphasis on notions of cultural and professional control, which allow the professional autonomy to perform their job based on their professional judgement in combination with organizational structures put in place to support autonomy and collegial control.

In order to address the nature of the work challenge, the professional bureaucracy and P^2 model rely not on the standardization of work processes, as in a traditional bureaucracy, but on achieving control through the standardization of skills by self-governing association outside of the employing organization (Mintzberg, 1979). The process of professionalization embodies professionals with the necessary skills and attitudes to encourage self-control and mutual monitoring, and the professional organization serves as an external source of monitoring, reducing the need for internal monitoring by the organization. This allows professionals to retain autonomy over their work which also minimizes the nature of the individual problem.

Additional control is achieved by putting in place organizational structures to support self-control and mutual monitoring. For example, in the P^2 model the legal form of partnership fuses ownership, management, and operations which influences the strategic practices of the organization. Greenwood et al. (1990) argue that this legal form combines with the "spirit of partnership" to make up the interpretive scheme of the P^2 form, or "the shared background of mutual understanding that constitutes agreement between members and that enables the orderly production of roles and rules" (Empson and Chapman, 2006, p. 141 from Brown; 1979 and Ranson et al., 1980). This interpretive scheme translates into norms of expertise, collegiality, peer evaluation and consensus based decision-making which encourage self-control and mutual monitoring. As a result, these organizations emphasize collegiality, peer evaluation and autonomy rather than strict adherence to authority (Blau, 1984; Bucher and Stelling, 1969). This interpretive scheme is very similar to the attitudinal

characteristics of professionals as outlined by Hall(1968) and thus suggests that in the P^2 model professionals are controlled creating an ownership structure which most closely mirrors that attitudinal characteristics of professionals. Similarly, Mintzberg's (1993) model of professional bureaucracy creates a bureaucratic structure which limits the use of bureaucratic forms of control and allows professionals to rely on their profession attitudes by creating a highly decentralized structure, where professionals are separated from support staff and managers allowing them significant control over their work and collective control over the administrative decisions which affect them. Thus, in both the professional bureaucracy and the P^2 model, the emphasis is creating an environment which most closely resembles the attitudinal characteristics of professionals and relying of the standardization of skills for control.

However, even as these models were being developed, other researchers (Derber, 1982; Haug, 1975; Light, 1986; McKinlay and Arches, 1985; Nelson, 1988; Scott, 1965; Spangler, 1986; Starr, 1982) began to suggest a shift in the autonomous model of professional organization to a model where professionals were more subject to bureaucratic controls. This shift is the result of a number of factors including increased competition, globalization, technological change, increased customer sophistication, and governance issues.

4.2 Forces of Change to Management Control in PSFs

The lack of bureaucratic controls in PSFs was partly made possible by limited competition between PSFs which allowed them to survive despite the potential inefficiencies of informal control processes (Greenwood et al., 1990; Von Nordenflycht, 2010). Increased competition as a result of privatization, consolidation, globalization and deregulation encouraged rationalization and a switch to more efficient structures (Brock, 2006) as well as more emphasis on business development and the marketing of professional services (Greenwood et al., 2004).

As the need for efficiency increased, the ability of the professional to demand autonomy and resist bureaucratic forms of control may be decreasing. The professionals' ability to demand autonomy rests partly on their ability to exercise dominance over their clients and managers by virtue of their expertise. However, the professionals' dominance over knowledge appears to be declining.

Improvements in technology have allowed more aspects of professional work to be automated and thereby performed by less knowledge intensive employees or even customers themselves, causing the professional became deprofessionalized (Haug, 1975) and less able to demand autonomy. The client firms of PSFs have also emerged as a significant source of knowledge due to their consolidation and globalization, shifting the knowledge monopoly from the realms of academic institutions and

professional service firms to the client organization. As professionals become more reliant on the client from for innovation and expansion and provision of the service offering, they can no longer work as autonomously as before.

Finally, large public scandals in professional fields such accounting, medicine and law has resulted in many types of professionals being viewed with suspicion (Evetts, 2006), bringing into question the ability of professions to regulate themselves and their members. Governments have pushed for changes in the governance and management of publicly funded professional services which have undermined professional dominance (Brock et al., 1999). In addition to limiting the professionals' ability to demand autonomy, these scandals may actually encourage the use of bureaucratic control measures as a form of self-preservation of the profession in order to improve accountability and (re)gain public trust (Evetts, 2006).

4.3 Contemporary Models of Management Control in PSFs

The implications of these changes in the business environment on the organization of the professional service firm have been captured in a number of models. Cooper et al. (1996) suggested that the professional service firm was shifting from a P^2 archetype to the Managed Professional Business (MPB) where reliance on the partnership is diminished and control becomes more rational and bureaucratic. Increased bureaucratization is fostered through changes in the interpretive scheme, or the normative order of the professional organization, where attributes traditionally assigned to professionals such as education, esoteric knowledge, and self-regulation (Abbott, 1988) shift to a more commercial focus on financial success and entrepreneurialism (Cooper et al., 1996). Rather than replacing the P^2 archetype, Cooper et al. (1996) argue that the MPB archetype is layered upon or sedimented onto the P^2 archetype resulting in the coexistence of two archetypes which may both conflict and support each other.

Rather than focus on a single archetype, others have captured the heterogeneity in professional service firms by dividing professional services into a number of archetypes or generic strategies based on their distinct characteristics. Based on their review of the literature, Brock and Powell (2005) suggest the existence of three competing archetypes depending of the firms' strategy, or breadth of service focus and size, both in terms of number of professionals and geographic spread. They propose two archetypes in addition to the P^2 archetype, the Star and the Global Professional Network (GPN). The Star form, which eschews reliance on bureaucratic controls by limiting firm size and remaining highly specialized, and the GPN, which tends to be large and highly diversified increasing focus on becoming more "business Like" with adoption of new management structures, increasing corporate governance, individualized reward systems and greater reliance on formal networks. Similarly, in

their extensive studies of professional service firms, Maister (1993) and Løwendahl (1997) also argue that PSFs can adopt one of three generic strategies, where the nature of the work problem is addressed by segmenting firms based on the complexity of the work they perform.

Maister (1993) argues that the optimal form of management for a professional service firm is determined by the firms' focus on a particular set of client needs. He distinguishes three categories along a spectrum of professional practice based on client needs: 1) the expertise practice, 2) the experience-based practice, and 3) the efficiency-based practice. These practice types are distinguished by the skill requirements, or task complexity, of the work to be performed which affect their systems of management control. Løwendahl (1997) suggests that strategy is determined by the resource base of the firm (individually controlled, organizationally controlled or some combination) and strategic focus (superior client responsiveness, ability to solve complex problems and ability to deliver a set of solutions more efficiently than competitors). This leads to three generic PSF strategies: 1) problem solving or creativity based strategies, 2) client relation based strategies and 3) solution or output based strategies.

Løwendahl (1997) and Maister's (1993) suggest that the use of bureaucratic controls is a function of task complexity. That is, firm strategy is segmented based on the complexity of the service they aim to provide, and the use of bureaucratic controls increases as task complexity decreases. The nature of the work problem is thereby resolved by limiting the use of bureaucratic forms of control to the routine and programmable aspects of professional work. For example, in the expertise practice (Maister) and the problem solving or creativity based strategies (Løwendahl); work is highly complex and demands creative and innovative solutions which cannot be standardized into organizational competences. Successful service delivery depends on the expertise of senior professionals who are granted a great deal of autonomy in the performance of their work. These strategies largely conform to the traditional P^2 archetype where bureaucratic control is limited and coordination is achieved through mutual adjustment and consensus building around common goals and priorities. As the firm is dependent on the knowledge contained within its professional workforce, ownership is internal to the firm and senior professionals are granted ownership in an effort to retain top talent. Lower level professionals are trained and socialized into the firm through a long process apprenticeship.

In contrast, in the efficiency based practice (Maister) or the Solution or Output-based Strategy (Løwendahl), task complexity is relatively low. Firms focus on delivering a set of solutions more efficiently than their competitors. The problems encountered by their clients are well-recognized and familiar, firms focus on packaging solutions into

programmable steps and activities which can then be delegated to lower level professionals. The programmability of the solutions creates an increasing degree of bureaucratic controls both in terms of the application of solutions and the training of lower level professionals. Finally, the experience based practice (Maister) or client relation based strategy (Løwendahl) is defined by a medium level of task complexity. In the experience based practice (Maister), the firm focuses on applying customized solutions to somewhat familiar problems. Since the activities necessary to complete the project are similar to those utilized on other projects, these activities can be standardized in systems and procedures and delegated to lower level professionals. In contrast, in Løwendahl's client relation based strategy, the use of bureaucratic forms of control is fairly minimal. This strategy emphasizes the firm's ability to understand and service particular clients groups. Senior professionals focus on developing relationships with clients and exploring possibilities for selling additional services to clients. Strategic decisions continue to be made by consensus and bureaucratic control measures are generally limited to the codification of knowledge about key clients in an attempt to prevent dependence on individual senior professionals.

The nature of the individual problem is in turn resolved primarily through hiring practices which aim to place work controlled by bureaucratic control measures in the hands to employees who are least likely to resist these forms of control. Maister (1993) argues that this is accomplished through a combination of leverage and separation of duties, whereas Løwendahl (1997) argues that this process occurs somewhat more organically through a process of mutual self-selection.

Maister (1993) argues that the nature of the individual problem is resolved through a focus on leverage, or the ratio of senior to junior staff. The practice type of the firm (expertise, experience, efficiency) determines the optimal degree of leverage since highly complex problems (expertise) require a greater proportion of senior level staff than low complexity (efficiency) type problems. Therefore, just as the use of bureaucratic measures increases as task complexity decreases, leverage increases as task complexity decreases. High complexity work is reserved for senior level professionals who possess the knowledge and experience to deal with complex work, while less complex work, which can be managed through bureaucratic forms of control, is delegated to lower level professionals. By matching the degree of leverage to the complexity of the work, the organization can minimize the degree of routine, non-complex work that the professional is expected to perform, limiting the professionals exposure to bureaucratic control measures and thereby minimizing any resistance to these measures. Resistance to bureaucratic forms of control can further be minimized by removing routine programmable tasks from the hands of senior or junior professionals and placing it in the hands of less-skilled employees such as

paraprofessionals and by substituting technology for professional labor wherever possible. Autonomy remains one of the most salient characteristics of professional and failure to provide autonomy will lead to decreased motivation (Maister, 1993). According to Maister (1993), it is therefore essential, that professionals be afforded the highest degree of autonomy that their level of skill and experience will allow.

Akin to Maister (1993), Løwendahl (1997) addresses the nature of the individual problem by matching the degree of autonomy afforded by the work to the individual's preference for autonomy. She argues that this occurs through a process of mutual self-selection whereby individuals with a low level of autonomy will be attracted to the job security and training programs offered by larger more hierarchal organizations pursuing the Solution of Output-based Strategy, while professionals demanding a high level of autonomy will prefer the less formalized and structured nature of the Client Relation Strategy, with professionals seeking a medium level of autonomy opting for the Problem Solving or Creativity strategy firm. This mutual self-selection forms a reinforcing loop for the firms' strategy whereby high autonomy firms are unlikely to attract or hire low autonomy professionals and vice versa. As a result, the firm strategy leads to the hiring of different types of professionals which are best suited to the firm's management control system (Løwendahl, 1997).

While the models of Brock and Powell (2005), Maister (1993) and Løwendahl (1997) acknowledge the heterogeneity within and between professional service firms and suggest that management control may differ based on the specific characteristics of the PSF, they do not explain the use of bureaucratic control measures by PSFs so much as they advocate a strategy of avoidance. They argue that the firm can address the nature of the work and the nature of the individual problems by not applying bureaucratic control measures to complex tasks and by not having professionals with a high preference for autonomy perform tasks subject to bureaucratic forms of control. The use of bureaucratic forms of control is limited to performing routine and repetitive tasks as suggested by the models of Perrow (1967) and Ouchi (1979) and firms are advised to prioritize a clear strategy based on the task complexity of the service that they provide. Similarly, hiring practices also aimed at avoiding conflict, by allowing professionals with a high preference of autonomy are granted this autonomy in their work, with bureaucratic forms of controls being limited to professionals with a low preference for autonomy, paraprofessionals or avoided altogether through the use of technology. While adjusting the management control system to the skill requirements of the work and hiring professionals best suited to the firms' MCS are undoubtedly important components to the success of professional service firms, rather than helping to explain the use of bureaucratic measures in PSFs, the models of Maister (1993) and Løwendahl (1997) continue to subscribe to the old adage that

professionals are impossible to control through rules, procedures, supervision and technology (Maister, 1993; Mintzberg, 1993). Our analysis of the literature on management control in professional service firms appears to suggest that this view may be incomplete.

We argue that the development of a more complete model of professional services firms requires us to challenge the fundamental assumptions upon which the theory surrounding management control within these firms is based. These fundamental assumptions are based on the two essential control problems which emerged from our review of the literature, the nature of the individual challenge and the nature of the work challenge. That is, much of the literature assumes that 1) the professional will be resistant to bureaucratic forms of control and 2) the application of bureaucratic forms of control to professional work is problematic. Our review of the literature suggests that the nature of these two problems may be overstated, professionals may not be as resistant to bureaucratic control measures as once thought and application of bureaucratic forms of control to both routine and complex tasks may not only be possible but beneficial to the professional service firm.

In the section that follows, we outline the inherent assumptions of the nature of the individual and the nature of the work challenges and present empirical evidence that examines the validity of these assumptions. Using case studies from the PSF literature, we then provide insights as to why these assumptions may not hold and how this can inform our understanding of management control is professional service firms.

4.4 Questioning the Nature of the Individual Challenge

Part of the challenge of management control in professional service firms is the nature of the individual. Much of the early literature on professionals centers on the professionals' need for autonomy and their resistance to bureaucratic forms of control (Raelin, 1985). Autonomy is often seen as a prerequisite of professionalism (Bottery, 1996; Eraut, 1994; Wilensky, 1964), and limiting the ability of the professional to exercise discretionary judgement prohibits their ability to carry out professional work (Molander and Grimen, 2010). We suggest that the professionals' need for autonomy may be overemphasized. We begin by explaining the theoretical explanations of the professionals' need for autonomy, followed by an examination of the empirical findings to support these claims. We argue that while there is considerable evidence that increased autonomy is related to improved job outcomes; the evidence to support the negative relationship between bureaucratic control measures and perceptions of job autonomy is less convincing. We then propose a number of reasons for the inconsistencies of the findings in the empirical literature.

4.4.1 Professionals' Need for Autonomy

While job autonomy is considered to be an important characteristic of both professional and non-professional occupations, it is generally assumed that professionals place a greater value on job autonomy than non-professional workers and therefore, are more likely to resist bureaucratic forms of control. The greater importance of autonomy to professional workers may be explained in two different ways.

First of all, the psychology literature suggests that personality characteristics may cause individuals with a high preference for autonomy to self-select into professional occupations. Holland's theory of vocational choice suggests that "the choice of an occupation is an expressive act which reflects the person's motivation, knowledge, personality, and ability" (Holland, 1958, p. 336) and "people search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles" (Holland, 1997, p. 4). Therefore, professionals may choose to enter professional occupations based their own personal preference for autonomy and the expectation that professional work will provide them with the degree of autonomy that they desire. As Maister (1993) explains, "one of the most salient psychological characteristics of those who choose professional careers is a strong need for autonomy. People choose professions... because the work is not routine or rigidly structured" (p. 291). In contrast, blue collar workers may have lower expectations of job autonomy because their chosen occupation is not generally associated with, nor do the characteristics of the job require a high level of job autonomy. Unlike professional workers, they may view their jobs primarily as a means of obtaining financial resources rather that a means to fulfill higher level needs of self-actualization (Kakabadse and Worrall, 1978). Since professional and non-professional workers may differ in their expectations of the features and tasks of their jobs (Dierdorff and Morgeson, 2007; Morgeson and Humphrey, 2006), this difference in the expectation of autonomy may led to differences in how autonomy is perceived, with autonomy having a stronger relationship between job autonomy and job satisfaction for professional than non-professional careers (Oliveira and Scherbaum, 2017).

Secondly, the sociology literature argues that the professionals' expectation of autonomy may be a result of the process of socialization in the profession. As discussed previously, professionalized occupations are characterized by a number of attributes such as creation of a full-time occupation, creation of a training school, formation of professional associations and a code of ethics (Wilensky, 1964). These structural characteristics mean that becoming a professional typically involves a long process of education, training, and experience which serves as a process of

socialization to professional norms. These professional norms form the basis for the set of expectation which governs the individuals' behavior in his role as a professional (Grover, 1993). One of these professional norms is autonomy, or the belief that the professional should be able to perform his work as he sees fit without the influence of clients, the employing organization, or other non-professionals (Hall, 1968). Under this view, the professionals' expectation of job autonomy is thought to differ based on degree to which the occupation is professionalized. More highly professionalized occupations such as medicine or law conform more closely to the attributes of a professionalized occupation and therefore may increase the salience of professional norms such as autonomy. As a result, the professionals' expectation of job autonomy may differ based on chosen occupation.

The psychological and sociological explanations of the importance of autonomy to the professional are not mutually exclusive. Individuals with a greater preference for autonomy may self-select into occupations where they expected to be granted more job autonomy and this preference for autonomy may be reinforced by the process of socialization into the profession. Both suggest that autonomy is of critical importance to professionals and that there is a positive relationship between job autonomy and job outcomes. We now examine the empirical findings on the link between job autonomy and job outcomes.

4.4.2 Does Autonomy Lead to Better Outcomes?

Autonomy is perhaps the most widely studied work characteristic (Morgenson and Humphry, 2006). Empirical research on the relationship between autonomy and job outcomes has provided fairly consistent findings between autonomy and job satisfaction, motivation and to a lesser degree performance (Fried and Ferris, 1987; Loher et al., 1985; Spector, 1985), though the strength of these findings is highly variable (satisfaction r=.23-.46, motivation r=.18-.38, performance (.03-.25) and may be influenced by factors such as task significance, job feedback, and knowledge of results (Fried and Ferris, 1987). Job autonomy has also been positively linked to job satisfaction and/or job performance in a number of professional fields including nursing (Aiken et al., 1997; Ingersoll et al., 2002; Kramer and Schmalenberg, 2003; Taunton et al., 1997; Zangaroo and Soeken, 2007), social work (Arches, 1991), teaching (Perie and Baker 1997) accounting (Colarelli et al., 1987), law (Wallace, 1995), medicine (Warren et al., 1998, Shirom et al., 2006) and management information systems (Igbaria, 1991). While empirical findings appear to support a positive relationship between job autonomy and improved job outcomes, the relationship between bureaucratic control measures and job autonomy is less well understood.

4.4.3 Do Control Mechanisms Impact Autonomy?

Research which directly examines the relationship between the use of bureaucratic measures and autonomy is somewhat limited. Ramaswami et al. (1993) find that both job codification and rule observation is negatively associated with task autonomy for marketing employees. Hall (1968) found that autonomy was strongly inversely related to various dimensions of bureaucracy including hierarchy of authority, division of labor, procedural specification, and impersonality. He found no statistically significant relationship, though, between the feeling of autonomy and the presence of rules (Hall, 1968). Katsikea et al. (2011) found no relationship between formalization and job autonomy for sales managers, and in a study of physicians, Engel (1969, 1970) found that professionals in moderately bureaucratic settings perceived themselves to have higher levels of autonomy that physicians in low or high bureaucratic settings. Chan et al. (2000) examined the relationship between bureaucratic constraints and job satisfaction for medical doctors, engineers, life insurance agents, lawyers, nurses, and teachers in Singapore and found that only engineers reported a significant negative link between bureaucratic constraints and job satisfaction. These findings appear to suggest that bureaucratic forms of control do not necessarily result in lower perceptions of autonomy, and perceptions of autonomy should not be construed as an unambiguous indicator of formalization (Dewar et al., 1980).

4.4.4 Why Professionals' Need for Autonomy may be Less Problematic

The findings of the studies above appear to suggest that when professional experience a lack of job autonomy, this likely leads to lower job satisfaction and to a lesser degree lower job performance. On the other hand, the relationship between bureaucratization and perceptions of autonomy is more inconsistent. Below, we outline five reasons which help to explain these inconsistencies in the findings suggesting that the resistance of the professional to bureaucratic forms of control may be overemphasized.

4.4.4.1 Enabling Controls Reduce Organizational-Professional Conflict

First of all, professionals are unlikely to resist bureaucratic control measures which are seen as useful or which reinforce behaviors which the professional would have engaged in the absence of such measures. Professionals do not resist bureaucratic forms of control out of hand, but resist control measures which pressure "them to conform to organizational requirements which they do not understand or believe necessary" (Orth, 1965; p. 141). That is, the professional response to formalization may be determined by whether or not the rules they encounter are viewed as helpful or unnecessary (Adler and Borys, 1996). Therefore, one explanation for the inconsistencies in the empirical findings is that negative job outcomes are the result of the degree to which bureaucratic forms of control constrain the desired behaviors of

professionals rather than the mere presence or absence of these controls. Bureaucratic controls which are perceived as helpful or reinforcing are unlikely to lead to a decreased perception of autonomy, as good rules tend to go unnoticed (Perrow, 1986). This helps to explain the conflicting empirical results on the relationship between formalization and perceptions of autonomy while the relationship between perceived autonomy and job outcomes is more consistent. Direct empirical evidence of perception of the usefulness of rules on job outcomes has largely been limited to the public sector, but appears to indicate that the positive relationship between rule formalization and job satisfaction is mediated by, among other factors, optimal rule control, or the perception that the rules are necessary, adequate and not burdensome (DeHart et al., 2014). Optimal rule control is linked to increased rule abidance for public sector employees (DeHart-Davis, 2009). While we are unaware of any similar research for professional employees in for-profit organizations, indirect evidence from studies of organizational professional role conflict (OPC) in professional organizations appears to lend some support to these claims.

Role theory argues that the negative relationship between autonomy and job outcomes can be explained by role conflict, or inconsistencies in the expectations of two or more roles embodied by the individual which lead to stress and dissatisfaction (Rizzo et al., 1970). One specific type of role conflict is organizational professional conflict (OPC) or the degree to which the professional feels that there is a discrepancy between the norms of behavior as dictated by the profession and by the organization. This discrepancy between how the individual would act as a professional and the rules created by the organization creates conflict and may result in professionals' resistance to bureaucratic rules, rejection of bureaucratic standards, resistance to bureaucratic supervision, and conditional loyalty to bureaucracy (Scott, 1965).

Empirical findings appear to support a negative relationship between OPC and job outcomes, suggesting that when professionals feel hindered in performing their role as they feel they should, this results in negative job outcomes. For example, in their study of public accountants in large public firms Sorensen and Sorensen (1974) showed that conflict between professional and bureaucratic ideals resulted in increased job dissatisfaction and job migration. Similarly, in separate studies of Canadian and US and Israeli accountants Aranya and Ferris (1983, 1984) found significant negative relationships between organizational professional conflict and job satisfaction and significant positive relationships between OPC and turnover intentions. In a study of accountants in Hong Kong, Lui et al. (2001) produced similar findings. For mental health service providers, Acker (2004) also found significant negative links between role conflict and job satisfaction and intention to leave. For management accountants, OPC has also been linked to decreased job satisfaction and

higher turnover intentions (McGregor, 1987; Shafer, 2002; Shafer et al., 2002). Similarly, in their study of Big 5 auditors, Bamber and Iyer (2002) found that professionals who experienced professional-bureaucratic conflict also scored significantly higher on turnover intention. While these studies do not directly test the usefulness of organizational control measures, they appear to suggest that when there is a conflict between the way professionals would like to behave and the desired behavior as outlined by the control system, this results in negative job outcomes.

As with autonomy, it has been suggested that, formalization, or the use of bureaucratic control measures, may increase role conflict by decreasing professionals' ability to exercise their judgement (Ortqvist and Wincent, 2006), but empirical evidence to support this assertion is once again mixed. While Greene and Organ (1975) and Organ and Greene (1981) and Lee and Mathor (1999) find a positive relationship between formalization and role conflict for their samples of professionals. Rogers and Molnar (1976) and Nicholson and Goh (1983) find no significant relationship between formalization and role conflict for top-level administrators or the R&D department of a utility company, respectively. In contrast, in his study medical doctors, lawyers, engineers, and architects (Podsakoff et al., 1986) found that perceived formalization decreased role conflict for both professionals and non-professionals. Senatra (1980) also found that formalization of rules and procedures decreased role conflict for senior level audit professionals. Similarly, Bamber et al. (1989) found that senior audit professionals in structured firms had a significantly higher perception of the formalization of rules and procedures than audit professionals in unstructured firms, but this perception was associated with significantly lower role conflict in structured firm than in unstructured firms, albeit at a 10% level of significance.

Taken together, these empirical findings suggest that when professionals experience OPC this may lead to negative job outcomes, but as with autonomy, formalization does not appear to drive this relationship. The use of bureaucratic forms of control may conflict with professional norms but can also serve to protect and reinforce these norms (Wallace, 1995). This lends to the argument that perceptions of autonomy may be based on degree to which the bureaucratic control measures constrain the individuals' ability to act the way that they think they should, rather than the presence of bureaucratic forms of control per se, suggesting the bureaucratic forms of control that are viewed as helpful should not lead to decreased perceptions of autonomy and result in negative job outcomes.

4.4.4.2 Enabling Controls Reduce Role Ambiguity

Secondly, and related to the first point, even if the use of bureaucratic measures decreases autonomy to some degree, this may lead to better job outcomes than conditions of full autonomy, since bureaucratic measures may produce offsetting effects causing inconsistencies in the net effect to bureaucratization. While the use of bureaucratic control measures may increase OPC by limiting job scope (Hackman & Lawler, 1971; Hulin and Blood, 1968), a lack of formalization can also lead to role ambiguity, or a lack of clarity about job expectations (Kahn et al., 1964). Role ambiguity, much like role conflict can result in increased job stress, reduced job satisfaction, and lower productivity (Rizzo et al., 1970). Conversely, increased formalization may positively affect employees' attitudes towards work by facilitating job and role clarity (Michaels et al. 1988; Morris and Steers 1980). Meta-analytic studies show that formalization decreases role ambiguity (e.g., Fisher and Gitelson, 1983; Jackson and Schuler, 1985; Tubre and Collins, 2000). This suggests that the relationship between formalization and performance may be curvilinear, where the optimum level of performance is determined by the degree of formalization which minimizes role ambiguity while limiting role conflict (Dalton et al., 1980). Organ and Greene (1981) explore these conflicting effects in their study of 247 engineers and scientists and find that while formalization is positively associated with role conflict, it is also negatively associated with role ambiguity and positively associated with organizational identification. Taken together these findings lead to an overall net decrease in job alienation or the individual's self-estrangement from their job, though the authors do not directly examine the impact on job outcomes. Podsakoff et al. (1986) attempt to replicate the study of Organ and Greene (1981) and also find that formalization leads to decreased role ambiguity with no concurrent increase in role conflict and an overall decrease in job alienation. These findings suggest that while bureaucratic forms of control may have negative consequences, they may also produce positive outcomes. When choosing the degree of formalization in the MCS, firms may need to carefully weigh the positive and negative consequences of formalization in order to optimize performance.

4.4.4.3 Heterogeneity Among Professionals

Thirdly, the findings on the relationship between autonomy and job outcomes may be inconsistent because the professional's preference for autonomy is not homogeneous across occupation, organization type, or job-level. Professionals in applied field such as engineering may have a lower preference for autonomy than professionals in research field such as scientists (Raelin, 1985). This lower preference for autonomy

should reduce the professionals' resistance to bureaucratic forms of control and make their application less problematic in these fields. In addition, as argued by Løwendahl (1997) and Maister (1993), problems of professional resistance to bureaucratic control measures may be partially mediated through self-selection into the organization type best suited to the individual. Research suggests that individuals with a greater reference for autonomy are significantly more likely to choose careers in academia and significantly less likely to choose a career in an established firm or a start-up (Roach and Sauermann, 2010). This self-selection should lead to greater convergence in the professional's expectation of autonomy and the autonomy afforded to them and thereby further reduce the professionals' resistance to bureaucratic forms of control. Self-selection can further be supplemented by personnel control to select employees whose preference for autonomy best fits with the control logic of the organization (Briscoe, 2007) thereby facilitating subordination and obedience (Alvesson and Kärreman, 2004). Furthermore, in our review of the literature the importance of autonomy is almost exclusively mentioned by partners of firms rather than lower level professionals (i.e. Empson, 2012; Faulconbridge and Muzio, 2007). Prior research has shown that autonomy increases with job level (Cenker and Pearson, 1993) and lower level professionals may have a lesser need for autonomy since they are still in establishment phase of their career where they seek to develop the requisite skills and experience necessary to perform their jobs gain peer and organizational acceptance (Dalton et al., 1977; Gould, 1978; Hall and Nougaim, 1968; Levinson et al., 1978; Schein, 1978). For example, Chang and Birkett (2004) demonstrate that competency standards of professionals change over the course of their career, with novice level professionals being afforded little autonomy or opportunity to be creative as they focus on knowledge development, learning and achieving productive outcomes. Expert professionals are expected to possess the requisite knowledge necessary for their jobs and are provided greater autonomy to engage in more complex tasks and be creative. Brivot (2011) found that lower level lawyers were more likely to make use of templates in the knowledge management system suggesting that lower level professionals may be less likely to resist bureaucratic forms of control. Finally, as indicated by Cooper et al. (1996), the interpretive scheme of the professional is changing, as younger professionals become more versed in the "business-like" aspects of their profession. Moody (2002) suggests that younger physicians are more favorably orientated toward bureaucracy than their older counterparts and a positive orientation toward bureaucratic goals has been shown to moderate the negative response to bureaucratic forms of control (Abernethy and Stoelwinder, 1991).

4.4.4.4 Positive Spill-Overs from Autonomy Reducing Controls

Fourthly, professionals may also be willing to make a trade-off between autonomy and some other factor they value. For example, Briscoe (2007) found that physicians were willing to accept greater bureaucratization and decreased discretion because it allowed for greater flexibility in their work schedules to accommodate their personal interests and needs. Brivot (2011) found that some lawyers utilized the knowledge management system as a way to attract recognition, maintain their status as specialists, and deter others from encroaching on their knowledge jurisdiction. Increased formalization can also increase the efficiency and decrease the time spent of routine tasks allowing the professional to focus on more challenging, complex tasks which they view as more rewarding (Jaakkola, 2011). Finally, increased bureaucratization may also be a form of self-preservation and facilitation of professional power (Brivot, 2011). As public scandals have led to decreased trust of professionals by the public, increased formalization and standardization can improve accountability and improve the reputation of professional in order to help maintain the monopoly power of the profession (Bastard et al., 2005; Castel and Merle, 2002).

4.4.4.5 Mechanisms for Increasing Acceptability of Bureaucratic Controls

Finally, the assumption that the professional is resistant to bureaucratic forms of control also fails to recognize that this resistance can be tempered by other means. As with non-professional employees, resistance to bureaucratic forms of control can be reduced by involving professionals in MCS development and making them responsible for administrative and managerial tasks (Modell, 1995). Resistance may also be decreased through traditional incentive schemes. For example, Young et al. (2012) found that compliance with recommended clinical tests and screenings increased after a bonus was introduced, though this effect was partially moderated for physicians who felt it reduced their autonomy or physicians who did not believe in the goals of the project. Furthermore, the use of bureaucratic forms of control such as behaviors controls may actually lower resistance to bureaucratic forms of control. Cohen et al. (1982) found that by simply affixing a preventative care checklist to the front of patients' charts resulted in significant increase in preventative screenings and this increase was primarily attributed to a change in physician attitudes rather than factual knowledge.

In summary, while professionals may be resistant to bureaucratic forms of control, mounting evidence suggests that this relationship is more complex than once thought. The effect of bureaucratic controls on perceived job autonomy and job outcomes may be conditional on the attributes of these controls and may not lead to resistance from professionals provided that are seen as useful, and can also have positive off-setting effects. In addition, the preference for autonomy is neither homogeneous across

individuals, occupations, organization type, job-level, or generation nor does it exist in a vacuum but rather as a single aspect of job utility to be balanced with other job characteristics. Finally, firms have the ability to reduce resistance to bureaucratic forms of control through personnel selection, employee empowerment and even the use of bureaucratic forms of control. Thus, while increasing evidence shows that the nature of the individual challenge may not be as problematic as once thought, the nature of the work challenge may still inhibit the application of bureaucratic forms of control in PSFs.

4.5 Questioning the Nature of the Work Challenge

The nature of the work challenge suggests that the work in professional service firms is poorly suited to bureaucratic forms of control such as behavior and results control. This assertion is based on three separate but related assumptions. First of all, professional work is deemed to be too complex for the application of bureaucratic forms of control. Secondly, application of bureaucratic forms of control can be damaging if applied in PSFs because it limits the flexibility necessary for this complex and non-routine work. Finally, application of bureaucratic forms of control is considered antithetical to the traditional collegial nature of control in professions which advocates the use of informal controls in professional services. As with the nature of the individual challenge, we argue that these assumptions may be exaggerated. In the section below, we address these three assumptions and present evidence from case studies of PSFs, which suggest that the use of bureaucratic control measures in PSFs may be less problematic than once thought.

4.5.1 Is Professional Work Too Complex?

First of all, while some portion of tasks that professionals perform are complex and novel and make application of bureaucratic controls truly difficult, many professional occupations also exhibit a certain degree of routineness. Empirical evidence shows professional work is composed of a mixture of both complex and routine tasks (Abdolmohammadi and Wright, 1987; Kuhlthau and Tama, 2001). In her study of a variety of Finnish professional service firms Jaakkola (2011) found that, “much of the work done by professionals… is unproductive and routine” (p. 227). Lewis and Brown (2012) mirror this sentiment suggesting that in their study of a British legal partnership there is “ample evidence of standardized techniques, rapid pro-forma projects and highly repeatable activities” (p. 6). Bureaucratic controls are considered well suited to tasks where there is knowledge or the transformation process, knowledge of the desired outputs or both (Ouchi, 1979), and therefore application of bureaucratic control to these types of tasks should not create control challenges for PSFs. In contrast, application of bureaucratic forms of control to these routine tasks may even be necessary in order to maintain employee motivation to perform such

tasks. As suggested by self-determination theory, individuals lack intrinsic motivation for tasks which they view as uninteresting and thus behavior for these types of tasks may have to be motivated through the creation of contingencies between behaviors and desired consequences such as implicit approval or tangible rewards (Gagné and Deci, 2005). Therefore, while it may be difficult to apply formal control to all professional tasks, it is precisely for these routine tasks where the professional is thought to lack intrinsic motivation that the use of bureaucratic forms of control may be most beneficial and warrants greater attention.

A number of studies from the literature suggest that PSFs apply bureaucratic forms of control to the routine aspects of professional work. Kirsch (1996) found that in information systems development, behavior observability and controller's knowledge of the transformation process is associated with increased use of behavior controls and outcome measurability and behavior observability is positively associated with outcome control. Homburg and Stebel (2009) examined, among other things, the verifiability of service provider behavior and the verifiability of service output on contract terms in management consulting and found that verifiability of service output was positively liked to variable cost contracts while verifiability of service provider behavior was negatively associated with variable cost contract and positively associated with fixed-cost contracts with the total cost fixed. Ditillo (2004) examined the control response to different types of knowledge complexity in a software development firm showing that less complex projects utilized more action and results controls than innovative or novel projects. Similarly, in the R&D department of a high-tech equipment firm Olausson and Bergren (2010) found that the firm used formal procedures to manage key aspects of the development process such as handoffs from development to process engineering. Abernethy and Brownell (1997) found that tasks with many exceptions and low analyzability were associated with personnel controls, while high analyzability tasks with few exceptions were associated with accounting controls. Application of behavior controls in the form of checklists has also been used for routine procedures in the medical field such as per- and post-surgery and insertion of central lines. These checklists typically do not involve novel approaches to patient care nor the use of new devices or techniques but rely on the application of routine procedures such as counting of instruments, hand washing and verifying patient information to improve patient outcomes. Application of bureaucratic forms of control to these routine processes does not pose a challenge to management control and we should therefore expect to see greater application of bureaucratic forms of control for less complex tasks.

4.5.2 Are Bureaucratic Controls Too Rigid?

Secondly, the literature appears to indicate that rather than a rigid and mandatory application of formal controls, PSFs use behavior and results controls in a flexible manner to serve as guidelines to model desirable in the form of tools, benchmarks, and templates. A number of case studies describe the use of bureaucratic forms of management control in PSFs as "diluted" (Marginson, 1999, p. 217), "loosely coupled" (Kärreman and Alvesson, 2004; p. 164) or a type of "formalized informality" (Olausson and Bergren, 2010; p. 395). This "loose" application of bureaucratic form of control allows for the application of bureaucratic forms of control to both simple/routine and complex/non-routine tasks.

The creation and use of standard procedures and protocols is designed not to create a foolproof system of binding rules, but rather to reduce the complex and ambiguous nature of the professionals' tasks and improve coordination (Adler and Borys, 1996). This reduction of complexity and ambiguity provides advantages for both the professional and the client as the professional is better able to perform their job and the client has a better understanding of what they need and what the professional service firm can provide them. It allows professionals the flexibility necessary to exercise their professional judgement which can also address the nature of the individual problem. In addition, it frees management from creating management controls to cover all contingencies of the work.

The literature on professional service firms indicates that standardized work procedures in PSFs tend to be used as tools, templates or guidelines to guide employee behavior rather than following the strict definitions of results and behavior control, where results or behaviors are defined, adherence to those behaviors or results is measured and rewards are provided to encourage the desired behaviors or results (Merchant and Van der Stede, 2007).

Kärreman et al. (2002) Alvesson and Kärreman (2004) and Kärreman and Alvesson (2004) describe how a consulting firm standardized work into a unified package of methods which could be modified and reused to suit the unique characteristics of individual projects. A similar type of modularization was also found in architecture firms, law firms, and medical practices. Briscoe (2007) found that the medical practices in his study used clinical protocols to standardize the sequence of activities to be followed to create a common framework and terms for patient evaluation, but none of these protocols were considered binding. Canavan (2013) and Winch and Schneider (1993) suggest that the strategy of architecture firms plays a key role in the degree to which they standardize their service offering with firms applying a "product portfolio" or "strong delivery" strategy relying on a high degree of standardization where templates for buildings can then be taken "off the shelf" and adapted to a

client's specific needs. The implementation of a knowledge management system in a Parisian law firm was designed to centralize knowledge, make it searchable, and allow for peer review, but the use of the knowledge management system was voluntary allowing lawyers to contribute and take from the system as they saw fit rather than being imposed from the top down (Brivot, 2011). In her examination of a variety of Finnish professional services, Jaakkola (2011) found that many attempted to productize their service offering by creating service modules or standardizing the contents and processes of their service offerings, but the modules were used flexibly and tailored to each specific customer.

4.5.3 Do Bureaucratic Controls Affect Informal Controls?

Finally, while traditional models of control in PSFs suggest that these firms will rely primarily on the use of informal controls such as personnel and cultural controls, these controls tend to be unstable, and few firms can rely solely on informal controls to control behavior (Abernethy and Stoelwinder, 1995; Merchant and Van der Stede, 2007). Hall (1968) suggested a certain level of bureaucratization may be necessary to maintain social control of professionalized occupations. Recent work in management control in professional services has further highlighted the role of bureaucratic forms of control in protecting and reinforcing informal forms of control (Wallace, 1995).

First of all, bureaucratic controls can strengthen mutual monitoring or having peers within the organization monitor and influence each other's behavior (Picard and Reis, 2002). Mutual monitoring may be particularly beneficial in professional service firms because it places management control in the hands of those who have the requisite knowledge and experience to monitor other professionals, and as a form of informal control, it may encounter less resistance and dysfunctional behavior than bureaucratic forms of control. However, effective mutual monitoring is predicated on the ability of professionals to monitor each other's work. Bureaucratic controls can improve mutual monitoring by increasing the ability of professionals to view each other's work and decreasing costs to mutual monitoring. For example, while the use of clinical protocols in medical practices was designed to improve patient hand-offs, the system also enabled and legitimated greater scrutiny of physicians' records by making them visible to other physicians (Briscoe, 2007). Interestingly, it appears that mutual monitoring may also increase with information provision in absence of standardization. For example, the introduction of a voluntary knowledge management system in a Parisian law firm allowed lawyers to place documents and contracts into the system without any attempt at standardization but was shown to be used by the lawyers to observe and monitor their peers' work (Brivot, 2011). The ability to observe each other's work more closely may also lead to increased self-control and more consistency and standardization since errors become visible to the entire firm and can threaten the

professional's public reputation and professional begin to align their practices with those of their colleagues (Briscoe, 2007; Brivot, 2011).

Standardization of protocols may also increase the transfer of tacit knowledge and improve learning. Although tacit knowledge is not codifiable and is typically only transferred through face-to-face interaction, a portion of the physicians in Brisoce's (2007) study indicated access to their colleagues' records allowed them to better understand the latent framework, heuristics and assumptions made by their colleagues. Lawyers in Brivot's (2011) reported using the knowledge management system as a source of self-training.

Case studies also suggest that the presence of bureaucratic forms of control may be a source of culture, values, and norms of the organization. Alvesson and Kärreman (2001) suggest that the use of standardized manuals, work methodologies, and hierarchies in the consulting firm that they studied served create a shared universe and common identity. This common identity was then reinforced through an extensive recruitment process which served as a form of socialization leading to enactment of a common culture through similar dress, long working hours and lunching together. In the same way, the physicians in Briscoe's (2007) study believed that the use of standardized protocols encouraged them to further orient themselves towards an evidenced-based approach to medical practice which was supported by a recruitment process which selected employees of the basis of community-orientated values an orientation toward learning and belief in evidence-based medicine.

In summary, while the nature of the work in professional service firms may make the application of bureaucratic forms of control more difficult, recent literature suggests that a portion of the work in PSFs highly routine and easily subject to bureaucratic forms of control. Furthermore, even when work is complex bureaucratic control measures may lead to a net benefit especially if PSFs apply bureaucratic control measures in a "loose" fashion and use these controls to buttress informal controls.

5 Toward a Theory of Management Control in PSFs

As evidenced by the sections above, the fragmented nature of the research on management control in professional service firms has made it difficult to come to consistent generalizations, and the assumptions of the nature of the work challenge and the nature of the individual challenge may not be as pronounced as once thought. So where do we go from here?

Clearly more empirical research is needed on a wide variety of PSFs so that we can compare the differences within and between PSFs and between PSFs and other types of firms. But what should this research look like?

Research should focus on the combination of characteristics of PSFs rather than trying to create a single theory of the PSF firm. Focusing on a combination of characteristics can not only ease the problems of definition of PSFs, but it can also allow for comparisons of PSFs over time as the importance of these characteristics continues to shift in response to changes in the business environment.

As suggested by Empson et al. (2015), Sciulli (2006) and Von Nordenflycht (2010) PSFs are an amalgam of these characteristics which they possess to varying degrees. While Von Nordenflycht (2010) suggests creating a single measure of professional service intensity based on the combination of these characteristics, we argue development of such a measure may be premature. A lack of empirical research addressing the impact of the PSF characteristics on management control systems means that we do not understand the relationship between the PSF characteristics and management control nor the relationship between the PSF characteristics themselves. Inclusion in a single measure may obscure the impact of PSF characteristics on management control is some of these characteristics do not behave the way that we might expect. Moreover, there is still considerable disagreement regarding which characteristics should be considered as unique to PSFs and more empirical research is need to establish which characteristics make professional service firms truly unique.

Research should utilize established definitions of modes of management control such as behavior, results, personnel and cultural control. As we have little empirical evidence on management control in PSFs, development of modes of control specific to PSFs may be counterproductive. Many of the PSF characteristics are present in other types of firms, and literature on these firms may be used to build a theory of management control in PSFs. While Cardinal et al. (2017) suggest that older frameworks and theories have limited theorizing that better fits with the organizations of today, we argue that by first testing our assumptions based on these well conventional modes of control we avoid throwing the baby out with the bath water as we first establish how closely management in PSFs approximates control in these other types of firms.

That said, the above does not suggest that the modes of management control cannot be modified to incorporate the findings of more recent case studies in the PSF literature. Research should focus on how PSFs deal with the nature of the work and the nature of the individual challenges such as relaxing the assumption that bureaucracy is necessarily rigid to arrive at a more nuanced understanding of

management control. To this end, it is also important that that research on PSFs consider the use of formal and informal control simultaneously since these appear to support and reinforce each other (Briscoe, 2007; Brivot, 2011).

Better understanding of the mechanisms which influence professional resistance to bureaucratic measures should also prove a fruitful area for research. A tremendous amount of literature examines the relationship between autonomy and job outcomes and role conflict and job outcomes, but there is measurably less literature which examines the impact on management control on these factors. Our understanding of how management control contributes to the professionals' interpretation of rules and procedures as "good" or "bad" is still fairly limited.

Professional service firms our often held up as the model of 21st century firms who operate in environments with increasing turbulence, complexity and information (Huber, 1984). Our understanding of management control in these firms can help to improve understanding of firms with less extreme forms of these management challenges. However, developing a theory of management control in PSFs will require examining the assumptions which have informed our theory development on professions and professionals since the 1950's. In addition, while case studies have helped to shed light on some of management practices in professional service firms, creation of a more generalized theory of management control in professional services will require empirical research across a wide variety of professional service firms.

CHAPTER 2
Antecedents of Management Control in Professional Service Firms

1 Introduction

Professional service firms (PSFs) have received increased attention in the academic literature in recent years. Interest in PSFs has grown because both because professional services are the most rapidly growing, profitable and significant sector of the global economy (Empson et al., 2015) and because they are seen as being distinct from other types of firms due to the importance of human capital and the application of complex knowledge into intangible outputs (Greenwood et al., 2005; Von Nordenflycht, 2010).

Professional service firms have also come to symbolize the service economy. The importance of human capital in professional service firms is seen as a model for the post-industrial economy where intellectual capital has replaced land, labor, physical and financial capital as the main factor of production (Ulrich, 1998; Fitzgerald et al., 1991). The complexity and uncertainty inherent in professional work can make bureaucratic forms of control difficult to apply and the professionals expected resistance to bureaucratic controls can make them useless or counterproductive raising questions as to how these types of firms can best be managed.

Although there is abundant research interest in PSFs, the PSF literature has not succeeded in developing a coherent view on management control in these firms. First of all, the literature fails to systematically analyze how management control systems are implemented, in differentiated ways, in professional service firms. Despite increasing evidence to the contrary, PSFs are often treated as being homogeneous and having homogeneous needs (Løwendahl, 1997; Canavan et al., 2013). The empirical literature on management control in professional service firms most often either compares PSFs to non-PSFs (Auzair and Langfield-Smith, 2005; Verma, 2000) or examines only a single PSF or PSF sector (i.e. Abernethy and Stoelwinder, 1995; Chang and Birkett, 2004; Ditillo, 2012; Greenwood et al., 2005; Hitt et al., 2001). This lack of systematic research can at least partly be attributed to the absence of a single unambiguous definition of professional service firms which has led researchers to focus on canonical examples of PSFs resulting in a constricted range of empirical research (Von Nordenflycht, 2010). Rather than providing a single definition of PSFs, a number of scholars have recently begun advocating for defining PSFs based on a common set of characteristics which make these firms unique from other firms and from each other and how variations on these characteristics effect the management and organization of these firms (Malhotra and Morris, 2009; Von Nordenflycht, 2010; Von Nordenflycht et al., 2015). They suggest that intra-industry variation may be as important as inter-industry variation, but empirical work is necessary to verify these claims (Von Nordenflycht et al., 2015).

Secondly, much of the literature assumes that there is an inherent conflict between the professional and bureaucratic forms of control. The conventional wisdom suggests that the nature of the work in PSFs is ill-suited to bureaucratic forms of control, and the nature of professionals as individuals are resistant to bureaucratic forms of control, causing researcher to emphasize the use of non-bureaucratic means of control in professional service firms (Alvesson, 1995; Hedberg, 1990; Kanter, 1983; Kunda, 1992; Mintzberg, 1998; Wilkins and Ouchi, 1983). However, changes in the business environment have created forces for bureaucratization and more recent case studies suggest that a variety of PSFs are actually making use of bureaucratic forms of control (Alvesson and Kärreman, 2004; Brivot, 2011; Kirsch, 1996; Morris and Empson, 1998; Stumpf et al., 2002), but this process is still not well understood.

These individual case studies on PSFs suggest that rather than avoiding bureaucratization, professional services firms aim to find an optimal balance between customization and standardization, autonomy and control, professionalization and bureaucratization and flexibility and efficiency. A number of researchers have found that the optimal environment for professionals appears to be one of “controlled freedom” (Pelz and Andrews, 1966) or “subtle control” (Brown and Eisenhardt, 1995),

and professionals in these moderately bureaucratic environments may be more likely to view themselves as autonomous and perform better than those in high or low bureaucratic environments (Engel, 1969; Pelz and Andrews, 1966).

Theoretically speaking, from the point of view of the organization, bureaucratization can make work more controllable, improve service quality, make quality more tangible to customers, and increase effectiveness. Standardization can also help to diminish the firms' dependency on individual professionals by codifying and storing knowledge. From the professionals point of view, bureaucratization may be beneficial if it provides guidance on how to best perform their work, improves performance on routine tasks which allows the professional to focus more on expert tasks which they are truly interested in, or provides benefits which may counter resistance to bureaucratic control measures such as flexibility in working hours (Briscoe, 2007; Jaakkola, 2011).

This paper attempts to address these gaps in the literature by investigating the design of management control systems in professional services firms. More specifically, we systematically analyze the impact of a number of distinct PSF characteristics on MCSs in professional service firms. By looking at the effects of variation in PSF characteristics across a wide variety of PSFs we can assess whether any variation in these characteristics impacts the design of the management control system. Secondly, we aim to shed light on the use of bureaucratic forms of control in professional services. To what extent do professional service firms use these forms of control and how does their use vary with changes in PSF characteristics? Do the unique characteristics of PSFs lead to a reduction in the use of bureaucratic control measures and an increase in the use of non-bureaucratic control measure as predicted by theory? Finally, we explore how professional service firms balance their need for control with their need for flexibility and the professionals' preference for autonomy. We propose a potential alternative explanation for the presence of bureaucratic measures in professional service firms by examining how PSFs make use of bureaucratic control in light of the management control challenges posed by the unique characteristics of PSFs.

We do this by proposing a new way of modeling the conflict between bureaucratization and autonomy. Namely, by exploring two forms of control tightness as key attributes for the design of MCSs in professional service firms, explicit control tightness, and implicit control tightness. Where explicit control is defined as the degree or scope of the management control system and implicit control is defined by the level of tolerance for deviations from the control system. Control tightness is then achieved either by increasing the scope of the MCS or by decreasing tolerance for deviations from the MCS. In this way, tightness satisfies the firms need for control,

while autonomy is achieved by loosening the control system. That is, by decreasing the scope of the MCS or increasing tolerance for deviations from the MCS. By designing a control system which combines tight and loose aspects of explicit and implicit control, professional service firms can achieve both the control and flexibility necessary for optimal performance and satisfy the professionals' need for autonomy.

We contribute to the literature in a number of ways. First of all, by empirically evaluating the presence and degree of these distinct PSF characteristics across different a wide variety of PSFs and how these effect management control system design we contribute to the limited literature on management control in these firms and help to explain the heterogeneity of PSF firms. Secondly, we contribute to the literature on the bureaucratization of professional service firms by examining both bureaucratic and non-bureaucratic forms of control. Finally, by developing a unique measure of control tightness, we shed light on how professional service firms deal with professionals' potential resistance to bureaucratic measures and the difficulties in codifying complex work in order to strike a balance between autonomy and control.

We begin by examining the difficulties of applying traditional theories of management control to professional service firms and describing our theoretical model for examining flexible forms of bureaucratic control is PSFs. Section 3 develops the hypotheses based on our model followed by details of our sample and methods in section 4. In Section 5, we present our results followed by a discussion of these results in section 6 and section 7 concludes.

2 Management Control in Professional Service Firms

Much of the management control literature has focused on control system design in manufacturing settings where the tasks performed are well suited to bureaucratic forms of control (Ditillo, 2004). Management control in professional service firms is considered distinct from other types of firms due to the presumed inability, ineffectiveness, or inappropriateness of applying bureaucratic forms of control (Maister, 1993; Zucker, 1991). Bureaucratic forms of control are assumed to be poorly suited to PSFs for two reasons. First of all, the characteristics of the work performed in PSFs make the work difficult to codify into bureaucratic measures of control. We refer to this MCS challenge as the nature of the work challenge. Secondly, even if the organization is able to design (effective) bureaucratic controls, professionals are often unwilling to cooperate with these types measures (Hower and Orth, 1963; Schriesheim et al., 1977). Unwillingness of professional to cooperate with bureaucratic forms of control may induce firms to adopt non-bureaucratic forms of

control to appease employee needs for autonomy. We refer to this as the nature of the individual challenge (or individual challenge).

Early frameworks of management control such as Ouchi (Ouchi and Maguire, 1975; Ouchi, 1977) drew heavily on Weber's (1946) notions of bureaucracy to achieve efficiency, reliability, and predictability in workers actions as a means to achieve organizational goals, where control is achieved through the formalization of work. The suitability of bureaucratic forms of control in Ouchi's conceptual model of control is dependent on management having knowledge of either the process of achieving organizational goals (behavior controls) or the ability to define and monitor achievement of organizational goals (results control). In absence of one or both of these forms of knowledge, firms should rely on non-bureaucratic forms of control such as clan control (Ouchi, 1977).

As the nature of work in PSFs is considered to be complex, it is often assumed that PSFs rely on non-bureaucratic forms of control. Similarly, early management control frameworks specific to professional service firms also argue that control in PSFs is achieved not through bureaucratic measures, but through a process of socialization which provides professionals with the social norms and rules to govern their behavior. In Mintzberg's model of professional bureaucracy, the complex nature of professional work is controlled through standardization of skills by self—governing association outside of the firm (1993). The professional is educated and socialized in the performance of his work, and control is achieved through social self and professional control, while the professionals' preference for autonomy is met by providing them with a large amount of discretion over their work. Similarly, Greenwood et al.'s (1990) professional partnership model (P^2) control is achieved through skill standardization and a strong culture of professionalism with limited formalized systems and supervision.

However, in response to changes in the market for professional services, the management control literature has shown renewed interest in bureaucratization in professional service firms (Briscoe, 2007; Jaakkola, 2011; Kärreman et al., 2002). PSFs mergers, increased competition, globalization, deregulation of professional markets , changing client demands, increased accountability and technological change have been identified as some of the forces driving this change and the need to adopt an archetype better suited to PSFs operating in this new environment (Brock et al., 1999). Scholars have attempted to develop new archetypes and typologies of PSFs to explain these shifts such as the Managed Professional Business (MPB) (Cooper et al., 1996) and the Global Professional Network (GPN) (Brock and Powell, 2005). These models acknowledge that control in professional services is becoming bureaucratized

and “business like” with adoption of new management structures, performance based contracts and reliance on formal rather than informal networks, but they fail to explain how firms balance the increased control these measures provide with the professionals’ preference for autonomy.

Cooper et al. (1996) describe the process of bureaucratization in PSFs as one of “sedimentation” whereby bureaucratic measures are layered on top of old practices and these bureaucratic and non-bureaucratic measures co-exist. Individual case studies also appear to confirm the presence of a number of bureaucratic elements in professional service firms (Alvesson and Kärreman, 2004; Lewis and Brown, 2012; Kärreman et al., 2002; Briscoe, 2007; Kirsch, 1996), but these have been limited to a single firm or PSF sector limiting the generalizability PSFs as a whole. As discussed previously, part of this constriction in the empirical research is due to the lack of a single definition of PSFs. Similarly, a model to explain the use and benefits of bureaucratic controls in complex firms may be attributed to failure of traditional definitions of MCS to account for the use of “light-handed” controls (Ahrens and Chapman, 2004). Modern conceptualizations of management control systems provide some guidance in this respect.

Modern approaches to management control describe the MCS as having duals roles or uses for controlling and enabling employee behavior. Under the controlling or coercive use of management control, the primary goal of the management control system is attainment of organizational goals by reducing goal divergence and information asymmetry between the principle and agent (Davila, 2000; Ditillo, 2004). This role is reminiscent of Ouchi’s (1977) model of control where formalization and standardization is used to achieve predictability and efficiency in an effort to reduce information asymmetry. On the other hand, enabling use of MCS provides for adaptability, flexibility, and information sharing necessary to reduce uncertainty and improve decision-making (Adler and Borys, 1996; Sprinkle, 2003; Zimmerman, 2011). While the outcome of both roles of management control is similar in that the intended outcome is to increase the predictability, efficiency and reliability with which employees achieve organizational goals, the mechanism by which this is achieved differs.

Adler and Borys (1996) distinguish between these two roles of control by dividing formalization based on its underlying logic or rationale, whereby coercive bureaucracy is designed with a fool-proofing or deskilling rationale aimed at coercing effort and compliance from employees, and enabling bureaucracy which is based on a usability or upgrading rational aimed enhancing users' capabilities to leverage their skills and

intelligence. Here the role of the MCS is to facilitate rather than influence decision making. Formalization and standardization is used to provide employees with the knowledge necessary to make better decisions rather than to impose decisions on them (Sprinkle, 2003).

Adler and Borys (1996) argue that applying enabling logic in the features, design, and implementation of the MCS can lead to positive attitudinal outcomes whereas a coercive logic will lead to negative attitudinal outcomes. Features of the enabling logic include repair, internal transparency, global transparency, and flexibility. Repair refers to whether non-expert employees are allowed to fix breakdowns caused by system failures or user mistakes. Internal transparency refers to the degree to which users are provided with the logic underlying the processes and rules and what constitutes best practice. Global transparency is the extent to which users understand how their work fits into the processes of the organization as a whole, and flexibility refers to the discretion users have to modify their work. The design and implementation process can also been seen as enabling or coercive. Systems designed externally by technical experts are more likely to be seen as coercive while user involvement in the design process can foster enabling formalization. Finally, enabling implementation involves shared control of implementation in a participative process while coercive implementation is top-down and autocratic (Adler, 1999).

The resulting typology (see Figure 2.01) characterizes organizations on two dimensions, the degree of formalization and the type of formalization. The degree of formalization is defined by commonly used definition put forth by Hall (1963) and Pugh and Hickson (1976) as the “extent of formalized rules governing work behavior and the extent to which they are enforced” (Adler and Borys, 1996, p.77). The type of formalization refers to the application of enabling or coercive logic. The optimal degree of formalization in their model is determined by the routineness of the task as determined by contingency theory, while the type of formalization refers to the degree to which the formalization contains the characteristics of enabling formalization (repair, internal transparency, global transparency, and flexibility). The attitudinal outcome of formalization depends on the fit between the degree of formalization and the routineness of the task and the type of formalization. As such, Adler and Borys (1996) suggest that formalization can lead to positive attitudinal outcomes in conditions of either high or low formalization as long as the type of formalization employed is enabling.

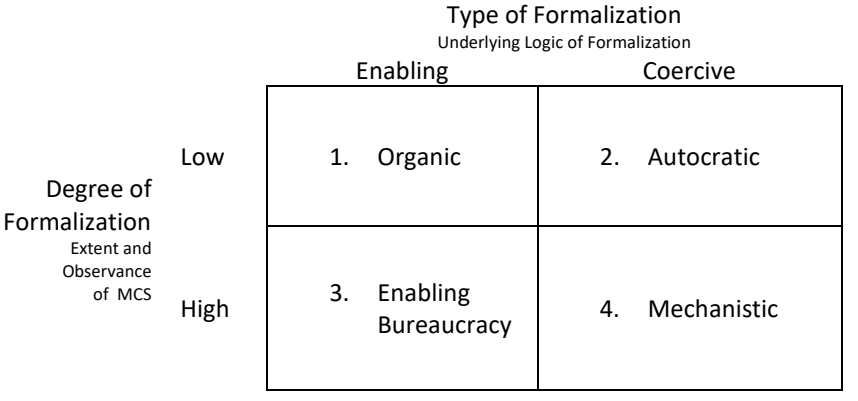


Figure 2.01: Typology of Organizations Adler and Borys (1996)

While Adler and Borys (1996) acknowledge that the casual relationship between formalization and behavioral outcomes is not determined only by the extent of documented procedures but also by how these procedures are applied, their model appears to suggest that the design of the control system itself and the design of the control system as enabling or coercive are two separate components of MCS design. Since they focus on attitudinal outcomes, the choice of control measures is determined external to their model by contingency theory and then the organization chooses to apply these controls with a coercive or enabling logic. Much like Cooper et al.'s (1996) idea of sedimentation, the enabling or coercive rationale of the control system exists separate from the actual control measures applied.

Instead, we suggest that the design of the control measures themselves can be used to address both the nature of the work challenge and the nature of the individual challenge of management controls in professional service firms. By deconstructing Adler and Borys' (1996) commonly used definition of formalization into two separate components, 1) the extent of formalized rules governing work behavior and 2) the extent to which [those rules] are enforced, we argue that firms can modify control measures both to better suit the characteristics of work in PSFs and to prevent negative behavioral outcomes from formalization.

To explain, in designing the control system the firm makes two basic decisions: 1) what types of control to implement and 2) how tightly or loosely these control should be implemented (Merchant and Van der Stede, 2007). Both the type of control and the tightness with which it is applied is based on the suitability of the control to the work tasks. Under traditional models such as Ouchi (1977, 1979), the choice of control (behavior, output, clan) is dependent on the knowledge of the transformation process

and ability to measure outputs. Control tightness, or the "degree of certainty that employees will act as the organization wishes "(Merchant and Van der Stede 2007; p. 118) is further determined by the congruence, specificity, completeness with which these controls can be defined, communicated, monitored and reinforced (Merchant and Van der Stede, 2007).

However, alternative conceptualizations of tightness suggest that tightness can also refer to the flexibility with which controls are applied. Hopwood (1974) argues that in tight control systems employee participation in setting objectives is low, targets are imposed on employees and seen as firm commitments, and performance is based only on accounting measures. Loose control on the other hand is evidenced by managers which are conscious to the social side of control. Employee participation is high, targets are negotiated with employees, and even when targets are agreed upon, they are only seen as reference points to be considered in the context of other available information. Lerner and Wanat (1983) and Butler et al. (1998) suggest that tight control implies that decision rules are precisely defined whereas in loose control systems precise rules may exist but the idiosyncrasies of the particular situation and the people involved are taken into account when deciding a course of action.

We build on Adler and Borys' (1996) definitions of bureaucracy and these latter definitions of tightness and define tightness as the degree of flexibility in the control system. Tightness can be created in two ways: 1) increasing the extent or scope of the MCS or 2) expanding the level of tolerance for deviations from the MCS. In the first case, tightness is achieved by creating more controls, more rules, and more procedures. We call this explicit tightness. In the second case, tightness is achieved by minimizing the difference in scope between the actions defined by the control system and those deemed acceptable within the organization. Tightness created by decreasing the level of tolerance for deviations from the MCS we call implicit tightness. Defined in this way, the presence of work tasks with difficult to define processes and/or outputs does not preclude the use of bureaucratic controls such as behavior and output control. Rather, each type of control (behavior, results, personnel, cultural) can be applied with varying levels of explicit and implicit tightness to suit the task at hand.

The resulting typology is illustrated in Figure 2.02. The figure is similar to the typology of Adler and Borys (1996) in that it provides the firms with two additional combinations of controls for their management control system. However, while in Adler and Borys' their model focusses on the attitudinal outcomes of control, and thus leave the choice of control as external to their model, we suggest that by varying these two forms of tightness the firm can address both the nature of the work challenge and the nature of the individual challenge in professional service firms.

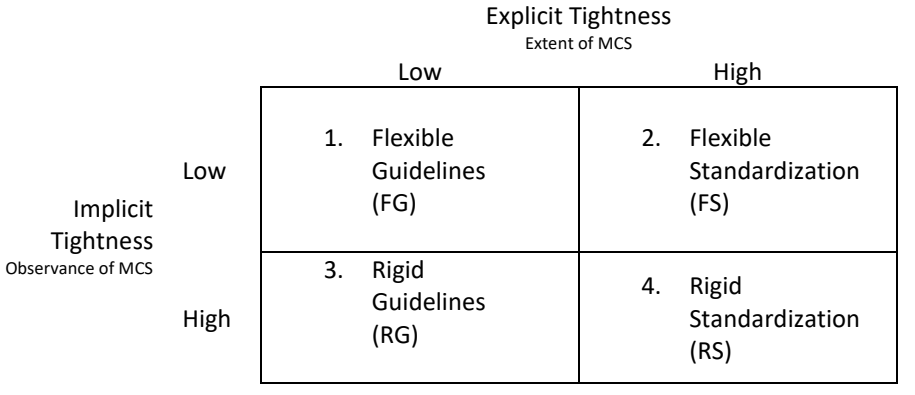


Figure 2.02: Conceptual Model of Control Tightness

Cell 4 in Figure 2.02, *rigid standardization*, is synonymous with the coercive form of control where the extent of rules and the degree to which those rules are observed is high. As predicted by the models of Ouchi (1977, 1979) and Adler and Borys (1996), *rigid standardization* is likely to be problematic for professional service firms due to the nature of the work challenge and the nature of the individual challenge. The nature of the work in professional service firms will make it difficult to standardize work processes and professionals may be highly resistant to this type of standardization suggesting that this form of control is unsuitable for professional service firms.

Cell 1, *flexible guidelines*, is akin to Ander and Borys' (1996) organic control, where there are few rules and observance of these rules is low. *Flexible guidelines* presents few problems with respect to the nature of the work challenge and the nature of the individual challenge because there is little codification and therefore there is also little resistance to the MCS. This approach is analogous to Mintzberg's (1993) notion of professional bureaucracy and Greenwood et al.'s (1990) professional partnership (P^2) model where professionals are afforded considerable autonomy with minimal formalization and control is achieved primarily through social- and self-control.

Cell 2, *flexible standardization*, and cell 3, *rigid guidelines*, both represent enabling or flexible forms of control which provide potential solutions to the both the nature of the work and individual challenges. *Flexible standardization* combines a large number of rules with low observance of these rules. The large number of rules addresses the nature of the work challenge by not requiring firms to create rules or procedures to cover all contingencies. Instead, the firm can create rules for a variety of contingencies, but allow the individual the flexibility to adapt these rules to the

situation at hand. The flexibility afforded to the employee also addresses the individual challenge, since the employee maintains autonomy to exercise their professional judgement. Conversely, the *rigid guidelines* approach combines a low number of rules with strict observance of these rules. While observance is strict, which would appear to detrimental to individual autonomy and present problems for the individual challenge, the relatively small number of rules serves as broad guidelines or general principles to be observed which allow to individual considerable leeway in their work and therefore are unlikely to be met with individual resistance. In addition, such rules address the nature of the work challenge because the rules do not have to be specific and therefore do not have to address all potential contingencies making them suitable for routine and non-routine tasks. Therefore, both *flexible standardization* and *rigid guidelines* can be seen as a form of enabling control in that they provide additional information for decision making while maintaining the autonomy necessary for adaptability and flexibility.

The deconstruction of Adler and Borys' (1996) commonly used definition of formalization into two components has been proposed and utilized in the literature previously, and is commonly referred to as codification (explicit control tightness) and rule enforcement (implicit control tightness), respectively (Aiken and Hage, 1966, 1971). However, studies which measure these two aspects of formalization often combine the two constructs into a single summary measure (Cohn and Turyn, 1980; Kaluzny et al., 1974) or they measure the two aspects separately but fail to examine the interaction between these two aspects of formalization (Aiken and Hage, 1966, 1971; Hage and Aiken, 1967a, 1967b; Hall, 1961, 1963; Kim, 1980). Such application of these constructs may obscure the relationship between them if their joint effect influences organizational outcomes (Bodewes, 2002). We argue that professional service firms balance their need for efficiency with the need for flexibility by modifying both explicit and implicit tightness of mechanisms or control to suit the control challenges presented by the PSF characteristics.

While increased use of bureaucratic measures can improve efficiency, in situations where the nature of the work is ill-suited to bureaucratic mechanisms or control and/or the ability of professionals to resist bureaucratic mechanisms is particularly strong, this drive for efficiency will need to be tempered by balancing the implicit and explicit tightness of these controls. Balancing the explicit and implicit tightness of bureaucratic forms of control in these situations should not only make it easier for firms to apply bureaucratic forms of control to non-routine tasks, it should also allow firms and individuals to benefit from the controlling and coordinating function of bureaucracy while limiting the negative attitudinal outcomes which may result from bureaucratic forms of control. This paper focuses on how firms design their

management control system in response to distinct PSF characteristics which present challenges for the application of bureaucratic forms of control. In the following section, we develop our hypotheses with respect to these characteristics and their impact on explicit and implicit control tightness.

3 Hypothesis Development

We now develop hypotheses based on our conceptual model of control tightness. Our model suggests that firms modify explicit and implicit forms of control to suit their unique characteristics. We first examine hypotheses which predict the direct relationship between implicit and explicit forms of control. We then turn our attention to the unique characteristics of PSFs and their impact on explicit forms of control as well as the interaction between these characteristics and control tightness.

3.1 Implicit Control

Consistent with the traditional definition of formalization as both the extent of rules and the extent to which they are enforced, we argue that the direct effect of implicit control tightness on explicit control tightness will be positive. This assertion is supported by some of the findings in the previous literature which show positive correlations between job codification (explicit control tightness) and rule enforcement (implicit control tightness) (Agarwal, 1993; Agarwal and Ramaswami, 1993). We reason that, ceteris paribus, because implementing controls is costly, firms will be selective in the controls that they choose to implement and when they choose to implement controls, they will tend to enforce those controls strictly. This leads to a positive relationship between implicit and explicit forms of control as predicted by the following hypotheses:

H1a: Implicit behavior control tightness is positively associated with explicit behavior control tightness.

H1b: Implicit results control tightness is positively associated with explicit results control tightness.

H1c: Implicit personnel control tightness is positively associated with explicit personnel control tightness.

H1d: Implicit cultural control tightness is positively associated with explicit cultural control tightness.

3.2 PSF Characteristics

However, for professional service firms the costs and benefits to implicit and explicit forms of control may vary based on the extent to which they face the challenges of work and the individual. In order to improve our understanding of PSFs we must acknowledge the heterogeneity and homogeneity of factors within and between these firms (Malhotra and Morris, 2009; Von Nordenflycht et al., 2015) and the management challenges and opportunities that these characteristics present (Von Nordenflycht, 2010). Rather than advocating a singular definition of professional service firms, these scholars argue that professional service firms should be defined based on a continuum where some firms more closely resemble archetypical professional service firms. Therefore, we define professional service firms based on the degree to which they possess the unique PSF characteristics of task complexity, customer reliance, capital intensity, professionalized workforce and ownership structure, where one end of the continuum represents highly professionalized service firms (high task complexity, high customer reliance, low capital intensity, highly professionalized workforce and no outside ownership) and the other end of the continuum represents less professionalized firms (low task complexity, low customer reliance, high capital intensity, low professionalized workforce and outside ownership).

The PSF characteristics that we examine differ in the degree to which they present challenges with respect to work and/or the individual. Task complexity and customer reliance primarily present challenges with respect to the nature of the work, while capital intensity, professionalized workforce, and ownership structure primarily create challenges with respect to the individual. Based on the theoretical model we presented in section 2, we expect that firms will modify the levels of implicit and explicit control in their control systems in response to the degree to which they face the control challenges presented by these characteristics. In order to better understand these management challenges, we now discuss each of the PSF characteristics in turn.

3.2.1 Task Complexity

Task complexity is defined as extent of predictability and variety in the tasks to be performed for a given job position. Formal bureaucratic controls such as results and behavior controls are considered to be ill-suited to complex tasks (Abernethy and Stoelwinder, 1991) by impacting the predictability and variety of the tasks to be performed (Jaworski, 1993). Ouchi (1979) described these task features as task programmability and knowledge of the transformation process, while Perrow (1967) defined these features as task analyzability and number of exceptions. Generally speaking, more routine, repetitive, and predictable tasks are more effectively

controlled using formal control mechanisms such as behavior and results control, while non-routine, varied, and unpredictable tasks are more effectively controlled through non-bureaucratic controls such as culture and personnel controls.
For routine tasks, increased formalization through the use of bureaucratic forms of control improve efficiency and may also help create positive attitudinal responses to the control system by decreasing role ambiguity, or the discrepancy between job-related information available to the person and information needed by the person for adequate job performance (Kahn et al., 1964). The information provided by these controls can serve a coordinating function by providing guidance and direction for employees through the specification of duties, roles requirements, and goals of their job position (Rizzo et al. 1970). For the point of view of the employee, this ensures that the employee knows how to perform their job well and how their performance will be judged. From the point of view of the firm, this ensures that employees respond to routine situations in a manner congruent with organizational goals (Blau and Scott, 1962). In the absence of such guidance, employees are more likely to experience negative attitudinal responses such as role ambiguity and the resulting increased stress, anxiety, decreased job satisfaction, and decreased productivity (Chen et al., 2007; Kahn et al., 1964).

For non-routine or complex tasks, reliance on increased formalization may be problematic because complex tasks can be difficult to codify and because formalization increases the potential for negative attitudinal states. Non-routine tasks are more likely to deviate from existing rules, procedures, and goals than routine tasks. As a result, the employee is may be forced to choose between a number of rules and procedures which apply to a given situation in varying degrees. This is likely to contribute to role ambiguity because the employee is unsure of which rule or procedure to apply. In addition, strict adherence to established rules and procedures limits professional autonomy and may result in increased role conflict, or stress due to incompatibilities between performance and role requirements because the employee has to choose between applying a procedure which they know is not compatible with the situation or to modify the rules or procedures to best suit the situation but is in violation of the their role. As a result, for non-routine tasks we should see less application of bureaucratic forms of control due to the difficulty in codifying these tasks and the potential negative effects of decreased autonomy on role conflict and role ambiguity.

A number of studies from the literature appear to confirm these assertions. Rockness and Shields (1984) found that knowledge of the transformation process was positively associated with the use of behavior control in R&D departments. Similarly, in their examination of a variety of organizations Daft and Macintosh (1981) found that tasks with low analyzability were related to a low reliance on behavior controls such as standard operating procedures, programs, and plans. Difficult and highly variable tasks have been associated with a low reliance on results controls which compare quantitative measures of performance to expected measures of performance (Hirst, 1983). In a research and development setting, Abernethy and Brownell (1997) found that tasks with many exceptions and low analyzability were associated with personnel controls, while high analyzability tasks with few exceptions were associated with accounting controls. The models of Perrow (1967) and Ouchi (1979), as well as the findings from the studies above, form the basis for our first set of hypotheses which are illustrated graphically in Figure 2.03:

H2a: Task complexity is negatively associated with explicit behavior control tightness.

H2b: Task complexity is negatively associated with explicit results control tightness.

H2c: Task complexity is positively associated with explicit personnel control tightness.

H2d: Task complexity is positively associated with explicit cultural control tightness.

However, the relationship between task complexity and MCS appears to be more nuanced. A review of case studies from a variety of professional service firms (law, accounting, medicine, consulting, architecture, software development) appear to suggest that many of these firms use behavior controls in the form of standardized work procedures, methodologies, protocols and templates (Alvesson and Kärreman, 2004; Briscoe, 2007; Brivot, 2011; Canavan, 2013; Ditillo, 2012; Morris and Empson, 1998; Winch and Schneider, 1993). While these findings support the notion of bureaucratization of professional service firms proposed by Scott (1965) and others, they appear paradoxical as theory suggests that formal controls measures are both ill-suited to the nature of complex work and to the professionals' preference for autonomy.

One explanation for the use of bureaucratic controls measures may be that professional work, or some aspects of professional work, may be much more routine than once thought, suggesting that the use of bureaucratic control measures may be

indicative of their application to routine aspects of professional work. For example, in a study of a top management consulting firm Alvesson (2003) found that the consultants viewed 80% of their job as routine. As discussed above, if a large portion of professionals' tasks are in fact routine, then these routine tasks provide a good match between the characteristics of the task and bureaucratic control measures. In addition, when bureaucratic control measures are well matched to the nature of the task, then the attitudinal response of employees is more likely to be positive (Adler and Borys, 1996). Therefore, for routine (non-complex) tasks we expect firms to benefit from the application of bureaucratic control measures. Furthermore, standardizing routine aspects of complex work can also improve performance on complex aspects of work by for example, improving efficiency of routine tasks leaving more time for complex tasks (Jaakkola, 2011) or by serving as memory aids to free up cognitive processing ability for more complex tasks. Therefore, the use of bureaucratic measures by PSFs may simply be the result of codification of more routine tasks.

Another explanation which emerges from the PSF literature is that when faced with high levels of task complexity, firms introduce greater flexibility into the control system in order to address the difficulty in applying bureaucratic measures of control and the negative attitudinal outcomes these forms of control may foster. By varying the extent and scope of formalization (explicit control) with the extent to which the formalization is enforced (implicit control) firms with high task complexity can reduce the negative consequences of a controlling MCS and promote the enabling roles of the MCS. This combination of controls can reduce both the nature of the work problem and the nature of the individual problem. A number of case studies from the PSF literature appear to support this idea of a combination of formalization and flexibility and find that the use of bureaucratic form of control is coupled with a greater tolerance for deviation from these controls (Alvesson and Kärreman, 2004, Briscoe, 2007; Brivot, 2011; Canavan, 2013; Jaakkola, 2011; Kärreman et al.; 2002; Kärreman and Alvesson, 2004; Winch and Schneider, 1993).

One subset of firms appears to do this by combining extensive use of bureaucratic measures (high explicit control) with a high tolerance for deviation from these measures (low implicit control). For example, Alvesson and Kärreman (2004) find that "the methodology [employed by the case study organization] is not expected to be used as a prescription… Several standardized work procedures are typically suggested for the same task, and individual consultants are expected to exercise their judgement in actual implementation, giving them plenty of discretion" (p. 430). Similarly, in a tax consulting firm, one manager described their manuals as "a listing of techniques, which we use to help stimulate our thinking about how to deal with particular issues.

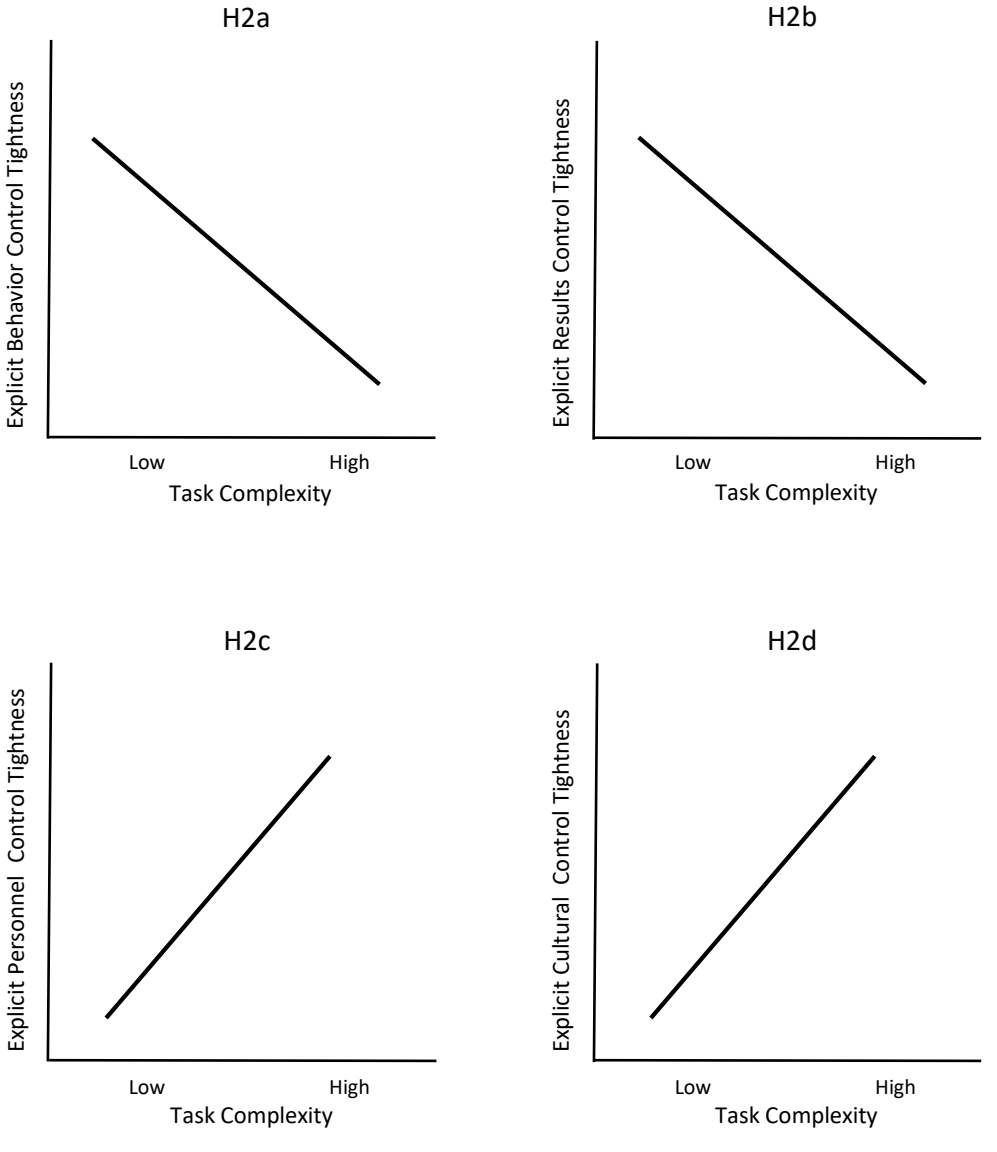


Figure 2.03 Graphical Representation of Hypotheses H2a-H2d

Using the analogy of a map, our manuals do not help you to plan the whole journey but they will help you to know where to go once you've reached the right neighborhood" (Morris and Empson, 1998 p. 619). In his study of physicians, Briscoe (2007) also found that "none of the organizations used protocols as binding rules governing physician behavior" (p. 304).

Another subset of professional service firms appears to combine low levels of formalization (low explicit control) with strict adherence to controls (high implicit control). Though we found relative less mention of these types of firms, a number of studies focus on what they terms "elite", "high-end", "renowned" or "high reputation" professional service firms. These types of firms tended to be described as having a flat structure, with little to no hierarchy and tended to focus on unique, customized, innovative, and prestigious work (Canavan, 2013). For example, at The Law and Economics Consulting Group (LECG), a global expert service and consulting firm, professionals are provided with extensive autonomy in their work, and control is achieved through a transparent pay-for-performance compensation model which sets compensation as a fixed percentage of the professional's bill rate combined with an at-will contract that is terminable on notice (Teece, 2003). Quality of work is assured as bill-rate hours are approved by clients and budget overruns lead to decreases in compensation. Professionals who fail to perform are simply not compensated and are terminated or leave of their own accord. Similarly, Netflix has often been touted as an example of a high performing company which has "no rules" (Kruse, 2016), but their unlimited vacation policy and lack of formal expense or travel policy is combined with an emphasis on high performance, where "adequate performance gets a generous severance package" (Hastings, 2009).

The presence of these two broad types of professional service firms appear to suggest that in PSFS a high degree of task complexity may be associated with either a high degree of standardization which is loosely applied, or a low degree of standardization which is then tightly applied. Whereas when task complexity is low, tasks are routine and programmable and the efficiency gains to increased formalization are high. In addition, the negative attitudinal responses of professionals to increased bureaucratic control is diminished because bureaucratic forms of control fairly closely match the routines of the task and are therefore unlikely to lead to role ambiguity or role conflict. Therefore, low task complexity firms design their control system to maximize efficiency gains from increased control by implementing relatively high levels of both explicit and implicit control.

In contrast, when task complexity is high, increased flexibility in the control system is necessary in order to cope with a large variety of unpredictable tasks as well as to cope with the increased risk of role conflict when bureaucratic control measures prove incompatible with the task at hand. In this case, we predict that firms will employ one of two strategies to create flexibility in the system. First of all, firms may increase the extent and scope of bureaucratic forms of control (high explicit tightness) but tolerate greater deviations from established rules, procedures, and goals (low implicit tightness). Secondly, firms limit the extent and scope of bureaucratic forms of control (low explicit tightness) but tolerate little to no deviations from these controls (high explicit tightness), which leads to the following hypotheses (illustrated graphically in Figure 2.04):

H2e: There is a negative interaction between task complexity and implicit behavior control tightness on explicit behavior control tightness.

H2f: There is a negative interaction between task complexity and implicit results control tightness on explicit results control tightness.

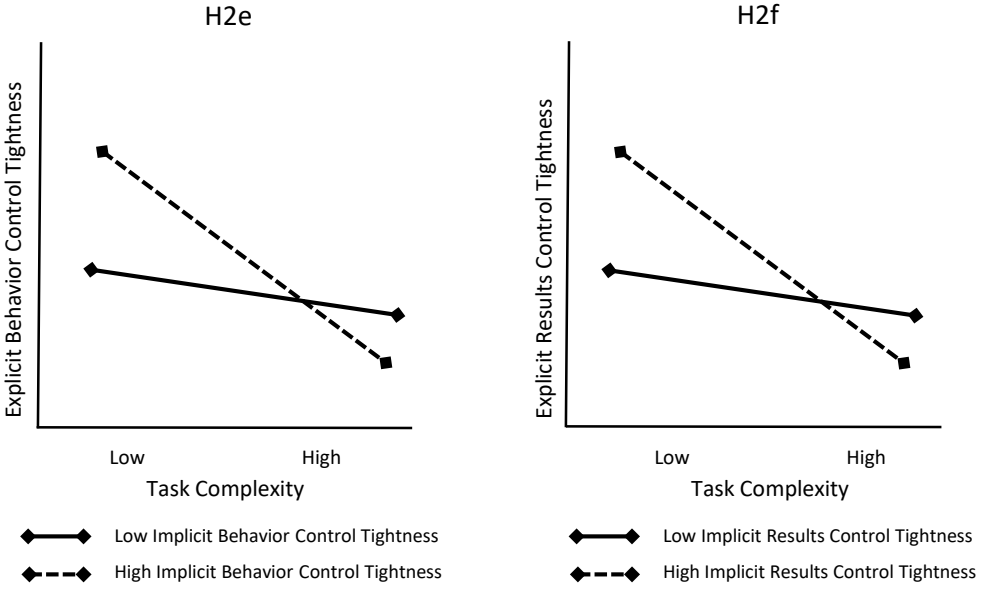


Figure 2.04 Graphical Representation of Hypotheses H2e and H2f

Unlike bureaucratic forms of control such as results and behavior control, non-bureaucratic forms of control such as personnel and cultural controls are thought to be more suitable in controlling the variety and unpredictability stemming from task complexity. When it is more difficult to define the desirable behaviors or outputs of job performance, then a useful alternative may be to align employee preferences with those of the organization either through personnel or cultural controls.

Personnel controls are control mechanisms aimed at modifying the inputs into the control system to improve performance. We focus on one aspect of personnel controls, employee selection, since this is considered to be particularly important for PSFs due to their high reliance on human capital. By controlling the antecedent conditions of performance such as "the knowledge, skills, abilities, values, and motives of employees" (Snell, 1992; p. 297) personnel controls can reduce the need for behavior or output controls. Through more extensive screening of employees before their entry into the organization (Campbell, 2012), the organization can maximize employee capabilities and goal congruence between the employee and the organization.

However, extensive screening of employees is not without costs and therefore, the firm must balance the costs of a more extensive system with the benefits of greater goal congruence. Traditionally, as modeled in hypothesis H1c, under low task complexity, the benefits to a more extensive personnel control system are diminished since employees are relatively interchangeable and tasks can be reasonably well controlled through behavior or results controls and thus the costs of a more extensive personnel control system may not be warranted. Under high task complexity, the difficulty in applying bureaucratic forms of control suggests that the costs of a more extensive personnel control system are more likely to be justified, and therefore it is hypothesized that firms with higher task complexity will tend to choose tighter explicit personnel control.

However, just as increasing levels of task complexity make it difficult to codify measures of job performance; it can also make it difficult to identify the factors which predict employee success. Employee selection systems are typically designed to measure the technical competence of applicants (knowledge, skills) as well the personality characteristic related to job performance (Schmitt and Chan, 1998) in order to predict employee performance on the job. However, even when taken together, these measures only predict a portion of job performance. The remainder, which cannot be explained, is what is referred to as "irreducible unpredictability" or the determinants of performance which are simply not knowable at the time of hiring (Highhouse, 2008). Just as the firm must devise a way to deal with the variety and

unpredictability of job tasks, so to must it devise a way to deal with the unpredictability in employee selection.

Based on our theoretical model, PSFs may do this much in the same way that they deal with the problems of unpredictability and variety when using behavior and results controls. First of all, the firm may create an extensive hiring process (high explicit personnel control tightness) in an effort to predict as much of job performance as possible, but allow the hiring person discretion in the application of these criteria (low implicit personnel control tightness). This strategy focuses on predicting as much of job performance as possible, while allowing the person responsible for the hiring decision to rely on experience, intuition or gut feeling to address the unpredictable aspects of job performance (see Figure 2.05). Alternatively, the firm may create a less extensive hiring process (low explicit personnel control tightness) and combine this with strict adherence to these limited criteria (high explicit personnel control tightness). This strategy focuses on identifying key aspects of job performance and requiring strict adherence to these measures, but allows for hiring discretion in the application and evaluation of additional measures. We argue that a combination of high implicit and high explicit personnel control tightness is high complexity firms is unlikely because it does not allow any discretion in hiring practices and thus does not allow the firm to take into account the unpredictable aspects of job performance. To the extent that these unpredictable aspects are increasing with task complexity, this lack of discretion could lead to an overly rigid MCS. We therefore predict the following:

> **H2g:** There is a negative interaction between task complexity and implicit personnel control tightness on explicit personnel control tightness.

Firms can also choose increase goal congruence between the professional and the organization through a process of socialization after the professional has entered the firm. Cultural control is the systematic, planned, and intentional process of socialization that the firm has implemented in order to create and maintain a corporate culture to achieve organizational ends (Smircich, 1983). We define explicit cultural control tightness as the extent of use of employee socialization procedures as part of the management control system and implicit cultural control tightness as the degree to which the employees' norms, values, and beliefs are tolerated to deviate from those of the organization. Tight explicit cultural control indicates that the firm makes extensive use of employee socialization procedures such as team-building and social events. Tight implicit cultural control implies a "strong" culture where beliefs and values are shared relatively consistently throughout an organization (Brown, 1996).

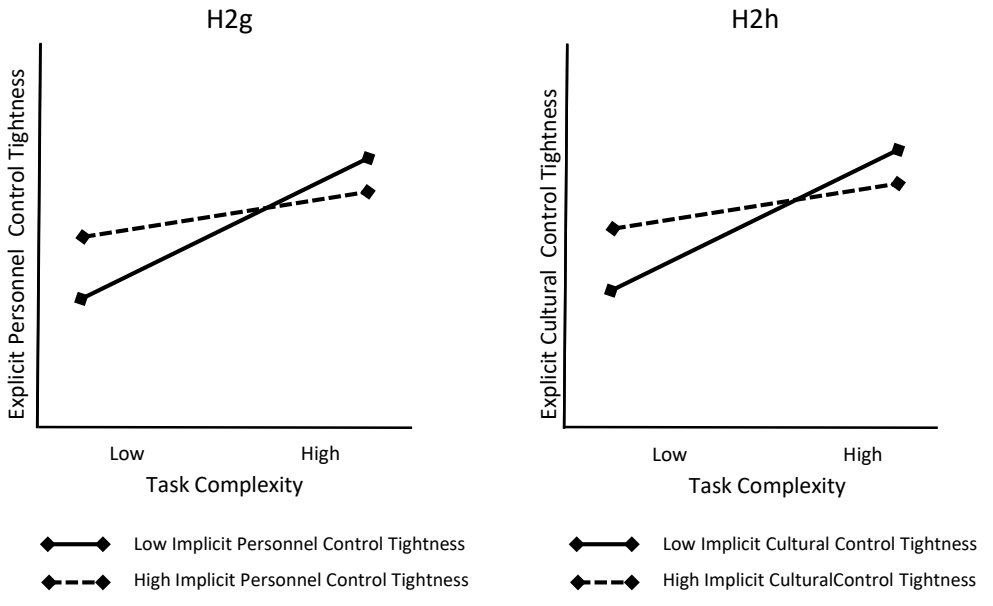


Figure 2.05 Graphical Representation of Hypotheses H2g and H2h

Tight implicit and explicit cultural control would indicate that socialization procedures are extensive and employee and firm values are homogeneous. While such a homogeneous culture may create may serve to create consistency and efficiency in the short term, it is often resistant to change and adaptation (Denison and Mishra, 1995). This may limit the ability of the firm to respond to the complex nature of the tasks in PSFs. While some research suggests that concerns about cultural matching are of great importance for firms and often outweigh concerns about productivity (Rivera, 2012), we suggest that firms which high task complexity are more likely to introduce flexibility into their cultural control system by applying looser implicit cultural control tightness in order to balance the need for consistency with the desire to remain responsive and adaptive to the complex tasks (see Figure 2.05).

Less complex firms have a less need for this flexibility because of the relatively stable nature of their tasks. Therefore, they are more likely to benefit from the "strong" culture created by tight implicit cultural control. When taken together, this suggests that for a given level of explicit cultural control tightness, high task complexity firms will have lower implicit cultural control tightness as predicted in the hypothesis below:

H2h: There is a negative interaction between task complexity and implicit cultural control tightness on explicit cultural control tightness.

3.2.2 Customer Reliance

Unlike manufacturing firms, service firms usually involve some degree of contact with the client consuming the service. The service literature has long acknowledged the importance of the involvement of the client in the production of the service (Chase, 1978; Kotler and Armstrong, 2010; Larsson and Bowen, 1989; Mills and Morris, 1986; Solomon et al., 1985), and for professional service firms, the contribution of the client is often essential to successful provision of the service both in terms of quality and client satisfaction (Bettencourt et al., 2002; Glückler and Armbrüster, 2003). We define customer reliance as the degree to which the organization relies on the customer to provide the outside resources necessary for service provision. In other words, customers serve as co-producers or "partial-employees" of the organization and their contribution of both codified (information) and tacit knowledge (firm culture) forms a critical part of the service provision.

Customer reliance introduces variability into the service provision in terms of the timing and quality of the inputs provided by the customer. This creates additional uncertainty in service provision which can be more difficult to control (Bateson, 2002; Chase, 1978, 1981; Mills and Morris, 1986; Skaggs and Youndt, 2004; Tansik, 1990). We argue that firms deal with this uncertainty much in the same way as with the uncertainty created by task complexity through the reduction of bureaucratic forms of control.

As with task complexity, the variability in client's demands makes it difficult to standardize the rules, procedures and outcomes for service provision. Use of bureaucratic forms of control for non-routine tasks may diminish the ability of employees to respond to non-routine tasks (Kelley et al., 1996; Peccei and Rosenthal, 2001) or cause employees to ignore customer requests as they "mindlessly" follow organizational scripts (Humphrey and Ashforth, 1994). As a result, firms may focus on the use of non-bureaucratic forms of control in response to a high degree of customer reliance which leads to the following hypotheses (illustrated in Figure 2.06):

H3a: Customer reliance is negatively associated with explicit behavior control tightness.

H3b: Customer reliance is negatively associated with explicit results control tightness.

H3c: Customer reliance is positively associated with explicit personnel control tightness.

H3d: Customer reliance is positively associated with explicit cultural control tightness.

However, as with task complexity, flexible use of bureaucratic controls may help to mitigate the negative consequences of bureaucratic forms of control and provide additional benefits of coordination and improved decision-making. Researchers argue that to effectively manage boundary-spanning service employees such as professionals, firms should maintain flexible work climates (Schneider, 1980) and increase employees' discretion (Bowen and Lawler 1992; Kelley 1993). Flexible use of bureaucratic forms of control can allow professionals to respond the customer requests while also assuring that employees behave in a manner which is consistent with organizational goals and brand image.

The use of behavior controls such as scripts or results controls such as milestones can provide employees with guidance in their relations with customers which can reduce role ambiguity. In addition, communication of these scripts or milestones to customers can help improve task clarity for customers resulting in more effective co-production (Bettencourt et al. 2002; Lengnick-Hall, 1996; Lovelock and Young, 1979; Meuter et al. 2005). Provided these controls are used flexibly, we should expect that

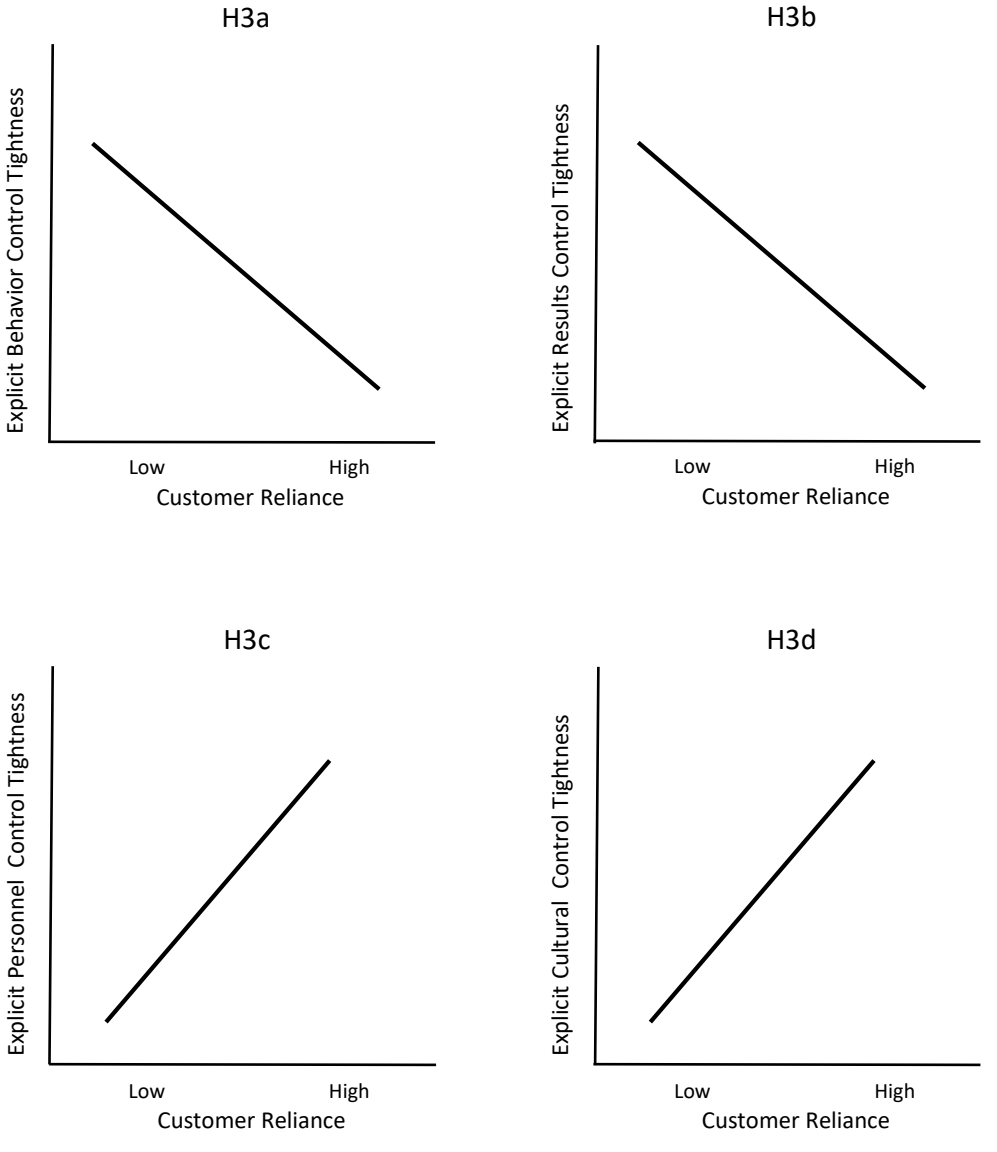


Figure 2.06 Graphical Representation of Hypotheses H3a-H3d

professionals maintain the ability to respond to customer requests. As with task complexity, we predict that PSFs allow for flexibility in the MCS by either combining high implicit and low explicit control or by combining low implicit and high explicit control, as summarized in the following hypotheses (illustrated in Figure 2.07):

H3e: There is a negative interaction between customer reliance and implicit behavior control tightness on explicit behavior control tightness.

H3f: There is a negative interaction between customer reliance and implicit results control tightness on explicit results control tightness.

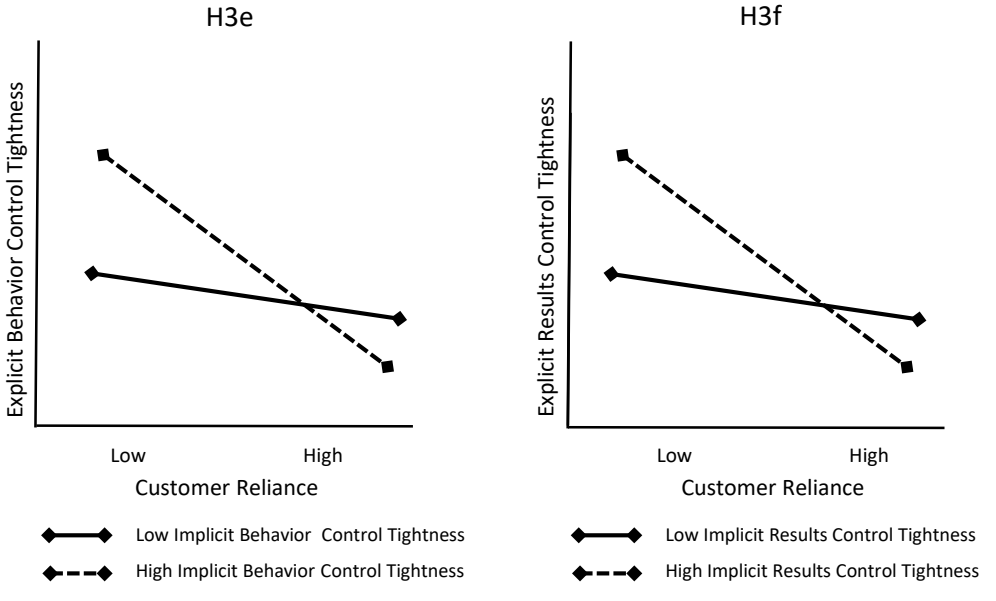


Figure 2.07 Graphical Representation of Hypotheses H3e and H3f

Firms are expected to make greater use of HRM practices when human capital is seen as particularly vital to firm success (MacDuffie, 1995). While human capital is seen as a critical input for PSFs as a whole, customer reliance further increases this importance due to the importance of interaction with the professional as the basis for customer satisfaction and perceived service quality (Bettencourt et al. 2002; Lengnick-Hall 1996). Therefore, as predicted in hypothesis H3c, we expect explicit personnel control to increase as customer reliance increases.

Furthermore, as argued in the section on task complexity above, the firm will deal with the unpredictability of employee selection by introducing flexibility in the personnel control system. That is, firms with high levels of customer reliance will combine high/low forms of explicit and implicit personnel control in order allow for more discretion in employee selection (see Figure 2.08). We propose that this discretion is even more important in high customer reliance firms than in high complexity firms due to the importance of interpersonal skills in close client relationships and the difficulty in evaluating interpersonal skills with objective measures. This suggests that firms allow hiring managers greater discretion to rely on their intuition in their assessment job candidates, rather than relying solely on strictly enforced objective criteria, as suggested by the following hypothesis:

H3g: There is a negative interaction between customer reliance and implicit personnel control tightness on explicit personnel control tightness.

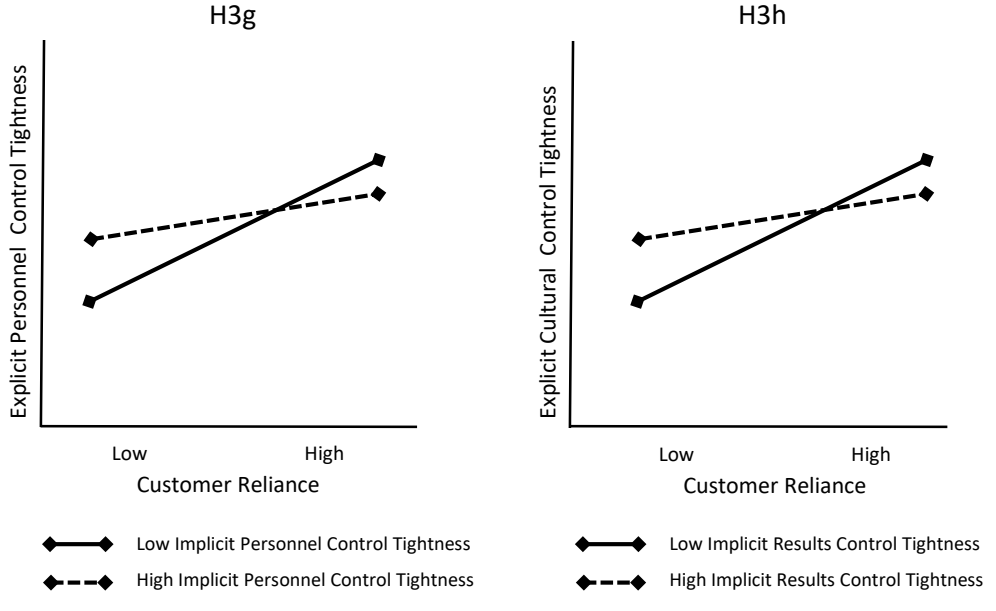


Figure 2.08 Graphical Representation of Hypotheses H3g and H3h

As outlined in hypothesis H3d, we expect that cultural control will increase with customer reliance partly as a substitution for formal controls. However, as with task complexity, we suggest that high customer reliance firms will utilize lower levels of implicit cultural control tightness in order to for greater diversity in values which should permit high customer contact PSFs to modify their values in response to the changing needs of customer over time. Since lower customer reliance firms do not face these changing customer demands to the same degree, they are more likely to benefit from the consistent values shared throughout the organization. Therefore, as with task complexity, we expect that for a given level of explicit cultural control tightness, high customer reliance firms will have lower implicit cultural control tightness than low customer contact firms (see Figure 2.08).

H3h: There is a negative interaction between customer reliance and implicit cultural control tightness on explicit cultural control tightness.

3.2.3 Capital Intensity

Capital intensity is defined as the degree of physical capital necessary for service provision. Physical capital can serve as a bonding mechanism for professionals by limiting their opportunities for alternative employment (Von Nordenflycht, 2010). Professionals who have fewer opportunities for alternative employment have relatively less bargaining power with respect to the firm and are less able to assert their preference for autonomy. As such, the push for autonomy from the professional's side is diminished. Furthermore, firms with higher capital intensity are arguably more amendable to bureaucratic forms of control since machines and equipment may be more amenable the creation of procedures for operation. Therefore, PSFs with high capital intensity can implement tighter bureaucratic control procedures without the same risks of retention and motivation problems that may occur at less capitally intense firms, which leads to the following hypotheses (see Figure 2.09).

H4a: Capital intensity is positively associated with explicit behavior control tightness.

H4b: Capital intensity is positively associated with explicit results control tightness.

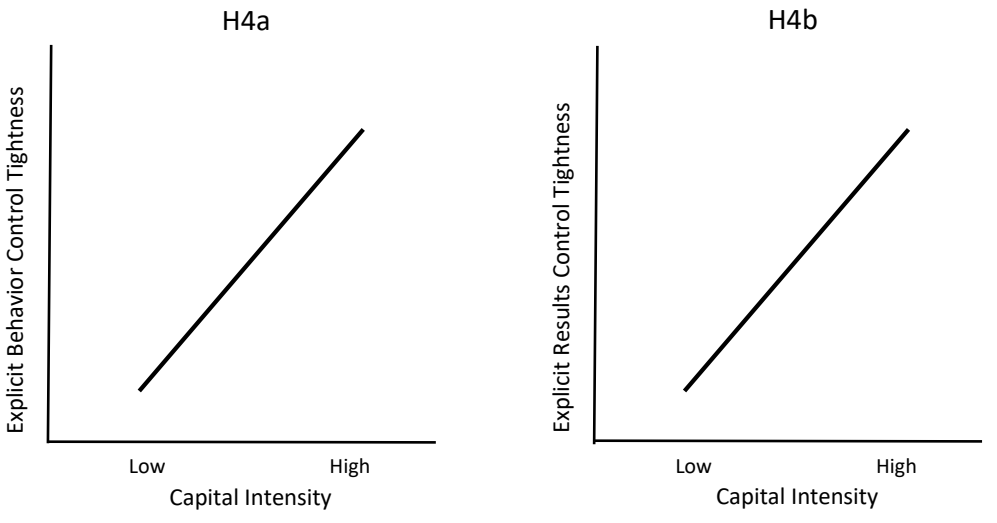


Figure 2.09 Graphical Representation of Hypotheses H4a and H4b

With respect to non-bureaucratic controls, it is difficult to predict a direct relationship between capital intensity and control tightness. On the one hand, because retention problems are reduced the costs of a tight personnel control system may not be justified and tight cultural control may not be necessary. On the other hand, capital intensity allows for the use of tighter formal controls in spite of the professionals preference for autonomy. The professional still dislikes the use of formal controls, but has limited power to assert this preference. In this case, tighter personnel control could serve to select individuals who are less averse to formal controls thereby maximizing the benefits of informal controls. Tighter explicit cultural controls could also serve to better socialize the individual to be more tolerant of the formals controls and reduce negative behavioral attitudes and dysfunctional behaviors. However, although capital intensity may reduce retention problems, it is unlikely to eliminate them completely and firm may still need to use informal controls to supplement the formal controls. We therefore present our hypothesis in the null form (see Figure 2.10):

H4c: There is no relationship between capital intensity and explicit personnel control tightness.

H4d: There is no relationship between capital intensity and explicit cultural control tightness.

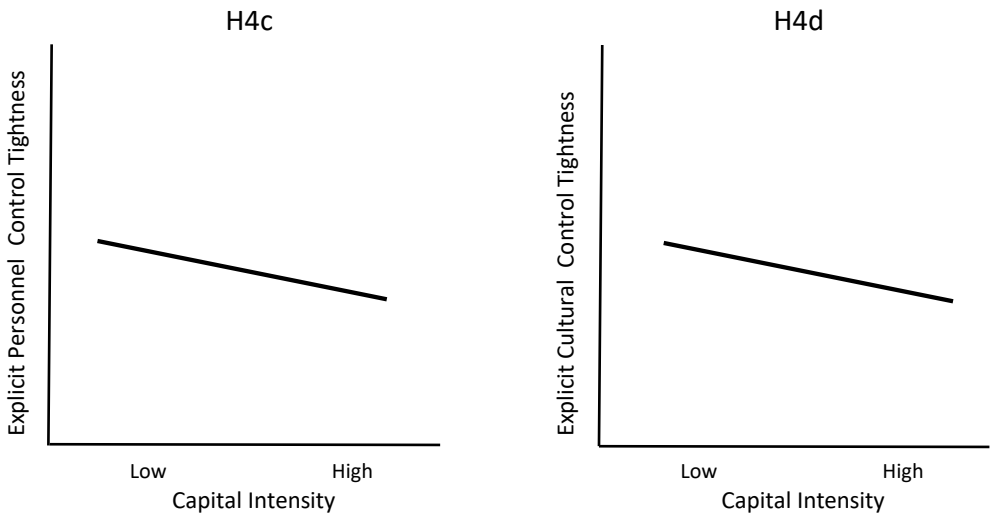


Figure 2.10 Graphical Representation of Hypotheses H4c and H4d

If we consider the joint effect of explicit and implicit forms of behavior and results control, we would expect that firms with lower capital intensity introduce greater flexibility into the control system relative to high capital intensity firms. Since lower capital intensity firms lack the bonding mechanism of capital, they are under greater pressure to accommodate the professionals' preference for autonomy and are more likely to suffer the negative effects of an overly tight control system. As a result, we predict the following (see Figure 2.11):

H4e: There is a negative interaction between capital intensity and implicit behavior control tightness on explicit behavior control tightness.

H4f: There is a negative interaction between capital intensity and implicit results control tightness on explicit results control tightness.

For personnel controls, the relationship is more complex. Tight implicit and explicit personnel control tightness would imply that the firm relies on strict hiring criteria but leaves little room for discretion in the hiring decision. However, even with high capital intensity, the nature of the work in the PSF remains complex and therefore the firm is still likely to prefer some discretion in the application of hiring criteria. As suggested above, we do not expect capital intensity to eliminate the retention problem entirely and both types of firms may still benefit from selecting candidates which better match their unique organizational configuration, therefore we suggest that both types of

firms implement similar levels of flexibility into their personnel control systems, as outlined in the hypothesis below (see Figure 2.11):

> **H4g:** There is no significant interaction effect between explicit personnel control tightness and capital intensity based on implicit personnel control tightness.

For cultural controls, presence of capital as a bonding mechanism may allow for greater divergence in values between the individual and the firm. Firms which lack capital as a bonding mechanism may put more emphasis on shared values to maintain consistency in beliefs and values throughout the organization. While high capital intensity firms may also benefit from "strong" culture, the presence of capital as a bonding mechanism makes the consistency of beliefs and values less of a necessity and therefore high capital firms are more likely to opt for lower implicit cultural control tightness for a given level of explicit cultural control tightness (see Figure 2.11).

> **H4h:** There is a negative interaction between capital intensity and implicit cultural control tightness on explicit cultural control tightness.

3.2.4 Professionalized Workforce

Professionalized workforce is defined as the degree to which the profession is formally organized and institutionalized. In highly professionalized occupations, a clearly defined body of knowledge exists independent of the employing organization to guide professionals in the execution of their work and the professional is attached to a governing body which is responsible for the standard setting, licensing and disciplinary action within the profession. These governing bodies serve to standardize the skills of professionals and can act as external forces of management control to the professional and can thus be seen as a surrogate form control to the organization. This outside source of control should reduce the need for formal controls within the organization. In addition, professional associations exist to protect and maintain the monopoly power of the profession by restricting entry to the profession, shaping legislative, licensing and regulatory activities (Hyde, 1954; Stevens, 1971) and defining work arrangements (Freidson, 1994). The power of the profession to exert power over

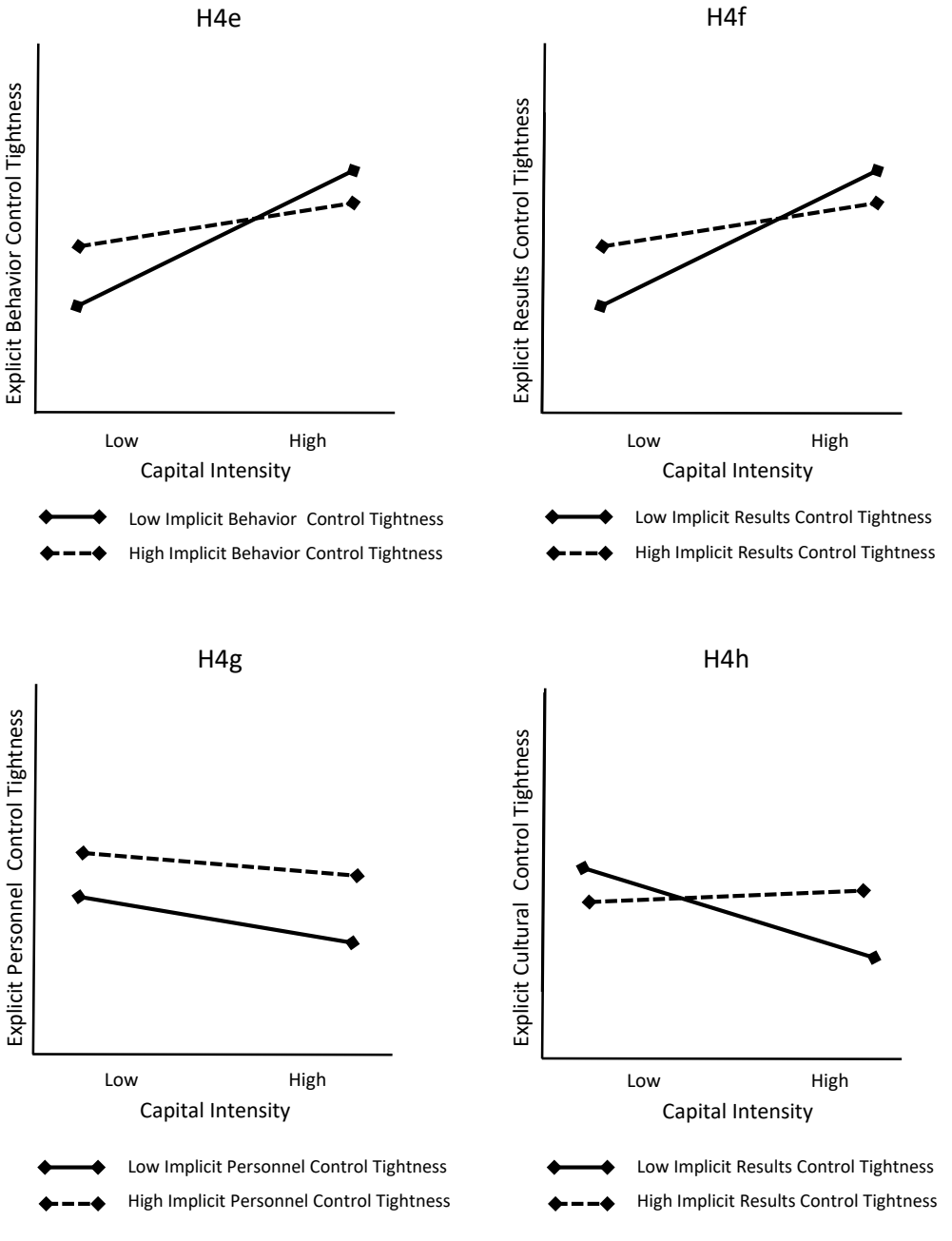


Figure 2.11 Graphical Representation of Hypotheses H4e-H4h

work arrangements can serve to maintain the professionals' preference for autonomy thereby also limiting the use of bureaucratic forms of control (Abernethy and Stoelwinder, 1995). Consequently, we predict the following (see Figure 2.12):

H5a: Professionalized workforce is negatively associated with explicit behavior control tightness.

H5b: Professionalized workforce is negatively associated with explicit results control tightness.

The presence of an external control system may decrease the need for bureaucratic internal controls, while the power of the profession may reduce the ability of the firm to use bureaucratic controls. To compensate for this relative lack of formal controls, firms in highly professionalized organizations may increase their use of personnel and cultural controls.

On the other hand, the standardized set of skills in highly professionalized occupations may reduce the need for an extensive personnel control system. In professionalized occupations candidates are essentially pre-qualified for the specific skills of the job through completion of their professional education, while in less professionalized occupations, the knowledge base of applicants may be more general and variable and firms may have to expand the personnel control system in order to better evaluate an applicant's job specific skills. Accordingly, we predict that more professionalized occupations have less extensive personnel controls (see Figure 2.12).

H5c: Professionalized workforce is negatively associated with explicit personnel control tightness.

Unlike personnel control, which takes place at a fixed point in time, cultural control is an ongoing process. Thus, even though professionals acquire a set of professional norms and values as part of their socialization into the occupation, the efficacy of professionalized workforce as a surrogate from of control is based on the expectation of ongoing mutual monitoring among professionals (Scott, 1982), and cultural control is designed to encourage mutual monitoring (Merchant and Van der Stede, 2007). We therefore suggest that firms with a highly professionalized workforce do not reduce the extent of cultural controls in order to encourage mutual monitoring (see Figure 2.12).

H5d: There is no relationship between professionalized workforce and explicit cultural control tightness.

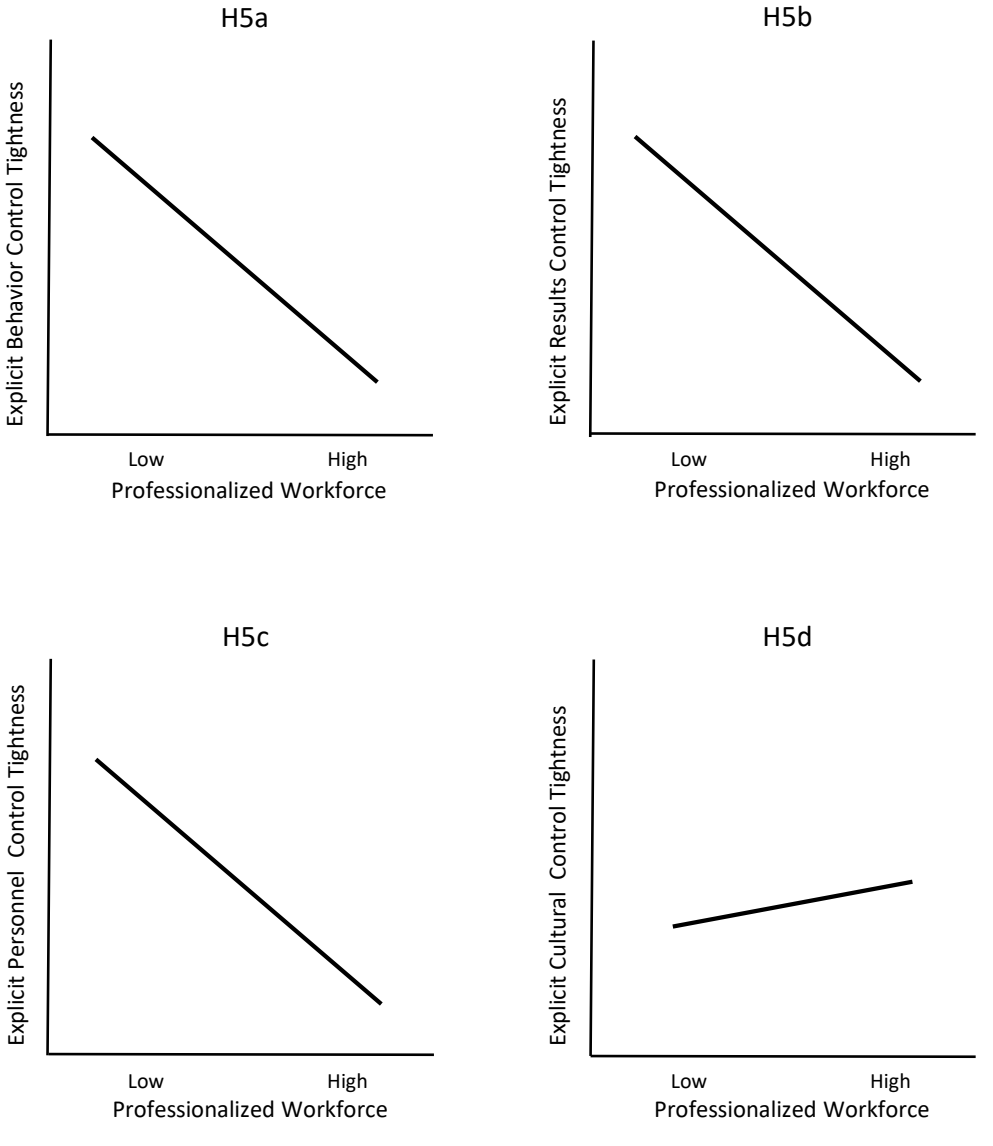


Figure 2.12 Graphical Representation of Hypotheses H5a-H5d

We argued above that professionalized workforce can serve as a surrogate to the firm's internal control system and we therefore expect explicit behavior and results control to be less tight in highly professionalized firms. Less professionalized firms lack this external control system and will therefore have greater uncertainty with respect to the actions of their employees. As a result, these firms need a tighter control system to deal with the complexity of the work while taking account the professionals' preference for autonomy. As with task complexity and customer contact, we argue that firms with low levels of professionalization do this by introducing flexibility into the system either combining high levels of explicit results/behaviors control tightness with low levels of implicit behavior control tightness or vice versa.

For highly professionalized occupations, we expect a similar relationship. Although we expect lower levels of explicit behavior and results controls for highly professionalized firms than for less professionalized firms since the professionalized workforce may substitute for the extent of controls, it seems unlikely that professionalized workforce can serve as a complete substitute for internal management controls. This would suggest that the use of explicit controls in highly professionalized firms will also need to be balanced with some degree of flexibility in the control system. In fact, highly professionalized firms may have a greater need for flexibility to prevent role conflict between professionalized norms and organizational norms. Therefore, while we expect highly professionalized firms to have lower implicit behavior/results control tightness for a given level of explicit results control tightness, suggesting an interaction effect (see Figure 2.13).

H5e: There is a negative interaction between professionalized workforce and implicit behavior control tightness on explicit behavior control tightness.

H5f: There is a negative interaction between professionalized workforce and implicit results control tightness on explicit results control tightness.

Similarly, for personnel control, while completion of professional education may partially substitute for an extensive personnel control system it is also unlikely to substitute fully. A portion of the candidate's success on the job will remain difficult to assess and we suggest that firms will balance the unpredictable aspects of job performance with increased flexibility in the personnel control system. Thus firms will tend to combine high explicit personnel control with low implicit personnel control and vice versa. While we predict that highly professionalized occupations may have less extensive personnel control systems in general, for a given level of explicit control

tightness highly professionalized firms will have to be more flexible than less professionalized firms because of the extensive process of socialization that professionals undergo as part of their education. Professionals in more professionalized fields are shaped by their professional norms, and if these norms conflict with those of the firm than they are more likely to experience role conflict than less professionalized professionals for whom these norms are less salient. Greater flexibility in the hiring process should allow the firm to assess to what extent the professional is likely to encounter such a conflict, while less discretion in hiring is needed for less professionalized occupations since the lack of a strong alternative role means that role conflict is less likely to be a problem (see Figure 2.13).

H5g: There is a negative interaction between professionalized workforce and implicit personnel control tightness on explicit personnel control tightness.

Finally, with respect to explicit cultural control we argued that a highly professionalized firm does not reduce the degree of explicit cultural control in order to encourage mutual monitoring. The extensive socialization process which professionals in highly professionalized occupations undergo as part of their education and training should lead to a greater convergence of values than less professionalized occupations which are not subject to a similar process of socialization. However, the strength of these professional values for highly professionalized firms and the power of professional organizations in serving the interests of professionals may mean that firms in highly professionalized occupations must tolerate greater divergence from firm values (see Figure 2.13). That is, these firms should have lower implicit cultural tightness for a given level of explicit cultural tightness.

H5h: There is no significant interaction effect between explicit personnel control and capital intensity based on implicit personnel control tightness.

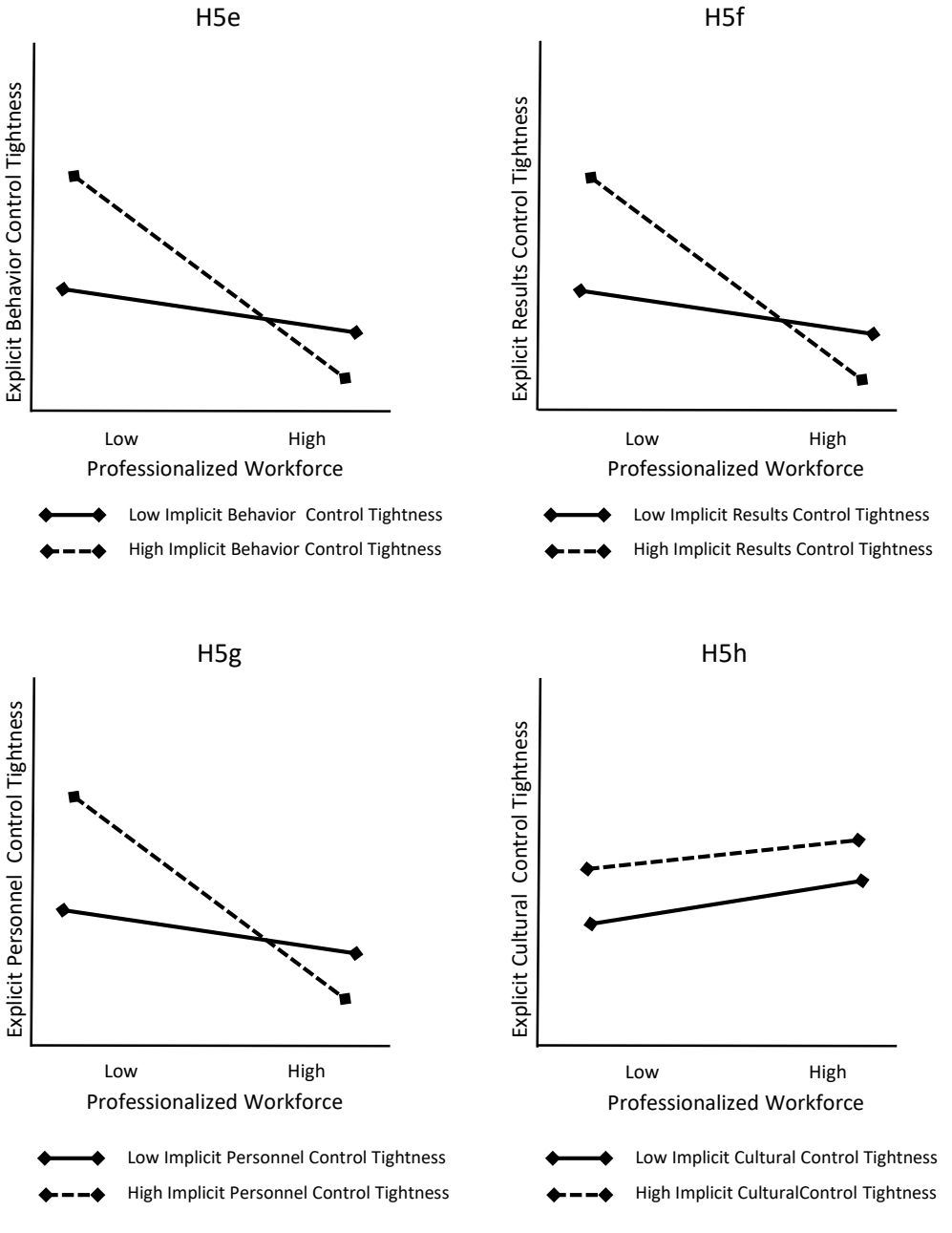


Figure 2.13 Graphical Representation of Hypotheses H5e-H5h

3.2.5 Ownership Structure

Ownership structure refers to the primary source of ownership of the organization, internal or external. Similar to professionalized workforce, ownership structure forms a surrogate for the control system of the organization. However, unlike professionalized workforce, the source of this control is internal rather than external to the firm.

Traditionally, inside ownership through organization as a partnership was seen the optimal form of governance for PSFs (Empson and Chapman, 2006). The application of bureaucratic forms of control in PSFs can be difficult and costly due to the complex and non-routine nature of the work (Jensen and Meckling, 1976). Inside ownership is thought to provide an alternative to bureaucratic forms of control by decreasing the costs and increasing the incentives to monitoring.

Inside ownership can reduce external agency costs and improve incentives for internal monitoring by making high-level employees owners of the firm. When professionals are also owners of the firm, they are better able to monitor lower-level professional because they possess the knowledge and experience necessary to evaluate the agent. In addition, professionals who are owners of the firm have a direct incentive to monitor lower-level professionals due to their ownership stake in the firm. Inside ownership may also reduce to need for accountability to outside investors, allowing for more freedom in the design of the management control system (Von Nordenflycht, 2010). By making ownership internal to the firm, owners can solve the problem of applying formal controls to complex work by increasing the incentives for mutual and self-monitoring (Fama, 1980; Leibowitz and Tollison, 1980). This suggests that inside ownership firms rely more on non-bureaucratic rather than bureaucratic forms of control. We therefore hypothesize the following (see also Figure 2.14):

H6a: Outside ownership is positively associated with explicit behavior control tightness.

H6b: Outside ownership is positively associated with explicit results control tightness.

H6c: Outside ownership is negatively associated with explicit personnel control tightness.

H6d: Outside ownership is negatively associated with explicit cultural control tightness.

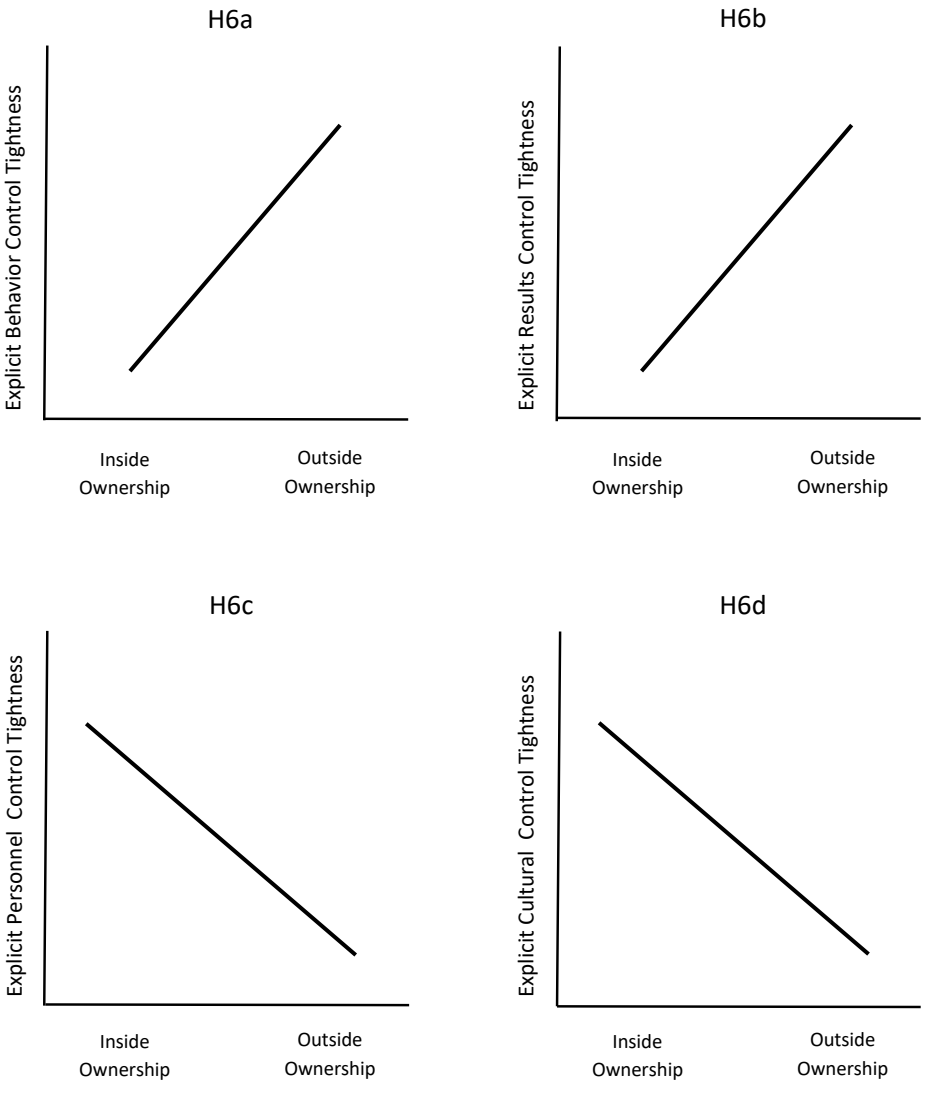


Figure 2.14 Graphical Representation of Hypotheses H6a-H6d

While historically the partnership form has been held up as an effective means of resolving the control problem in PSFs, in the past several decades, the professional service sector has undergone a number of changes which weakened the ability PSFs to rely on partnership as the sole means for controlling professional activity (Empson and Chapman, 2006). Increased PSF size, geographic dispersion, and competition have placed limits on the control to be achieved through non-bureaucratic forms of control. As a means of addressing financial pressures and coordinating a greater number and more diverse set of interests a more "corporate" style of partnership has emerged.

This "corporate" form of partnership, sometimes referred to as managed professional business or (MPB), utilizes more formal mechanisms of control for financial outcomes, human resource development and knowledge management. The resulting professional service firm is more centralized and consciously coordinated (Pinnington and Morris, 2003). Increased formalization is found in performance management and target setting as well as more clearly defined standards of quality and standardized processes. However, while research appears to confirm the presence of more bureaucratic forms of control in PSFs, many of the informal, non-bureaucratic control processes appear to persist (Cooper et al., 1996; Pinnington and Morris, 2003). While some argue that bureaucratic forms on control are being sedimented or layered on top of the old informal style of partnership resulting in changes to the PSF archetype (Cooper et al., 1996), others argue that the old archetype persists and increased formalization is made to be compatible with the traditional informal means of governance (Pinnington and Morris, 2003).

In line with this latter view, we suggest that PSFs attempt to create compatible control systems by balancing the increased use of bureaucratic forms of control with greater flexibility in the use of these controls. By combining high explicit and low implicit or low implicit with high explicit forms of bureaucratic control, PSFs can improve the coordination of the firm while still retaining the benefits of the partnership form. We argue that inside ownership firms introduce more flexibility into the control system in order to allow for this compatibility, whereas outside ownership firms lack the benefits of the partnership structure and will therefore introduce lower levels of implicit flexibility for a given level of explicit tightness and vice versa (see also Figure 2.15).

H6e: There is a negative interaction between outside ownership and implicit behavior control tightness on explicit behavior control tightness.

H6f: There is a negative interaction between outside ownership and implicit results control tightness on explicit results control tightness.

As much as we expect PSFs to increase their use of bureaucratic forms of control in response to competitive pressure, we also expect they will increase the use of personnel controls. As competition in the PSF sector has increased, so has the importance of the quality of human capital, and therefore we expect that PSFs will place greater emphasis on hiring the best candidates. As with bureaucratic forms of control, PSFs will need to balance personnel controls with some degree of flexibility in order to account for the unpredictable factors of job performance. However, we have no a priori reason to believe that inside ownership firms will need greater flexibility in the personnel control system than outside ownership firms. Both types of firms will most likely need to select employees based on some degree of fit with the organization in order to account for the use of bureaucratic forms of control. Whether inside ownership firms focus more on fit than outside ownership firms is thus an empirical question leading to our hypothesis in the null form (see Figure 2.15):

H6g: There is no significant interaction effect between explicit personnel control tightness and implicit personnel control tightness based on ownership structure.

Finally, with respect to cultural control, we argue that firms with inside ownership are less likely than firms with outside ownership to introduce flexibility into the cultural control system. Whereas flexibility in the application of bureaucratic forms of control can create an MCS that is more compatible with professional norms and the partnership form of governance, flexibility in cultural control allows for greater deviation in values between the firm and the individual. Divergence in individual and firm values may be particularly costly for inside ownership firms if, as Pinnington and Morris (2003) suggest, the firm continues to rely on a collegial and consensus-based approach to decision making. They suggest that bureaucratic forms of control are exercised in addition to, and not as a substitute for, cultural controls. As such, we suggest that while the increase in bureaucratic forms of control is useful in providing coordination and direction, convergence of firm and individual values is still essential to provide for the collegiality and consensus-building that allows these firms to reap the rewards of inside ownership. Since outside ownership firms are less dependent on

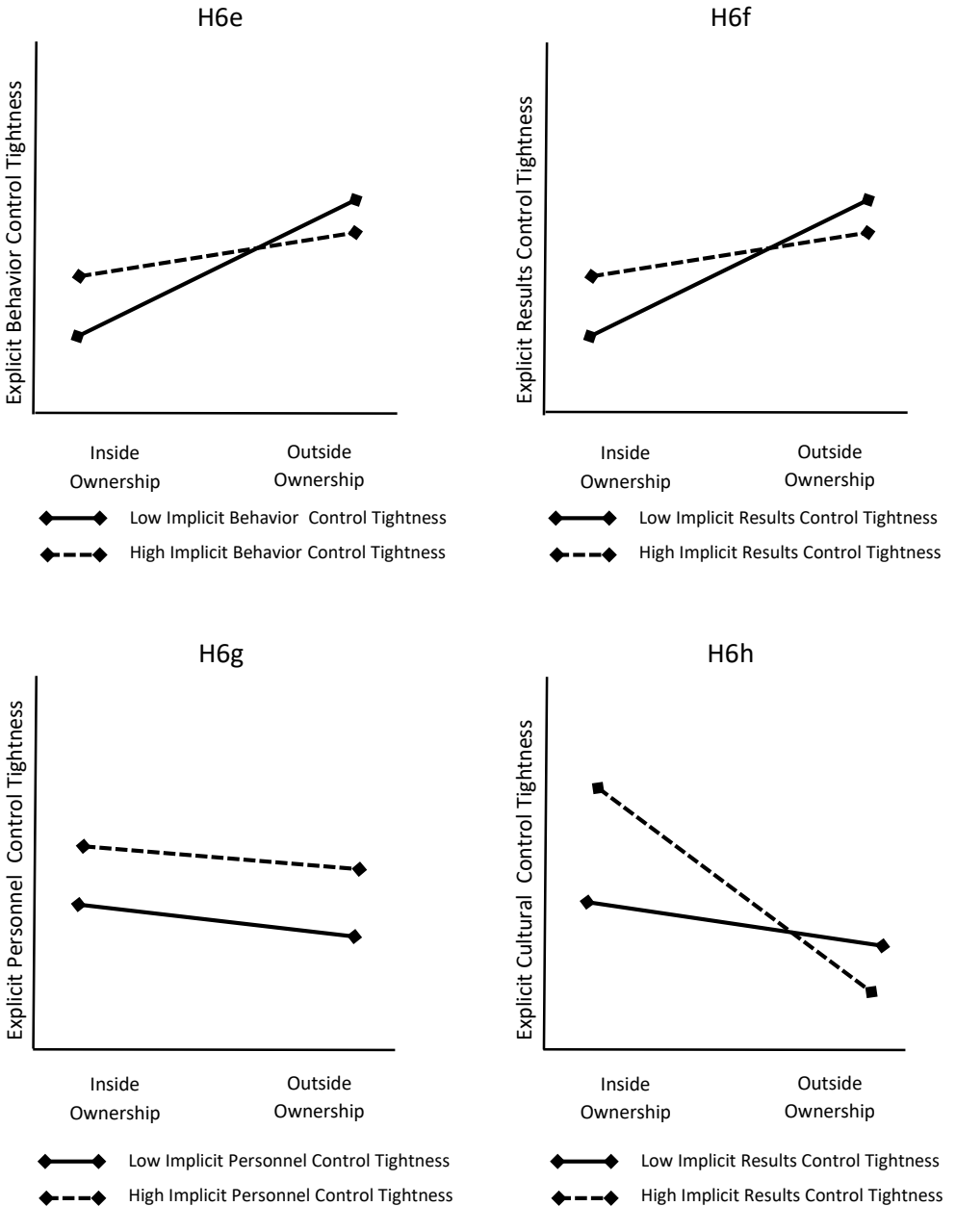


Figure 2.15 Graphical Representation of Hypotheses H6e-H6h

this collegiality and consensus building the implicit tightness of their cultural control system may be less tight for a given level of explicit tightness (see Figure 2.15), suggesting the following:

H6h: There is a negative interaction between outside ownership and implicit cultural control tightness on explicit cultural control tightness.

To summarize, the general thrust of our hypotheses is that in response to the uncertainty presented by the PSF characteristics, firms will move to introduce flexibility into their control system by trading-off high and low levels of implicit and explicit control tightness. The flexibility created by this combination of controls will serve to address the individual and work challenges created by the PSF characteristics, while allowing PSFs to increase control as compared to the flexible guidelines control configuration. A summary of our hypotheses is presented in Table 2.01.

4 Sample and Measurement

Our target population for this study focuses on mid-level professionals. Because we seek to compare professionals from a variety of professions and organizations types, we lack a sampling frame for our population and thus obtain responses through convenience sampling. We use Master students in Accounting from a Dutch university to identify potential respondents. This network based approach is a variation on "respondent-driven" ("snowball") sampling (Salganik and Heckathorn, 2004), which has been shown to work well for populations where a sampling frame is not available (e.g., Derfuss 2009).

Students were provided with a cover letter explaining the goal of our study and outlining the criteria for respondents. In order to be included in the study, respondents must 1) work in a professional field, 2) have more than 3 years of experience but less than 10, 3) not be owners or board members of their employing organization, 4) work for a medium/large size organization of more than 50 employees and 5) speak and understand English at a business level. As an additional source of verification, students were asked to provide a business card from each of the respondents who filled-out the survey. In return for providing a minimum of 10 respondents for the study, students were given access to the study data for the completion of their master thesis.

Table 2.01
Summary of Hypotheses

Hypothesis	Independent Variable	Dependent Variable	Predicted
H1a	Implicit Behavior Control Tightness (*IBCT*)	Explicit Behavior Control Tightness	+
H1b	Implicit Results Control Tightness (*IRCT*)	Explicit Results Control Tightness	+
H1c	Implicit Personnel Control Tightness (*IPCT*)	Explicit Personnel Control Tightness	+
H1d	Implicit Cultural Control Tightness (*ICCT*)	Explicit Cultural Control Tightness	+
H2a	Task Complexity	Explicit Behavior Control Tightness	-
H2b	Task Complexity	Explicit Results Control Tightness	-
H2c	Task Complexity	Explicit Personnel Control Tightness	+
H2d	Task Complexity	Explicit Cultural Control Tightness	+
H2e	Task Complexity	Explicit Behavior Control Tightness	-
H2f	Task Complexity	Explicit Results Control Tightness	-
H2g	Task Complexity	Explicit Personnel Control Tightness	-
H2h	Task Complexity	Explicit Cultural Control Tightness	-
H3a	Customer Reliance	Explicit Behavior Control Tightness	-
H3b	Customer Reliance	Explicit Results Control Tightness	-
H3c	Customer Reliance	Explicit Personnel Control Tightness	+
H3d	Customer Reliance	Explicit Cultural Control Tightness	+
H3e	*IBCT* x Customer Reliance	Explicit Behavior Control Tightness	-
H3f	*IRCT* x Customer Reliance	Explicit Results Control Tightness	-
H3g	*IPCT* x Customer Reliance	Explicit Personnel Control Tightness	-
H3h	*ICCT* x Customer Reliance	Explicit Cultural Control Tightness	-
H4a	Capital Intensity	Explicit Behavior Control Tightness	+
H4b	Capital Intensity	Explicit Results Control Tightness	+
H4c	Capital Intensity	Explicit Personnel Control Tightness	0
H4d	Capital Intensity	Explicit Cultural Control Tightness	0
H4e	*IBCT* x Capital Intensity	Explicit Behavior Control Tightness	-
H4f	*IRCT* x Capital Intensity	Explicit Results Control Tightness	-
H4g	*IPCT* x Capital Intensity	Explicit Personnel Control Tightness	0
H4h	*ICCT* x Capital Intensity	Explicit Cultural Control Tightness	-
H5a	Professionalized Workforce	Explicit Behavior Control Tightness	-
H5b	Professionalized Workforce	Explicit Results Control Tightness	-
H5c	Professionalized Workforce	Explicit Personnel Control Tightness	-
H5d	Professionalized Workforce	Explicit Cultural Control Tightness	0
H5e	*IBCT* x Professionalized Workforce	Explicit Behavior Control Tightness	-
H5f	*IRCT* x Professionalized Workforce	Explicit Results Control Tightness	-
H5g	*IPCT* x Professionalized Workforce	Explicit Personnel Control Tightness	-
H5h	*ICCT* x Professionalized Workforce	Explicit Cultural Control Tightness	0
H6a	Ownership INC	Explicit Behavior Control Tightness	+
	Ownership Public		+
H6b	Ownership INC	Explicit Results Control Tightness	+
	Ownership Public		+
H6c	Ownership INC	Explicit Personnel Control Tightness	-
	Ownership Public		-
H6d	Ownership INC	Explicit Cultural Control Tightness	-
	Ownership Public/Non-profit		-
H6e	*IBCT* x Ownership INC	Explicit Behavior Control Tightness	-
	IBCT x Ownership Public/Non-profit		-
H6f	*IRCT* x Ownership INC	Explicit Results Control Tightness	-
	IRCT x Ownership Public/Non-profit		-
H6g	*IPCT* x Ownership INC	Explicit Personnel Control Tightness	0
	IPCT x Ownership Public/Non-profit		0
H6h	*ICCT* x Ownership INC	Explicit Cultural Control Tightness	-
	ICCT x Ownership Public/Non-profit		-

Since we are interested in how MCSs are defined based on the PSF characteristics defined above, we defined a "professional field" rather broadly and accepted respondents from a variety of occupations which have previously been included under the umbrella of professional services in the literature (see Von Nordenflycht, 2010 for a summary). We focus on professionals with at least three years of experience, but less than 10 years of experience, since previous research indicates that the goals and response to the MCS by novice professionals differs from that of experienced professionals (Bol and Leiby, 2011; Chang and Birkett, 2004). Similarly, professionals who actively design the MCS, such as owners and board members, have different incentives are likely to respond differently to the MCS than employees who are subject to the MCS, therefore we focus on the latter. Finally, we focus on respondents who work in large organizations since we are interested in examining the inherent conflict between flexibility and control. Size is considered an important driver in the emergence of MCSs (Flamholtz and Randle, 2000; Greiner, 1998; Simons, 2000), and we are therefore less likely to find this conflict in smaller organization since informal controls may be sufficient for the control of these firms (Davila, 2005).

A total of 750 responses[2] were collected (see Table 2.02). Of these responses, 94 were eliminated because they were incomplete and 16 responses were removed because they did not fulfill our broad definition of a professional occupation. A further 278 responses were removed because they did not meet our experience criteria, either because experience was below 3 years (61 respondents), exceeded 10 years (195 respondents), or was not filled out (22 respondents). Finally, 54 respondents were removed due to company size. This reduced our sample to a total of 308 responses. The large number of respondents whose experience exceeds 10 years is somewhat puzzling given that students were provided specific instructions to approach professionals with less than 10 years of experience. Based on our discussion with the students involved with our survey, many students encouraged their respondents to approach professionals in their own network to complete the survey. It is unclear how well the respondents communicated these requirements to the professionals in their network, which may account for the large number of responses with more than 10 years of experience. While this reduces the number of respondents collected within our target population, it also suggests that respondents answered the survey truthfully rather than trying to conform to the target population requirements. We choose to limit our analysis to this smaller sample, despite the reduction in respondents, as it most closely reflects our target population.

[2] A copy of the digital survey is available in Appendix A.

Table 2.02
Survey Response

	Respondents Removed	Respondents Remaining
Total Sample		750
Unfinished	94	656
Occupation not professional	16	640
Experience not filled out	22	618
Less than 3 years experience	61	557
More than 10 years experience	195	362
Company Size <100	54	308

Our respondents come from a variety of professional occupations (see Table 2.03), though the field of accounting and medicine are somewhat overrepresented as compared to other fields. The employing firms tend to be large (> 5,000 total employees), though there is considerable variation in the size of the work unit. The majority of firms are owned by employees within the firm (49.7%), though firms with outside ownership are also well represented (36.4%). Male respondents outnumber female respondents 66.1% to 33.9%. A review of the labor statistics in the Netherlands and the United States, the two individual countries that make up the largest portion of our sample, appear to indicate that the composition of males and females varies dramatically based on the specific professional field which may help explain the large disparity in males and females in our sample. Finally, the vast majority of respondents are from Europe, specifically the Netherlands and the US and Canada.

4.1 Variable Measurement

Whenever possible, we relied on previously validated instruments in building our survey. However, the conceptualization of two separate aspects of control tightness, explicit and implicit, was not available in the literature and had to be developed. Development of the new measures took place through a series of stages.

First of all, a thorough review of the literature was conducted to generate a list of possible items for each of the constructs in the study. The complete list was reviewed and a subset of potential items was identified. Whenever possible, previously validated questions from existing research were used, but when questions from

Table 2.03
Sample Characteristics

Employee Characteristics			
Occupational Field	%	Total Experience (years)	%
Accounting	22.4	3	24.7
Actuarial Services	0.6	4	21.8
Biotechnology	2.3	5	15.6
Consulting Engineering	1.0	6	14.0
Consulting IT	6.8	7	8.8
Consulting HR	4.2	8	10.4
Consulting Management Strategic	8.4	9	4.9
Consulting Technology	0.3		
Engineering	6.8	Experience with Current Organization (years)	
Financial Advising	2.6	< 1	8.4
Graphic Design	0.3	1	5.5
Insurance Brokerage	0.3	2	9.4
Investment Banking	2.3	3	20.1
Banking	0.3	4	14.6
Investment management (hedge funds, VC, mutual funds)	2.3	5	11.0
Law and legal services	1.9	6	10.1
Marketing/public relations	1.3	7	3.9
Media Production (film, TV, music)	1.3	8	6.8
Medicine and Healthcare	11.0	9	4.5
Pharmaceutical	1.6	10 or more	5.5
Project Management	3.6		
Real Estate	2.3		
Recruiting - executive	1.9	Age (in years)	
Research/R&D	5.2	Less than 30	31.4
Risk management services	3.9	30 - 39	54.2
Software Development	1.6	40 - 49	12.4
Talent management/agency	0.6	50 - 59	2.0
Education	0.6		
Other	1.9	Sex	
		Female	33.9
		Male	66.1

Organizational Characteristics			
Organization Size	%	Organization Location	%
100-499	24.0	Netherlands and territories	73.7
500-4999	29.5	Other Europe	10.1
≥ 5000	46.4	United States and Canada	7.5
		Asia	7.8
Unit Size		Middle East	0.9
< 10	15.6		
10 - 49	35.7	Ownership Structure	
50 - 99	17.5	Inside Ownership (i.e. Partnership)	49.7
≥ 100	30.8	Outside Ownership (i.e. Corporation)	36.4
		Other (i.e. Public, NGO, non-profit)	14.0

Sample Size n = 308

existing measures were not available, new items were developed. A total of 52 items was developed for the eight constructs. A number of items are reverse coded to minimize response set bias. Based on this initial subset of measures, an initial pre-test was conducted.

The first pre-test was an item sort task designed to assess the quality of the items used to measure the constructs. For the task, subjects were provided the 52 items and the 8 construct definitions and asked to match the item to the construct definition. Fourteen of the twenty professionals asked to take part in the pre-test completed the task (2 Management Consultants, 1 IT Consultant, 1 Security Consultant, 1 Accountant, 1 Psychologist, 1 Dentist, 1 Architect, 1 Marketing professional, 4 Lawyers, 1 Graphic Designer). The number of correct and incorrect matches identified by the subjects was then tabulated and the four items for each type of control with least number of incorrect matches were selected for inclusion in the survey. The 32 items included in the survey ranged from a low of zero incorrect matches (explicit behavior control tightness) to a high of six incorrect matches (implicit behavior control tightness). These items were included in the survey and subjected to an additional pre-test.

The second pre-test was designed to assess the face validity of the survey as a whole. An additional 20 professionals from a variety of fields were asked to view the survey online and answer a series of questions regarding the content, clarity, and appearance of the survey as well as the amount of time required to complete the survey. Thirteen subjects provided written answers to the questions and the remaining (seven) provided answers by telephone. The comments provided by the subjects resulted in only minor changes in wording and the inclusion of additional options in a few of the multiple choice questions.

The data used for this article was part of a larger survey on management control in professional service firms. Following acquisition of the data, principle component analysis (PCA) was performed on the 112 items used to measure the constructs for the entire survey. Many of our existing constructs have not been tested in the professional sector and new constructs, while based in theory, have not been tested to see how they group together to explain the same underlying concept, therefore we perform factor analysis to test for unidimensionality (De Vaus, 2013; Hair et al., 1998). We expected to extract a total of 27 factors based on our use of previous constructs and the design on new constructs. Initial analysis extracted a total of 31 factors with an eigenvalue greater than one. The Bartlett test and KMO measure of sampling adequacy indicated the suitability of factor analysis. Individual item correlations were low (< 0.5) so we selected varimax rotation and repeated the factor analysis with a fixed number of 31 factors. The results of the EFA for the constructs used in this paper

are presented in Table 2.04. Results of the full factor analysis for all items used in the survey is available in Appendix B. We discuss the findings of the factor analysis and the measurement of the individual constructs below.

4.1.1 Control Tightness

The dependent variable is control tightness, which is divided into four modes of control (results, behavior, personnel and cultural) each of which is separated into two components of control (implicit and explicit) resulting in a total of eight forms of control tightness. We define each of these in detail below.

4.1.1.1 Behavior Control Tightness

Explicit behavior control tightness (*EBCT*) is comprised of four items designed to measure the extent of use of standardized processes, procedures, rules and routines as part of the management control system. All control tightness items are measured on a five point Likert scale with one equal to Strongly Disagree and five equal to Strongly Agree where high values indicate tight control. Two items are based on Van den Ven and Ferry's (1980) measure of job standardization, a single items is adopted from Bodewes' (2000) measure of observation which was adapted from Hall (1963) and the final item is adapted from Hage and Aiken's (1968) measure of job specificity. As shown in Table 2.04, a total of five items loaded on a single factor. Four of these items we expected to comprise the construct of *EBCT*. The remaining item, with a high negative loading, we expected to load on implicit behavioral control tightness. Examination of the item reveals that it is a reverse coded item that may have been more difficult for respondents to interpret. We exclude this item from further analysis. Cronbach's alpha for the remaining items is 0.759, which is above the limits of exploratory research, which are considered to be between 0.50 and 0.60 (Nunnally, 1978).

Implicit behavior control tightness (*IBCT*) is comprised of four items designed to measure the degree to which deviation from established processes procedures, rules and routines is tolerated and/or encouraged, where a tight system is defined as one which does not allow any deviation from standard processes, procedures, rules and routines. Two items are adapted from Bodewes' (2000) measure of the extent of observation and more specifically, the respondents' subjective evaluation of the frequency of procedure skirting. A single item is based on Morgenson and Humphrey's (2006) measure of work methods autonomy and the final item is adapted from Van der Stede's (2001) emphasis measure of tight budgetary control. As discussed above, one of these items loaded on explicit behavior control and was excluded from further analysis. The remaining three items all load on a single factor with an acceptable Cronbach's alpha of 0.779.

4.1.1.2 Results Control Tightness

Explicit results control tightness (*ERCT*) comprises four items, designed to measure the extent of use of goals/targets/performance measures as part of the management control system, where a tight system is defined as one with a lot of controls in terms of number and scope. Two of these items are based on Van den Ven and Ferry's (1980) measure of job standardization, and two measures adapted from Hage and Aiken's (1967b) measure of rule observation, which is based on Hall's (1961) six dimensions of bureaucracy. A total of six items load on a single factor for *ERCT*. Two of these items we expected to load on implicit results control tightness. One of these items has a negative loading below 0.4 and is thus excluded from the construct. The final item has a positive loading above 0.4, but the as the difference between this item and the other individual items exceeds 0.2, it is also excluded. The Cronbach's alpha of the remaining items is 0.804.

Implicit Results Control Tightness (*IRCT*) comprises four items designed to measure the degree to which deviation from goals/targets/performance measures is tolerated and/or encouraged, where a tight system is defined as one which does not permit any deviation from established goals/targets/performance measures. The items are based on an adaptation of Van der Stede's (2001) measure of budget tightness (3 items) and Hage and Aiken's (1967b) measure of job specificity (1 item). Only two of these four items load on the single factor *IRCT.* The Cronbach's alpha of 0.428 is below the generally accepted minimum threshold for exploratory research of 0.5, indicating a lack of reliability in this construct. Nevertheless, we use this construct for our primary analysis, but interpret our findings with caution.

4.1.1.3 Personnel Control Tightness

Explicit personnel control tightness (*EPCT*) is comprised of four items designed to measure the extent of use of employee selection procedures as part of the management control system, where a tight system is one in which the employee selection procedure is extensive. As no existing scale was available, a new scale we developed. Factor analysis revealed that three of the items loaded on a single factor, while a third item had a low component loading (0.353) on a separate factor. This separate item was removed from further analysis and the Cronbach's alpha of the remaining items is 0.723.

Table 2.04†
Condensed Factor Analysis

Variable		Items	Component Loading			
			Factor 1	Factor 2	Factor 3	Factor 4
Explicit Behavior Control Tightness		In my organization, we have rules for everything.	0.742			
Cronbach's α = 0.759						
		Established processes, procedures and rules cover all of my job tasks.	0.729			
		Whatever situation arises, we have existing processes, procedures or rules to follow in dealing with it.	0.698			
		My supervisor frequently monitors the extent to which I follow established process, procedures and rules.	0.594			
	***	*The organization I work in primarily uses established processes, procedures and rules to give broad guidelines as to how activities are to be performed.*	-0.685			
Implicit Behavior Control Tightness						
Cronbach's α = 0.779		Employees in my organization are encouraged to adjust procedures to suit the situation.		0.762		
		Employees in my organization are encouraged to use procedures flexibly.		0.759		
		My job allows me to decide how to adjust rules to best perform my job tasks.		0.723		
Explicit Results Control Tightness		Employee attainment of goals/targets is checked constantly.			0.794	
Cronbach's α = 0.804						
		My supervisor frequently checks to make sure that I am meeting my performance targets.			0.773	
		My organization sets a large number of performance goals/targets that I am expected to meet.			0.662	
		In my job, there is a performance measure for everything.			0.630	
	***	*In my organization, employees are expected to meet pre-established goals/targets with no exceptions.*			0.486	
	***	*My supervisor is very considerate of my explanations of deviations from pre-established goals/targets.*			-0.347	0.286
Implicit Results Control Tightness		In our organization, goals/targets are essentially a guideline rather than a true commitment.				0.814
Cronbach's α = 0.428		Responding to new, unforeseen opportunities is considered more important by my supervisor than achieving pre-established goals/targets.				0.602

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.

[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.

† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Table 2.04† ***continued***
Condensed Factor Analysis

Variable		Items	Component Loading						
			Factor 5†	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
Explicit Personnel Control Tightness		You have to go through many steps in order to be hired at this firm.	0.780						
Cronbach's α = 0.723		The hiring process to become employed at my firm is extensive.	0.728						
		I interviewed with several people in my organization before being offered a position.	0.678						
	***	*The hiring process at my organization evaluates the knowledge, skills, abilities, values and motives of prospective employees.*		0.353					
Implicit Personnel Control Tightness		Before being hired, most of my colleagues and I acquired the same kind of job experience.			0.810				
Cronbach's α = 0.704		Before being hired, most of my colleagues and I followed the same type of education and training.			0.685				
	***	*The competence of employees within my job title varies greatly.*			0.409				
	***	*There seems to be little consistency in the type of professional that gets hired for my job.*				0.380			
Explicit Cultural Control Tightness		My organization plans team-building events for employees.					0.749		
Cronbach's α = 0.772		My organization creates company sponsored teams for sporting events/fundraisers/volunteer events.					0.698		
		My organization regularly hosts social events for employees.					0.646		
		My organization communicates its core values to employees.					0.511		
Implicit Cultural Control Tightness (Formative)									
Friends		I am not friends with any of my colleagues.						0.759	
Cronbach's α = 0.620		I socialize with my colleagues outside of work.						0.652	
Values		Since starting this job, my personal values and those of this organization have become more similar.							0.595
Cronbach's α = 0.587		I feel a sense of "ownership" for this organization rather than just being an employee.							0.523

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.
[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Table 2.04† ***continued***
Condensed Factor Analysis

Variable	Items	Component Loading					
		Factor 12†	Factor 13	Factor 14	Factor 15	Factor 16	Factor 17
Task Complexity (Formative)							
Predictability	I would describe my work as routine.	0.701					
Cronbach's α = 0.580							
	The situations, problems and issues that I encounter in performing my major tasks are usually the same.	0.575					
	I can easily determine whether I have performed my work correctly.	0.553					
	Most of the time, I know what to outcome of my work efforts will be.	0.545					
Analyzability	In my work, I spend a lot of time solving difficult problems with no immediate solutions.		0.775				
Cronbach's α = 0.712							
	I often encounter problems in my work for which there are no immediate or apparent solutions.		0.734				
Interdependence	*** *My job depends on the work of many different people for its completion.*			0,373[1]			
Customer Reliance	In order to do my work (properly), I depend a lot on the client to provide me with data, information and materials.				0.851		
Cronbach's α = 0.870							
	During my work, I depend a lot on client to provide required data, information, materials, etc.				0.838		
	I often need to coordinate my activities with the client during the performance of my main tasks.				0.781		
	In my organization, we must work in close collaboration with our client in order to ensure a successful service outcome.				0.774		
	I often have to wait for client input before I can move on to the next step of my work.				0.727		
	In our work, we are also able to perform our tasks successfully without the cooperation of our clients (or their employees).				0.619		
Capital Intensity	The cost of equipment necessary to do my job makes it difficult to start your own business in this field.					0.845	
Cronbach's α = 0.830							
	Performing my job requires a lot of expensive equipment.					0.810	
	I can do my job with little to no equipment.					0.761	
	I could start my own business in this field with little more than the cost of my own labor.					0.707	
Professionalized Workforce	The professional association in my field has a lot of power in defining and setting standards in my field.						0.803
Cronbach's α = 0.775							
	The professional association in my field is involved in the development and monitoring of education programs related to my field.						0.774
	There exists a clearly defined body of knowledge or subject matter, independent of my organization, which can guide me in doing my job.						0.707
	In order to remain active in my field, I must attend continuing education outside of my employing organization.						0.601

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.
[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Table 2.04† ***continued***
Condensed Factor Analysis

Variable		Items	Factor 8†	Factor 14	Factor 18	Factor 19	Factor 20	Factor 21	Factor 22	Factor 23	Factor 24
Strategy Cost Leadership		Making services/processes more cost efficient			0,757						
Cronbach's α = 0.703		Improving the cost required for coordination of various services			0,716						
		Achieving lower cost of services than competitors			0,691						
		Improving the utilization of available equipment, services and facilities			0,435						
Strategy Differentiation											
Scope		Offering a broader range of services than the competitors				0,706					
Cronbach's α = 0.697		Providing services that are distinct from that of competitors				0,662					
		Introducing new services/procedures quickly				0,635					
Customers	***	*Customizing services to customers' needs*					0,724				
Cronbach's α = 0.432	***	*Improving the time it takes to provide services to customers*					0,388				
	***	*Providing after-sale service and support*		0,721							
	***	*Providing high quality services*	-0,470								
Environmental Uncertainty											
Competition		Price competition.								0,788	
Cronbach's α = 0.680		Bidding for new contracts/clients.								0,786	
	***	*Competition for manpower.*								0,295	
Predictability		How would you describe the tastes and preferences of your clients?									0,725
Cronbach's α = 0.517		How would you classify the market activities of other firms in the industry?									0,712
		How many new products and/or services have been marketed during the past 5 years by your industry?									0,408

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.
[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Implicit personnel control tightness (*IPCT*) was also a newly developed scale based on four items designed to measure the degree to which deviation from human resource standards is tolerated. Since our respondents are the subjects of the personnel control system rather than the persons making the hiring decision, their ability to judge the tolerance for deviation in the hiring process may be limited. Therefore, the items measuring *IPCT* rely on measuring the outcome of personnel control tightness, as measured by the degree to which employees have the same training, experience and competencies are their colleagues. The scale loaded on two separate factors with three items loading on a single factor and a single item with a low component loading (0.380) on a separate factor. This factor was removed from further analysis. Of the three remaining items, one item had a fairly low component loading of 0.409. Reliability analysis revealed that Cronbach's alpha of all three factors is 0.600, but increases to 0.704 with this item removed. To improve reliability of the construct, we remove this item from our construct.

4.1.1.4 Cultural Control Tightness

Explicit cultural control tightness (*ECCT*) is comprised of four new items designed to measure the extent to which the organization makes use of employee socialization procedures to actively bring employees into the organization's culture and communicates core values to employees. As indicated in Table 2.04, all items from this construct loaded on a single factor with an acceptable Cronbach's alpha of 0.772.

Implicit cultural control tightness (*ICCT*) is comprised of four new items designed to measure the degree to which employees' norms values and beliefs are tolerated to deviate from those of the organization. Once again, since our respondents are the subjects of the cultural control system, their ability to judge the tolerance for deviation from firm's norms and values may be limited. Therefore, the items measuring *ICCT* rely on measuring the expected outcome of cultural control tightness. On the one hand, we expect that less tolerance for deviation from organizational norms and values will result in more similar values between the professional and the organization. Therefore, two of the items for *ICCT* focus on value congruence between the professional and the organization. On the other hand, a low degree of tolerance for deviation from organizational norms also suggests that the values of the professional will be similar to others within the organization. Research indicates that individuals tend to form relationships with people who are similar to themselves (Byrne, 1997; Monsour, 2002) and friendship is associated with co-orientation, or developing corresponding values, beliefs and interests (Newcomb, 1953). We therefore expect that organizations which allow little deviation from organizational norms will result in stronger social ties between the respondent and other employees in the organization and include two items to measure the strength of social ties within the organization.

As expected, results of the factor analysis reveal that our four items split into two separate factors. One of these factors focuses on the value congruence of employees and the organization (*Cultural Implicit Values*), while the other factor focuses on the strength of social ties between the respondent and other employees in the organization (*Cultural Implicit Friends*). As a low degree of tolerance for deviation from organizational norms suggests not only that the values of the professional will be similar to that of the organization but that the values of the professional will also be similar to others within the organization, we measure *ICCT* as formative construct of the factors *Cultural Implicit Values* and *Cultural Implicit Friends.* The Cronbach alpha's for the individual factors are 0.620 for *Cultural Implicit Friends* and 0.587 for *Cultural Implicit Values*.

4.1.2 Task Complexity

Task complexity has been measured in a variety of ways in the literature (Campbell, 1988; Wood, 1986). We define task complexity based on Campbell's (1988) conceptualization of task complexity as an increase in information load, information diversity, or rate of information change due to the existence of multiple paths to reach an end-state, the presence of multiple end states, conflicting interdependencies among paths to multiple end-states and uncertain or probabilistic links between paths and end-states. As such, we aim to measure complexity resulting from objective task characteristics rather than an interaction between the person and the task. We adapted Van den Ven and Ferry's (1980) measure of task difficulty and task variability into a 7 item measure on a 5 point Likert scale. These measures are based on the work of Perrow (1967) and March and Simon (1958) which focus on the individuals' search process when they encounter a task or problem and have also shown to be reliable in research on professional service firms (Homburg and Stebel, 2009).

Contrary to expectations from prior research (Homburg and Stebel, 2009), the seven items loaded on three separate factors, with four items loading on task predictability, two separate items loading on task analyzability and a single item loading on task interdependence. We exclude this single item due to a low factor loading of 0.373, with similar cross-loadings on task analyzability (factor 13, 0.338) and capital intensity (factor 16, 0.331). As we expect that both task predictability and task analyzability increase information load, information diversity and rate of information change, but in different ways, we form create a formative construct of task predictability and task analyzability to measure task complexity (*TaskComplexity*).

4.1.3 Customer Reliance

Customer reliance, or the extent to which successful service provision is dependent on the client's substantive cooperation and collaboration with the professional service firm, was measured using six items based on Homburg and Stebel's (2009) construct of integrativity level of service. This construct is characterized by the degree of influence that the client exerts on the service process and the service output (Larsson and Bowen, 1989) and has been shown to be reliable in prior research on professional service firms. The six items loaded on a single factor with a Cronbach alpha of 0.870.

4.1.4 Capital Intensity

Capital Intensity is typically measured as the ratio of physical capital to human capital. However, in our case, such a measure may be problematic since we do not have access to the financial reports of the companies surveyed and self-reported measure of financial numbers may be incorrect. In addition, in PSFs capital intensity is thought to serve as a bonding mechanism. This bonding mechanism is particularly strong when professionals cannot exercise their profession without large amounts of physical

capital. However, the need for additional physical capital may also be driven by coordination problems that result from increased organizational size rather than by the work itself. Larger firms may have to invest in additional physical capital in order to improve coordination of larger numbers of employees and offices. Coordination is less necessary and therefore capital is less necessary when the firm is small. To the extent that the relationship between physical capital and human capital is not linear, this ratio may be confounded by size. Therefore, we measure capital intensity using a newly developed 4 item measure designed to assess to what degree it is possible to practice the profession without a high degree of capital. All items have component loading above 0.7 and load on a single factor with a Cronbach's alpha of 0.830.

4.1.5 Professionalized Workforce

Professionalized workforce is defined as the degree to which the profession is organized and institutionalized, where the professional association serves as an external form of control for the professional. As no suitable scale of professionalization was available, new items were developed based on Wilensky's (1964) definition of a profession, where the basis of exclusive jurisdiction, or the monopoly of the profession, is based on systematic knowledge and adherence to a set of professional norms. We develop four new items designed to measure the extent of systematic knowledge, professional monitoring, and power of the professional to define knowledge and entrance to the occupation. All four items load on a single factor with a Cronbach's alpha of 0.775.

4.1.6 Ownership Structure

We measure ownership structure by using partnership as a reference group and constructing a dummy variable equal to 1 for outside ownership (*OwnershipINC*) and zero otherwise and for public or non-profit firms (*OwnershipPublic*) equal to 1 for public non-profit firms and zero otherwise.

4.1.7 Control Variables

To reduce the effect of confounding variables, we utilize a number of control variables which previous literature suggests may influence our dependent variable.

4.1.7.1 Size

To control for possible size effects, we control for both organization and unit size. Studies suggest that as organization size increases, the problem of coordination increases, leading to increased reliance on bureaucratic forms of control rather than direct supervision to control behavior (Child, 1974; Inkson et al., 1970; Samuel and Mannheim, 1970). We control for organization size by using organizations of more than five thousand employees as our reference group and creating dummy variables

for organization with more than 100 but less than 500 (*OrgSizeSmall*) employees and more than 500 but less than 5000 employees (*OrgSizeMedium*).

In addition, even if organizational size is large, prior research has found that individual units in professional service firms may operate autonomously from the whole of the firm (Scott, 1965). Small organizational units in large companies may therefore create separate management control systems that operate much like small informal firms. We therefore also control for unit size, using unit size of more than 100 as our reference group and creating separate dummy variables for units of less than 10 people (*UnitSize<10)*, more than 10 people but less than 50 (*UnitSizeSmall)* and more than 50 but less than 100 (*UnitSizeMedium)*.

4.1.7.2 Firm Type

Professional service firms can typically be divided into two distinct types. In autonomous professional service firms, professionals perform the core service and are often supported by an administrative staff to help them in the performance of their work, while in a heteronomous professional organization, the work of the professional serves auxiliary goals of the organization rather than the central goal (Scott, 1965). For example, a lawyer working in a law firm is an example of an autonomous professional organization, while a lawyer who works as in-house council for a technology company is employed in a heteronomous professional organization. Heteronomous organizations are typically associated with less autonomy, more administrative controls and more routine supervision than autonomous organizations (Scott, 1965). We control for these effects by creating a dummy variable (*FirmType)* equal to 1 for autonomous organizations and zero otherwise.

4.1.7.3 Strategy

Research suggests that firms adopting a cost leadership strategy are more likely to apply formal restricted controls (Miller, 1988), while those adopting a differentiation strategy are more often associated with loose, flexible and informal controls (Govindarajan, 1988; Van der Stede, 2000; Sim and Teoh, 1997; Simons, 1987). Research on architecture firms appears to confirm these assertions with cost leadership firms adopting more standardized systems that differentiation firms (Canavan, 2013). Consistent with Auzair and Langfield-Smith (2005) we recognize that PSFs may pursue both of these strategies to various degrees (Chenhall and Langfield-Smith, 1998) and therefore adopt their measure of environmental uncertainty which is based on Chenhall and Langfield-Smith (1998) and Kumar and Subramaniam (1998). We use four items to measure cost leadership strategy and seven items to measure differentiation strategy. The four items for cost leadership strategy all load on a single factor with a Cronbach's alpha of 0.703. While Auzair and Langfield-Smith (2005)

found that the seven items used to measure differentiation strategy all loaded on a single factor with component loading >0.6 and a reliability of 0.77, we find that these seven items split into four different factors. Three items load on a single factor (scope), with a Cronbach's alpha of 0.697. Another two items load on a single factor, and the component loading of one these factors is low (0.388) and the Cronbach alpha also fails to reach an acceptable level (0.432). We therefore eliminate these two items from further analysis. The remaining to items load on separate factors. One of these items loads on the same factor (8) as individual performance general job and is therefore eliminated. The final item loads on the same factor (14) as an item in task complexity and is therefore also eliminated. Cost leadership strategy is therefore measured using four items and differentiation strategy three items.

Since PSFs are often defined as providing novel solutions to customer's unique problems, we expect that most PSFs may adopt a differentiation strategy to some degree. Thus, we adopt the approach utilized by Auzair and Langfield-Smith (2005) and classify firms based on high adoption of one strategy and low adoption of the other. Using a median split we distinguish low cost leaders from high cost leaders and low differentiators from high differentiators. We then construct separate dummy variables for cost leadership and differentiation, where cost only strategy (*CostStrategy*) is equal to one for firms who score high on cost leadership and low on differentiation and zero otherwise and differentiation only strategy (*DifferentiationStrategy*) is equal to one for firms who score high on differentiation strategy and low on cost strategy and zero otherwise.

4.1.7.4 Environmental Uncertainty

Environmental uncertainty (*EnvironmentalUncertainty)* has been associated with a need for an open and externally focused management control system. On the one hand, industry deregulation and growing competition in service industries have been linked to increased formalization of the management control system (Berry et al., 1991; Brignall et al., 1992). On the other hand, when used in uncertain environments, these tight financial controls may be used together with an emphasis on flexible interpersonal interactions (Chenhall, 2003). We measure environmental uncertainty using six items from Gordon and Narayanan's (1984) measure of environmental uncertainty. Based on Gordon and Narayanan's (1984) research, we expected these items to load on three separate factors, but the items loaded on only two factors. In addition, one item was eliminated based on a low component loading of 0.295. Cronbach alphas of the items on the two remaining factors are 0.680 on *Environmental Uncertainty Competition* and 0.517 on *Environmental Uncertainty Predictability*. These are lower than the Cronbach alpha's in excess of 0.7 found by

Gordon and Narayan (1984) but acceptable for the exploratory nature of this research. We create a formative construct of these two separate factors.

5 Results

Table 2.05 presents summary statistics for each variable and Table 2.06 the correlation matrix. The correlations in Table 2.06 indicate the relationship between explicit and implicit behavior control tightness is positive (0.153, $p < 0.05$), as is the relationship between explicit and implicit cultural control tightness (0.425, $p < 0.01$). The relationship between explicit and implicit personnel control tightness is also positive (0.040) but not significant and the relationship between explicit and implicit results control tightness is negative (-0.047) and not significant. This lends some credence to our theory that explicit and implicit controls are not always used as complements but may also be used as substitutes. Bivariate correlations between the explicit modes of control tightness (behavior, results, personnel and cultural) also tend to be positive and are often significant suggesting that firms tighten these modes of control simultaneously rather than trading-off between the four modes of control. The relationships between implicit modes of control show more variability suggesting that these are less likely to be used as complements.

Table 2.05
Summary Statistics

	N	Mean	Median	Std. Deviation	Variance	Range	Minimum	Maximum
Explicit Behavior Control Tightness	308	3,17	3,25	0,86	0,74	4,00	1,00	5,00
Implicit Behavior Control Tightness	308	2,87	2,83	0,92	0,85	5,00	0,00	5,00
Explicit Results Control Tightness	308	2,86	3,00	0,88	0,77	3,75	1,00	4,75
Implicit Results Control Tightness	308	2,76	3,00	0,86	0,74	4,00	1,00	5,00
Explicit Personnel Control Tightness	308	3,17	3,17	0,87	0,76	4,00	1,00	5,00
Implicit Personnel Control Tightness	308	3,18	3,00	1,01	1,02	4,00	1,00	5,00
Explicit Cultural Control Tightness	308	3,62	3,75	0,86	0,75	4,00	1,00	5,00
Implicit Cultural Control Tightness	308	7,00	7,00	1,50	2,24	7,50	2,50	10,00
Task Complexity	308	6,29	6,25	1,28	1,65	7,75	2,00	9,75
Customer Reliance	308	3,72	3,83	0,91	0,82	4,00	1,00	5,00
Capital Intensity	308	2,98	3,00	1,14	1,29	4,00	1,00	5,00
Professionalized Workforce	308	3,54	3,63	0,92	0,85	4,00	1,00	5,00

Table 2.06

Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1 Explicit Behavior Control Tightness	1											
2 Implicit Behavior Control Tightness	0.152 **	1										
3 Explicit Results Control Tightness	0.426 **	-0.155 **	1									
4 Implicit Results Control Tightness	-0.018	0.104	-0.035	1								
5 Explicit Personnel Control Tightness	0.159 **	-0.086	0.261 **	-0.078	1							
6 Implicit Personnel Control Tightness	0.141 *	-0.048	0.139 *	0.021	0.090	1						
7 Explicit Cultural Control Tightness	0.117 *	-0.172 **	0.170 **	-0.132 *	0.334 **	0.017	1					
8 Implicit Cultural Control Tightness	0.107	-0.222 **	0.183 **	-0.043	0.270 **	0.064	0.508 **	1				
9 Task Complexity	-0.186 **	-0.003	-0.088	-0.077	0.025	-0.094	0.063	0.016	1			
10 Customer Reliance	0.101	-0.121 *	0.178 **	0.014	0.053	0.145 *	0.028	0.010	0.024	1		
11 Capital Intensity	0.156 **	0.053	0.060	0.123 *	-0.033	0.122 *	-0.037	0.069	0.014	-0.190 **	1	
12 Professionalized Workforce	0.204 **	-0.027	0.137 *	0.131 *	0.097	0.303 **	-0.013	0.079	-0.010	0.159 **	0.146 *	1
13 Ownership Type INC	-0.053	0.167 **	-0.013	0.044	0.027	-0.215 **	0.005	-0.022	0.104	-0.269 **	0.035	-0.117 *
14 Ownership Type Public/Non-profit	0.046	0.001	-0.072	0.103	0.017	0.188 **	-0.215 **	-0.043	0.062	0.006	0.215 **	0.173 **
15 Org Size Small	-0.175 **	-0.121 *	-0.059	0.026	-0.132 *	-0.078	-0.170 **	-0.110	-0.116 *	0.063	-0.169 **	-0.113 *
16 Org Size Medium	-0.020	-0.042	-0.103	-0.075	0.037	0.025	-0.027	0.029	0.103	-0.128 *	0.059	0.008
17 Unit size < 10	-0.084	0.022	-0.105	-0.028	-0.037	-0.124 *	-0.128 *	-0.166 **	-0.127 *	-0.093	-0.085	-0.159 **
18 Unit size Small	-0.030	-0.054	0.042	0.018	0.067	-0.057	0.079	0.142 *	0.011	-0.062	-0.026	-0.074
19 Unit size Medium	-0.013	0.016	-0.052	-0.051	-0.086	0.114 *	-0.134 *	-0.178 **	0.091	-0.043	0.054	0.061
20 Firm Type (Autonomous)	0.083	-0.052	0.041	-0.008	-0.056	0.261 **	0.034	0.036	0.055	0.257 **	0.073	0.260 **
21 Cost Only Strategy	-0.026	0.062	-0.007	-0.038	-0.058	-0.006	-0.099	0.000	0.029	-0.051	0.064	0.046
22 Differentiation Only Strategy	-0.095	0.009	-0.051	-0.048	0.024	-0.064	0.036	0.013	0.029	-0.003	-0.168 **	-0.105
23 Environmental Uncertainty	-0.051	-0.038	0.153 **	0.055	0.009	-0.094	0.035	0.003	0.056	0.181 **	-0.068	-0.099

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 2.06 ***continued***

Correlation Matrix

	13	14	15	16	17	18	19	20	21	22	23
13 Ownership Type INC	1										
14 Ownership Type Public/Non-profit	-0.305 **	1									
15 Org Size Small	-0.157 **	-0.095	1								
16 Org Size Medium	0.058	0.170 **	-0.364 **	1							
17 Unit size < 10	0.046	0.011	0.324 **	-0.061	1						
18 Unit size Small	-0.087	0.019	0.198 **	0.056	-0.322 **	1					
19 Unit size Medium	0.005	0.065	-0.160 **	0.078	-0.199 **	-0.345 **	1				
20 Firm Type (Autonomous)	-0.374 **	0.085	0.032	0.029	-0.270 **	0.044	0.083	1			
21 Cost Only Strategy	0.128 *	0.021	-0.011	0.044	0.009	-0.040	0.050	0.035	1		
22 Differentiation Only Strategy	-0.018	0.031	0.081	-0.041	0.048	0.037	-0.044	-0.002	-0.180 **	1	
23 Environmental Uncertainty	0.105	-0.298 **	0.047	-0.170 **	-0.078	-0.017	0.029	-0.054	-0.080	-0.005	1

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

To test our hypotheses we used hierarchal regression analysis with ordinary least squares. For each mode of control (behavior, results, personnel and cultural) we conducted a separate hierarchal regression. In step 1, we regress the explicit mode of control on our set of control variables (see equation B1). In step 2, we regress the explicit mode of control on our set of control variables and on the main effects variables which consist of implicit form of the mode of control as described by the dependent variable and the PSF characteristics (see equation B2). The analysis in step 2 provides the results for the first set of hypotheses (a-d) for each PSF characteristic. In step 3, we include the interaction term to the variables in step 2[3]. Step 3 provides the results for our interaction hypotheses (e-h) for each PSF characteristics. Equations B1-B3 below show the sample regression equations for these analyses for behavior control. Corresponding analyses were then conducted for results, personnel, and cultural control. Following the procedure proposed by Cohen et al. (2003), continuous independent variables were centered around the mean before creating the interaction terms to correct for the potential multicollinearity that can occur when testing moderated relationships.

$$\begin{aligned} \textit{Explicit Behavior Control Tightness (EBCT)} = {} & a_0 + b_1 OrgSizeSmall + b_2 OrgSizeMedium + b_3 UnitSize{<}10 + \\ & b_4 UnitSizeSmall + b_5 UnitSizeMedium + b_6 FirmType \\ & + b_7 CostStrategy + b_8 DifferentiationStrategy + \\ & b_9 EnvirnUncertainty + e_1 \end{aligned} \quad \text{(B1)}$$

$$\begin{aligned} \textit{Explicit Behavior Control Tightness (EBCT)} = {} & a_1 + b_{10} OrgSizeSmall + b_{11} OrgSizeMedium + b_{12} UnitSize{<}10 + \\ & b_{13} UnitSizeSmall + b_{14} UnitSizeMedium + \\ & b_{15} FirmType + b_{16} CostOnlyStrategy + \\ & b_{17} DiffOnlyStrategy + b_{18} EnvirnUncertainty + \\ & b_{19} ImplicitBehaviorControl + b_{20} TaskComplexity \\ & + b_{21} CustomerReliance + b_{23} CapitalIntensity + \\ & b_{24} ProfessionalizedWorkforce + b_{25} OwnershipINC + \\ & b_{26} OwnershipPublic + e_2 \end{aligned} \quad \text{(B2)}$$

[3] We also performed hierarchal regression analysis for each PSF characteristic individually. Similar to the full model above, in step 1 we regressed we regressed the explicit mode of control on our set of control variables. In step 2, we regressed the explicit mode of control on our set of control variables the implicit form of the mode of control as described by the dependent variable and a single PSF characteristic, and finally, in step 3, we include the interaction term to the variables in step 2. Results of these models are statistically similar to the results of the full model presented above. Therefore, for the sake of brevity, we present only condensed results for each mode of control below. Full results of the regressions can be found in Appendix C.

$$\begin{aligned} \textit{Explicit Behavior Control Tightness (EBCT)} = {} & a_2 + b_{27}\textit{OrgSizeSmall} + b_{28}\textit{OrgSizeMedium} + b_{29}\textit{UnitSize<10} + \\ & b_{30}\textit{UnitSizeSmall} + b_{31}\textit{UnitSizeMedium} + \\ & b_{32}\textit{FirmType} + b_{33}\textit{CostOnlyStrategy} + \\ & b_{34}\textit{DiffOnlyStrategy} + b_{35}\textit{EnvirnUncertainty} + \\ & b_{36}\textit{ImplicitBehaviorControl} + b_{37}\textit{TaskComplexity} \\ & + b_{38}\textit{CustomerReliance} + b_{39}\textit{CapitalIntensity} + \\ & b_{40}\textit{ProfessionalizedWorkforce} + b_{41}\textit{OwnershipINC} + \\ & b_{42}\textit{OwnershipPublic} + b_{43}\textit{ImplicitBehaviorControl x} \\ & \textit{TaskComplexity} + b_{44}\ \textit{ImplicitBehaviorControl x} \\ & \textit{CustomerReliance x } b_{45}\textit{ImplicitBehaviorControl x} \\ & \textit{CapitalIntensity} + b_{46}\textit{ImplicitBehaviorControl x} \\ & \textit{ProfessionalizedWorkforce} + \\ & b_{47}\textit{ImplicitBehaviorControl x OwnershipINC} + \\ & b_{48}\textit{ImplicitBehaviorControlxOwnershipPublic} + e_3 \end{aligned} \quad \text{(B3)}$$

Although we present our hypotheses per PSF characteristic, for ease of discussion, we present the results of our hypotheses per control type. That is, we first examine the direct effects of implicit behavior control and the PSF characteristics on the explicit form of behavior control, followed by explicit results, personnel and cultural control. Furthermore, our hypotheses are split into three sets. The first set examines the main effect of the implicit mode of control on the explicit mode of control. Consistent with prior literature, we expect this main effect to be positive. The second set of hypotheses examines the main effect of the PSF characteristic on the explicit mode of control. The general thrust of these hypotheses is that the higher levels of the PSF characteristic will lead to a decrease in bureaucratic forms of control (explicit behavior and explicit results control tightness) and an increase in non-bureaucratic forms of control (explicit personnel and explicit cultural control tightness). The final set of hypotheses examines the interaction effects, or how the relationship between explicit and implicit tightness is affected by the PSF characteristic. Here, the majority of our hypotheses assume that an increase in the PSF characteristics will induce firms to trade-off between implicit and explicit modes of control tightness, rather than increasing or decreasing both control types concurrently as suggested by the main effect.

5.1 Behavior Control

Table 2.07 presents the results of our hierarchal regression analysis for explicit behavior control. As predicted, the main effect between implicit behavior control and explicit behavior control is significant and positive ($b = 0.154$, $p < 0.01$), which provides support for hypothesis H1a. Based on our results, firms tend to either increase or decrease both explicit and implicit forms of behavior control at the same time.

When we examine effects of the PSF characteristics on explicit behavior control individually, we find a significant negative relationship (b =-0.187, p < 0.01) between task complexity and explicit behavior control which supports hypothesis H2a. We also find a significant relationship between customer reliance and explicit behavior control (b = 0.125, p< 0.05), but this relationship is positive rather than negative as predicted and we therefore fail to support hypothesis H3a. Hypothesis H4a is supported, as the results show a significant positive relationship between capital intensity and explicit behavior control (b =0.116, p < 0.10). The relationship between professionalized workforce and explicit behavior control is also positive and significant (b = 0.126, p <0.05), which does not support hypothesis H5a which predicted a negative relationship. Finally, we find no support for hypothesis H6a, as there is no significant relationship between outside ownership and explicit behavior control.

When we examine the interaction effects of the PSF characteristics and implicit behavior control on explicit behavior control in Model 19 of Table 2.07, the interaction effect *IBCT* x Task Complexity is significant (b = 0.133, p< 0.05) but the sign is opposite of that predicted and we therefore fail to find support for hypothesis H2e. A plot of this interaction in Figure 2.16, suggests that for low levels of task complexity, the degree of explicit behavior control tightness is similar for both low and high implicit behavior control, whereas for high task complexity, low levels of implicit behavior control are associated with decreasing levels of explicit behavior control, and for high levels of implicit behavior control, the degree of explicit behavior control remains fairly stable. This suggests that rather than trading-off between implicit and explicit behavior control tightness as task complexity increases, firms choose to either combine high explicit and implicit behavior control tightness or vice versa. In other words, the strong positive main effect of implicit behavior control on explicit behavior control dominates the relationship even when taking into account task complexity.

The interaction effect *IBCT* x Customer Reliance is significant and negative as predicted (b = -0.136, p < 0.05) by hypothesis H3e, but the nature of the interaction is also different than expected. We therefore fail to find support for hypothesis H2e. As depicted in Figure 2.17, when customer reliance is low, firms choose to combine low implicit behavior control with low explicit behavior control or vice versa. When customer reliance is high, low implicit behavior control firms increase their level of explicit behavior control up to the level of high implicit control firms such that there is no difference in explicit behavior control tightness between high and low implicit behavior control firms. Furthermore, we find no significant interactions for implicit behavior control and capital intensity, professionalized workforce or outside ownership and we thus fail to find support for hypotheses H4e, H5e, and H6e.

Table 2.07†
Condensed Results of Hierarchal Regression Analysis for Behavior Control Tightness

Dependent Variable Explicit Behavior Control Tightness	Hypothesis Predicted		Model 1	Model 18	Model 19
Control Variables					
Org Size Small			-0.232 ***	-0.203 ***	-0.202 ***
Org Size Medium			-0.120 *	-0.066	-0.051
Unit Size < 10			0.000	0.005	-0.008
Unit Size Small			0.011	0.041	0.039
Unit Size Medium			-0.045	-0.022	-0.037
Firm Type (Autonomous)			0.096	0.029	0.022
Cost Strategy			-0.046	-0.041	-0.022
Differentiation Strategy			-0.077	-0.040	-0.028
Environmental Uncertainty			-0.066	-0.041	-0.045
Main Effects					
Implicit Behavior Control Tightness (*IBCT*)	H1a	+		0.154 ***	0.158 *
Task Complexity	H2a	-		-0.187 ***	-0.176 ***
Customer Reliance	H3a	-		0.125 **	0.143 **
Capital Intensity	H4a	+		0.116 *	0.110 *
Professionalized Workforce	H5a	-		0.126 **	0.132 **
Outside Ownership INC	H6a	+		-0.029	-0.045
Outside Ownership Public/Non-profit	H6a	+		-0.017	-0.014
Interaction Effects					
IBCT x Task Complexity	H2e	-			0.133 **
IBCT x Customer Reliance	H3e	-			-0.136 **
IBCT x Capital Intensity	H4e	-			-0.023
IBCT x Professionalized Workforce	H5e	-			0.018
IBCT x Outside Ownership INC	H6e	-			0.047
IBCT x Outside Ownership Public/Non-profit	H6e	-			0.013
R^2			0.066	0.161	0.200
Adjusted R^2			0.037	0.113	0.137
F-stat			2.270	3.394	3.165
Sig F-stat			0.018	0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01

† Model numbers in the table do not appear in numerical order since we also performed hierarchal regression analysis for each PSF characteristic individually. Results of these models are statistically similar to the results of the full model presented above. Therefore, for the sake of brevity, we present only condensed results for each mode of control. Full results of all models can be found in Appendix C.

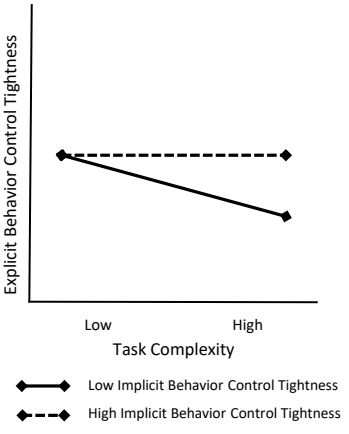


Figure 2.16: Interaction Plot of Implicit and Explicit Behavior Control Tightness on Task Complexity (H2e)

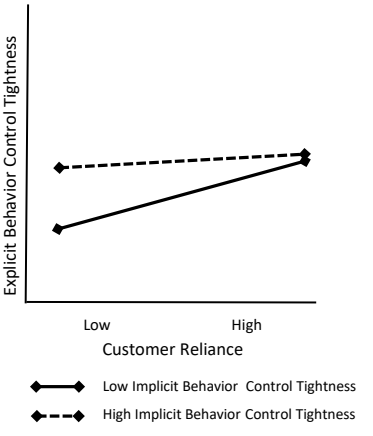


Figure 2.17 Interaction Plot of Implicit and Explicit Behavior Control Tightness on Customer Reliance (H3e)

5.2 Results Control

The findings for results control are presented in Table 2.08. In contrast to the findings for behavior control, the findings for results control indicate that the main effect of implicit results control is negative, though this relationship is not significant, and we therefore fail to find support for hypothesis H1b. When looking at the main effects of the PSF characteristics on explicit results control, we find no significant relationships between task complexity, capital intensity, ownership structure, and explicit results control. We therefore fail to find support for hypotheses H2b, H4b, and H6b. Furthermore, contrary to our hypotheses, the findings indicate a significant positive relationship between customer reliance ($b = 0.165$, $p < 0.05$) and explicit results control and professionalized workforce ($b = 0.127$, $p < 0.05$) and explicit results control, which fails to support hypotheses H3b and H5b.

With respect to the interaction effects, Model 38 in Table 2.08 shows no significant interaction effects between any of the PSF characteristics and implicit results control on explicit results control. We therefore find no support for hypotheses H2f, H3f, H4f, H5f, and H6f. In addition, the results show that including the interaction effects reduces model fit as adjusted R^2 decreases from 0.59 to 0.55 suggesting that the inclusion of the interaction effects does not improve our understanding of the relationships between the variables studied.

Table 2.08†
Condensed Results of Hierarchal Regression Analysis for Results Control Tightness

Dependent Variable Explicit Results Control Tightness	Hypothesis	Predicted	Model 20	Model 37	Model 38
Control Variables					
Org Size Small			-0.128 *	-0.124 *	-0.117
Org Size Medium			-0.128 **	-0.102	-0.087
Unit Size < 10			-0.048	-0.019	-0.015
Unit Size Small			0.039	0.077	0.081
Unit Size Medium			-0.069	-0.042	-0.036
Firm Type (Autonomous)			0.050	-0.016	-0.009
Cost Strategy			0.012	0.014	0.007
Differentiation Strategy			-0.033	-0.007	0.007
Environmental Uncertainty			0.136 **	0.129 **	0.122 *
Main Effects					
Implicit Results Control Tightness *(IRCT)*	H1b	+		-0.084	-0.150 *
Task Complexity	H2b	-		-0.094	-0.087
Customer Reliance	H3b	-		0.165 **	0.180 ***
Capital Intensity	H4b	+		0.084	0.080
Professionalized Workforce	H5b	-		0.127 **	0.119 *
Outside Ownership INC	H6b	+		0.013	0.013
Outside Ownership Public/Non-profit	H6b	+		-0.028	-0.026
Interaction Effects					
IRCT x Task Complexity	H2f	-			-0.011
IRCT x Customer Reliance	H3f	-			0.046
IRCT x Capital Intensity	H4f	-			-0.103
IRCT x Professionalized Workforce	H5f	-			0.034
IRCT x Outside Ownership INC	H6f	-			0.098
IRCT x Outside Ownership Public/Non-profit	H6f	-			0.038
		R^2	0.057	0.109	0.123
		Adjusted R^2	0.028	0.059	0.055
		F-stat	1.952	2.193	1.793
		Sig F-stat	0.045	0.006	0.017

* p < 0.10, ** P < 0.05, *** p < 0.01

† Model numbers in the table do not appear in numerical order since we also performed hierarchal regression analysis for each PSF characteristic individually. Results of these models are statistically similar to the results of the full model presented above. Therefore, for the sake of brevity, we present only condensed results for each mode of control. Full results of all models can be found in Appendix C.

5.3 Personnel Control

The results for personnel control are presented in Table 2.09. The results indicate that Model 39 and Model 56 fail to gain significance. This indicates that we cannot reject the hypothesis that all regression coefficients are equal to zero suggesting that our model is misspecified, and none of the variables considered have any effect on explicit personnel control. We therefore limit our discussion the results of the interaction effects and consider an alternative measure of personnel control in the section on additional analyses.

As predicted, Model 57 in Table 2.09 shows a significant negative interaction effect on *IPCT* x Task Complexity which provides support for hypothesis H2g. As illustrated in Figure 2.18, as task complexity increases low implicit personnel control firms increase their explicit personnel control tightness, while high implicit personnel control firms decrease their explicit personnel control tightness leading to a crossover interaction effect with low implicit personnel control firms having a higher degree of explicit personnel control tightness under high task complexity than high implicit personnel control tightness firms. We also predicted negative interaction effects for *IPCT* x Customer Reliance and *IPCT* x Professionalized Workforce, but we find no significant interaction effects and therefore fail to find support for hypotheses H3g and H5g. Finally, we predicted no significant interaction effects between implicit personnel control tightness and capital intensity or ownership structure. We find support for hypothesis H4g, which shows no significant interaction effect on *IPCT* x Capital Intensity. We find partial support for hypothesis H6g, since there is no significant interaction effect between implicit personnel control tightness and Outside Ownership INC. However, we do find a significant positive interaction effect on *IPCT* x Ownership public/non-profit which does not support hypothesis H6g. A plot of this relationship in Figure 2.19 shows a cross-over interaction effect with inside ownership (partnership) firms combining higher levels of explicit personnel control tightness with lower levels of implicit personnel control tightness and vice versa, whereas for public/non-profit firms this relationship is reversed. This suggests that partnership firms trade-off between implicit and explicit personnel control tightness, while public/non-profit firms tend to increase or decrease both types of control tightness simultaneously.

Table 2.09†
Condensed Results of Hierarchal Regression Analysis for Personnel Control

Dependent Variable Explicit Personnel Control Tightness	Hypothesis	Predicted	Model 39	Model 56	Model 57
Control Variables					
Org Size Small			-0.173 **	-0.173 **	-0.170 **
Org Size Medium			-0.022	-0.014	-0.013
Unit Size < 10			0.021	0.053	0.042
Unit Size Small			0.084	0.112	0.100
Unit Size Medium			-0.073	-0.067	-0.077
Firm Type (Autonomous)			-0.039	-0.084	-0.128 *
Cost Strategy			-0.053	-0.051	-0.064
Differentiation Strategy			0.019	0.028	0.029
Environmental Uncertainty			0.012	0.012	-0.006
Main Effects					
Implicit Personnel Control Tightness (*IPCT*)	H1c	+		0.099	0.050
Task Complexity	H2c	+		0.028	0.041
Customer Reliance	H3c	+		0.061	0.062
Capital Intensity	H4c	0		-0.049	-0.055
Professionalized Workforce	H5c	-		0.104	0.124 *
Outside Ownership INC	H6c	-		0.034	-0.016
Outside Ownership Public/Non-profit	H6c	-		-0.011	-0.099
Interaction Effects					
IPCT x Task Complexity	H2g	-			-0.110 *
IPCT x Customer Reliance	H3g	-			0.012
IPCT x Capital Intensity	H4g	0			-0.027
IPCT x Professionalized Workforce	H5g	-			-0.043
IPCT x Outside Ownership INC	H6g	0			-0.050
IPCT x Outside Ownership Public/Non-profit	H6g	0			0.216 ***
		R^2		0.039	0.068	0.110
		Adjusted R^2		0.010	0.016	0.040
		F-stat		1.321	1.298	1.565
		Sig F-stat		0.225	0.197	0.054

* p < 0.10, ** P < 0.05, *** p < 0.01

† Model numbers in the table do not appear in numerical order since we also performed hierarchal regression analysis for each PSF characteristic individually. Results of these models are statistically similar to the results of the full model presented above. Therefore, for the sake of brevity, we present only condensed results for each mode of control. Full results of all models can be found in Appendix C.

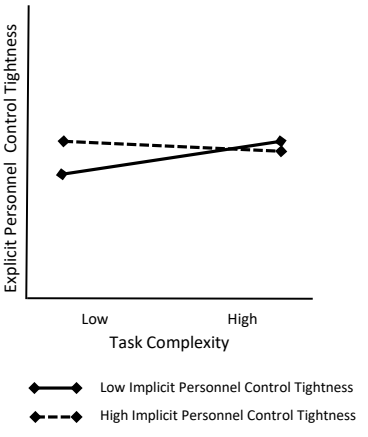


Figure 2.18: Interaction Plot of Implicit and Explicit Personnel Control Tightness on Task Complexity (H2g)

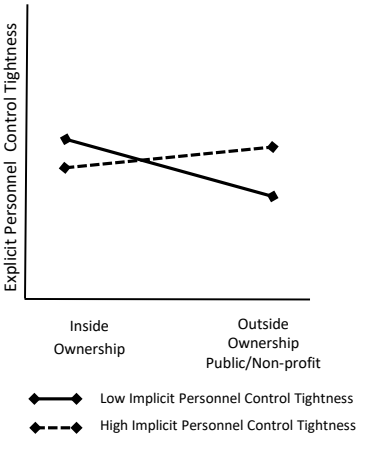


Figure 2.19 Interaction Plot of Implicit and Explicit Personnel Control Tightness on Ownership Structure (H6g)

5.4 Cultural Control

The results for cultural control are presented in Table 2.10. As shown in model 58, the main effect between implicit cultural control tightness and explicit cultural control tightness is positive and significant (b = 0.463, p <0.001), which supports hypothesis H1d. We find no significant relationship between task complexity, customer reliance, capital intensity or professionalized workforce and explicit cultural control. This provides support for hypotheses H4d and H5d and fails to support hypotheses H2d and H3d. We also find no significant relationship between outside ownership INC and explicit cultural control tightness, though we do find a significant and negative relationship for outside ownership public/non-profit and explicit cultural control tightness (b = -0.227, p < 0.01) which provides partial support for hypothesis H6d.

With respect to the interactions, Model 76 in Table 2.10 shows significant negative interactions on *ICCT* x Task Complexity (b = -0.083, p < 0.10). However, a plot of the interaction in Figure 2.20 shows the nature of the relationship is different than predicted, and we therefore fail to find support for hypothesis H2h. As task complexity increases low implicit cultural control tightness is associated with increasing explicit cultural control tightness as predicted by hypothesis H2h, but the strong positive relationship between implicit and explicit cultural control tightness continues to dominate the relationship. Contrary to expectations, we also find a significant positive interaction for *ICCT* x Capital Intensity (b = 0.139, p< 0.01), which fails to hypothesis H4h. As with task complexity, this relationship is dominated by the

strong positive main effect of implicit cultural control tightness on explicit cultural control tightness. As illustrated in Figure 2.21, high implicit cultural control tightness is associated with higher levels of explicit cultural control tightness for both low and high levels of capital intensity, but this difference is increasing as capital intensity increases causing a significant positive interaction. Neither customer reliance nor professionalized workforce shows a significant interaction effect and we therefore also fail to find support for hypotheses H3h and H5h.

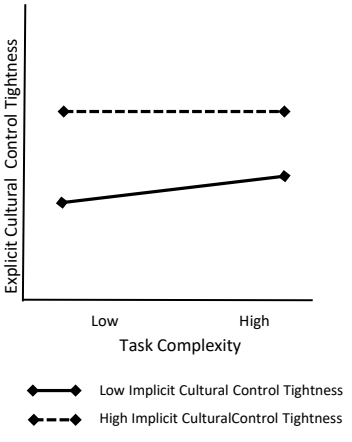


Figure 2.20: Interaction Plot of Implicit and Explicit Cultural Control Tightness on Task Complexity (H2h)

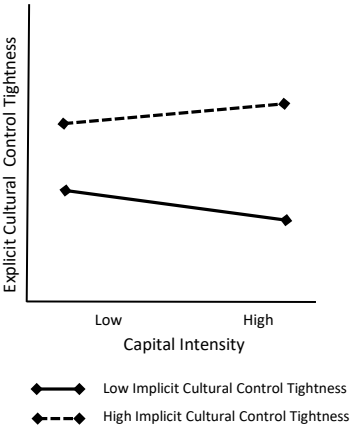


Figure 2.21 Interaction Plot of Implicit and Explicit Cultural Control Tightness on Capital Intensity (H4h)

Table 2.10†
Condensed Results of Hierarchal Regression Analysis for Cultural Control

Dependent Variable Explicit Cultural Control Tightness	Hypothesis	Predicted	Model 58	Model 75	Model 76
Control Variables					
Org Size Small			-0.238 ***	-0.218 ***	-0.245 ***
Org Size Medium			-0.105 *	-0.085	-0.082
Unit Size < 10			-0.055	0.042	0.046
Unit Size Small			0.053	0.049	0.062
Unit Size Medium			-0.155 **	-0.039	-0.044
Firm Type (Autonomous)			0.045	0.045	0.035
Cost Strategy			-0.089	-0.089	-0.104 **
Differentiation Strategy			0.031	0.019	0.035
Environmental Uncertainty			0.023	-0.045	-0.010
Main Effects					
Implicit Cultural Control Tightness (*ICCT*)	H1d	+		0.463 ***	0.498 ***
Task Complexity	H2d	+		0.070	0.069
Customer Reliance	H3d	+		0.014	0.006
Capital Intensity	H4d	0		-0.035	-0.025
Professionalized Workforce	H5d	0		-0.028	-0.007
Outside Ownership INC	H6d	-		-0.050	-0.061
Outside Ownership Public/Non-profit	H6d	-		-0.227 ***	-0.216 ***
Interaction Effects					
ICCT x Task Complexity	H2h	-			-0.083 *
ICCT x Customer Reliance	H3h	-			0.071
ICCT x Capital Intensity	H4h	-			0.139 ***
ICCT x Professionalized Workforce	H5h	0			-0.038
ICCT x Outside Ownership INC	H6h	-			-0.122 *
ICCT x Outside Ownership Public/Non-profit	H6h	-			0.040
R^2			0.090	0.348	0.398
Adjusted R^2			0.062	0.311	0.350
F-stat			3.213	9.511	8.377
Sig F-stat			0.001	0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01

† Model numbers in the table do not appear in numerical order since we also performed hierarchal regression analysis for each PSF characteristic individually. Results of these models are statistically similar to the results of the full model presented above. Therefore, for the sake of brevity, we present only condensed results for each mode of control. Full results of all models can be found in Appendix C.

For outside ownership, we find no significant interaction for *ICCT* x Outside Ownership Public/Non-profit and a significant positive interaction effect for *ICCT* x Outside Ownership Public, both of which fail to support hypothesis H6h. As shown in Figure 2.22, a plot of this interaction is similar to that of cultural control and task complexity. Both inside ownership (partnership) firms and outside ownership (corporations) tend to combine high explicit cultural control tightness with high implicit cultural control tightness and vice versa, but this difference is smaller for corporations than for inside ownership firms. A summary of our hypotheses and results is presented in Table 2.11.

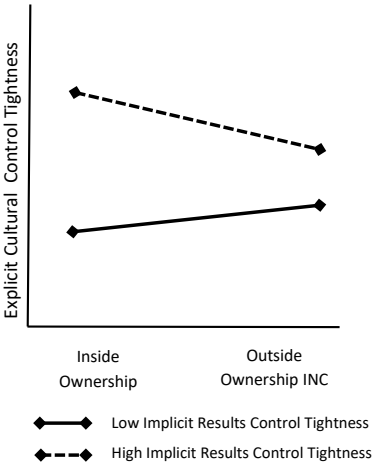


Figure 2.22: Interaction Plot of Implicit and Explicit Cultural Control Tightness on Outside Ownership INC (H6h)

Table 2.11
Summary of Hypotheses and Results

Hypothesis	Independent Variable	Dependent Variable	Predicted	Actual
H1a	Implicit Behavior Control Tightness (*IBCT*)	Explicit Behavior Control Tightness	+	+
H1b	Implicit Results Control Tightness (*IRCT*)	Explicit Results Control Tightness	+	-
H1c	Implicit Personnel Control Tightness (*IPCT*)	Explicit Personnel Control Tightness	+	0
H1d	Implicit Cultural Control Tightness (*ICCT*)	Explicit Cultural Control Tightness	+	+
H2a	Task Complexity	Explicit Behavior Control Tightness	-	-
H2b	Task Complexity	Explicit Results Control Tightness	-	NS
H2c	Task Complexity	Explicit Personnel Control Tightness	+	NS
H2d	Task Complexity	Explicit Cultural Control Tightness	+	NS
H2e	Task Complexity	Explicit Behavior Control Tightness	-	+
H2f	Task Complexity	Explicit Results Control Tightness	-	NS
H2g	Task Complexity	Explicit Personnel Control Tightness	-	-
H2h	Task Complexity	Explicit Cultural Control Tightness	-	-
H3a	Customer Reliance	Explicit Behavior Control Tightness	-	+
H3b	Customer Reliance	Explicit Results Control Tightness	-	+
H3c	Customer Reliance	Explicit Personnel Control Tightness	+	NS
H3d	Customer Reliance	Explicit Cultural Control Tightness	+	NS
H3e	*IBCT* x Customer Reliance	Explicit Behavior Control Tightness	-	-
H3f	*IRCT* x Customer Reliance	Explicit Results Control Tightness	-	NS
H3g	*IPCT* x Customer Reliance	Explicit Personnel Control Tightness	-	NS
H3h	*ICCT* x Customer Reliance	Explicit Cultural Control Tightness	-	NS
H4a	Capital Intensity	Explicit Behavior Control Tightness	+	+
H4b	Capital Intensity	Explicit Results Control Tightness	+	NS
H4c	Capital Intensity	Explicit Personnel Control Tightness	0	NS
H4d	Capital Intensity	Explicit Cultural Control Tightness	0	NS
H4e	*IBCT* x Capital Intensity	Explicit Behavior Control Tightness	-	NS
H4f	*IRCT* x Capital Intensity	Explicit Results Control Tightness	-	NS
H4g	*IPCT* x Capital Intensity	Explicit Personnel Control Tightness	0	NS
H4h	*ICCT* x Capital Intensity	Explicit Cultural Control Tightness	-	+
H5a	Professionalized Workforce	Explicit Behavior Control Tightness	-	+
H5b	Professionalized Workforce	Explicit Results Control Tightness	-	+
H5c	Professionalized Workforce	Explicit Personnel Control Tightness	-	0
H5d	Professionalized Workforce	Explicit Cultural Control Tightness	0	0
H5e	*IBCT* x Professionalized Workforce	Explicit Behavior Control Tightness	-	NS
H5f	*IRCT* x Professionalized Workforce	Explicit Results Control Tightness	-	NS
H5g	*IPCT* x Professionalized Workforce	Explicit Personnel Control Tightness	-	NS
H5h	*ICCT* x Professionalized Workforce	Explicit Cultural Control Tightness	0	NS
H6a	Ownership INC	Explicit Behavior Control Tightness	+	NS
	Ownership Public		+	NS
H6b	Ownership INC	Explicit Results Control Tightness	+	NS
	Ownership Public		+	NS
H6c	Ownership INC	Explicit Personnel Control Tightness	-	NS
	Ownership Public		-	NS
H6d	Ownership INC	Explicit Cultural Control Tightness	-	NS
	Ownership Public/Non-profit		-	-
H6e	*IBCT* x Ownership INC	Explicit Behavior Control Tightness	-	NS
	IBCT x Ownership Public/Non-profit		-	NS
H6f	*IRCT* x Ownership INC	Explicit Results Control Tightness	-	NS
	IRCT x Ownership Public/Non-profit		-	NS
H6g	*IPCT* x Ownership INC	Explicit Personnel Control Tightness	0	NS
	IPCT x Ownership Public/Non-profit		0	+
H6h	*ICCT* x Ownership INC	Explicit Cultural Control Tightness	-	-
	ICCT x Ownership Public/Non-profit		-	NS

5.5 Additional Analysis

As stated above, the predictive value of all of our models for personnel control except for our interaction failed to achieve statistical significance. To ascertain the potential source of this lack of significance we performed bivariate correlation analysis of the explicit personnel control tightness construct, with an additional question on the survey where we also measured the extent of the hiring process. We asked respondents to indicate via checkmark (yes/no) whether they underwent 12 different hiring procedures often discussed in the HRM literature. Respondents were also given the opportunity to list additional procedures that they had to undergo as part of the hiring process. Respondents were provided with a score on this question based on the number of procedures they underwent as part of their hiring process, with each additional procedure listed under additional procedures counted a 1. Bivariate correlation indicates that the correlation between the summated version of this question and explicit personnel control is moderate (0.478) possibly indicating that respondents interpret "extensive hiring process" differently. We therefore also present results for personnel control with this count-based measure (Explicit Personnel Control Tightness Count). Since we use a count-based measure, we also modify our analysis from hierarchal regression with OLS to a generalized Poisson regression model which has frequently been used to match this type of data (Greene, 2003). As the mean of our data (3.7403) exceeds the variance (3.600) indicating underdispersion, we utilize the generalized Poisson regression which can accommodate both over- and underdispersed count data (Winkelmann and Zimmermann, 1994).

Results of the generalized Poisson regressions are presented in Table 2.12. Models 1, 2 and 3 correspond in Table 2.12 correspond to the OLS regression results in models 39, 56, and 57, respectively. Under the generalized Poisson model our chi-squared statistics indicate adequate model fit. As in our main model, the generalized Poisson shows no significant main effects between explicit personnel control and implicit personnel control, customer reliance, capital intensity or outside ownership public/non-profit. Furthermore, the generalized Poisson model provides further evidence of the lack of support for hypothesis H4c and H5c as, counter to our predictions, the relationship between explicit personnel control and professionalized workforce and outside ownership INC are both positive and significant. We do however find support for hypothesis H2c, as the generalized Poisson model indicates that task complexity is associated with significantly higher levels of explicit personnel control. However, the incidence rate ratio of 1.079 indicates that high task complexity firms have 1.079 more hiring procedures than low task complexity firms. While this

finding achieves statistical significance, the practical significance of this increase appears limited since high task complexity firms use less than one additional hiring procedure than low complexity firms. It is questionable whether such a small increase can be interpreted as a more intense hiring process.

When looking at the interaction effects, the generalized Poisson model largely confirms the results of our main model. The findings for the interaction of implicit control with task complexity, customer reliance, capital intensity, professionalized workforce and outside ownership public/non-profit are the same as those of the main model. Only outside ownership INC which failed to reach statistical significance in the main model is significant in the generalized Poisson model. However, once again the incidence rate ratio is fairly close to 1 (0.861) which again brings the practical significance of these findings into question.

In summary, the findings of this alternative measure of explicit personnel control largely confirm our original findings. Where there are deviations from the main model the differences are small enough that they appear to lack practical significance and we therefore appear to confirm rather than refute the results of our main model.

6 Discussion

This study examines the antecedents to management control system design in professional service firms. Traditionally, theory on management control in PSFs has assumed that the unique characteristics of professional service firms (task complexity, customer reliance, capital intensity, professionalized workforce, and ownership structure) make bureaucratic forms of control difficult to apply. We tested this assumption by defining PSF based on the unique characteristics which make them difficult to manage using bureaucratic forms of control.

In the first part of our study, we aimed to show that uncertainty created by these characteristics would increase non-bureaucratic control use and decrease bureaucratic control use. As a whole, we find that the PSF characteristics we examined had a greater impact on the use of bureaucratic forms of control than non-bureaucratic forms of control. More specifically, explicit behavior control tightness showed the greatest change in response to the PSF characteristics, while explicit cultural control tightness largely failed to produce significant results.

Table 2.12
Results of Generalized Poisson Analysis for Personnel Control

Dependent Variable Explicit Personnel Control Tightness Count	Hypothesis	Predicted	Model 1	Model 2	Model 3
Org Size Small			0.798 **	0.832 **	0.844 **
Org Size Medium			0.993	0.978	0.973
Unit Size < 10			1.009	1.074	1.052
Unit Size Small			0.950	0.988	0.969
Unit Size Medium			1.073	1.082	1.075
Firm Type (Autonomous)			0.958	0.960	0.914
Cost Strategy			0.946	0.904	0.871
Differentiation Strategy			1.000	0.993	1.004
Environmental Uncertainty			1.045 **	1.034	1.028
Main Effects					
Implicit Personnel Control Tightness (*IPCT*)	H1c	+		1.045	1.074
Task Complexity	H2c	+		1.074 ***	1.079 ***
Customer Reliance	H3c	+		1.033	1.031
Capital Intensity	H4c	0		0.972	0.971
Professionalized Workforce	H5c	-		1.079 **	1.092 ***
Outside Ownership INC	H6c	-		1.219 ***	1.148 **
Outside Ownership Public/Non-profit	H6c	-		1.008	0.843
Interaction Effects					
IPCT x Task Complexity	H2g	-			0.968 *
IPCT x Customer Reliance	H3g	-			0.989
IPCT x Capital Intensity	H4g	0			0.980
IPCT x Professionalized Workforce	H5g	-			0.978
IPCT x Outside Ownership INC	H6g	0			0.861 **
IPCT x Outside Ownership Public/Non-profit	H6g	0			1.295 ***
Intercept			4.0427 ***	3.615 ***	3.792 ***
Log-likelihood			-599.978	-583.853	-572.437
Pseudo R^2			0.0158	0.0384	0.0572

* p < 0.10, ** P < 0.05, *** p < 0.01

Overall, the findings suggest that the increased uncertainty created by the PSF characteristics does not lead to a decrease in explicit bureaucratic control tightness. Of the characteristics we examined, only task complexity led to an expected decrease in explicit behavior and results control tightness. Similarly, capital intensity led to an expected increase in explicit behavior control tightness, though there was no significant difference in explicit results control tightness. In contrast, contrary to our predictions, customer reliance and professionalized workforce was associated with a significant increase in both explicit behavior and results control tightness. For customer reliance, this increase in explicit behavior and results control tightness may be an attempt by professional service firms to create more tangible and well-defined service offerings as a way to signal service quality. For professionalized workforce, the nature of the work problem may actually be diminished since work is based on a more clearly defined body of knowledge, which lends itself better to the increased application of explicit behavior and results controls. Outside ownership, on the other hand failed to produce significant results for both explicit behavior and results control tightness, suggesting that the inside ownership firms in our sample do not reduce their use of bureaucratic forms of control, despite the potential reductions in agency costs as a result of inside ownership.

Furthermore, the findings largely suggest that an increase in PSF characteristics does not lead to an increase in explicit non-bureaucratic control measures. For personnel control, the findings were problematic, as our OLS model of the direct effects failed to achieve statistical significance. In our additional analysis, we utilized a generalized Poisson model which achieved acceptable model fit and we discuss those findings here.

Task complexity was positively associated with both explicit personnel and cultural control tightness, though this relationship was only significant for explicit personnel control tightness. However, the incidence rate ratio of the effect of task complexity on explicit personnel control tightness is close to one (1.078) indicating that this increase is minimal. While this finding does suggest that firms increase the intensity of their employee selection process as tasks become more complex and it is more difficult to contract on output (Akerlof and Kranton, 2005; Cohen and Pfeffer, 1986; Merchant, 1985; Prendergast, 2008; Simons, 2000), it appears that this increase, at least in terms of the number of hiring procedures used, is minimal. In addition, no significant relationships were found for capital intensity or customer reliance and either explicit personnel control tightness or explicit cultural control tightness.

For professionalized workforce, we predicted that a clearly defined body of knowledge and sorting procedure for professional education would lead to a decrease in explicit personnel control as candidates were partially pre-qualified for their work. In contrast, professionalized workforce led to a significant increase in explicit personnel control tightness, though once again the IRR was close to one indicating that this difference is small. Moreover, no such significant increase in explicit cultural control tightness was found in response to professionalized workforce, indicating that the effect of professionalized workforce on non-bureaucratic controls is limited to explicit personnel control tightness and is relatively small. Finally, outside ownership was associated with decreases in explicit personnel and cultural control tightness as predicted, but for explicit personnel control tightness this decrease was only significant for corporations and not for public/non-profit firms. For explicit cultural control tightness this decrease was only significant for public/non-profit firms and not for corporations. This lack of consistent findings for outside ownership may suggest that the difference in not driven by outside ownership per se but by another factor unique to corporations and public/non-profit firms.

Generally speaking, increases in PSF characteristics appear to have a limited impact on both explicit personnel control tightness and explicit cultural control tightness. The findings for explicit personnel control tightness are particularly surprising since previous research on PSFs indicates that human capital is important for PSF performance (Hitt et al., 2001; Skaggs and Youndt, 2004) therefore we would expect greater use of HRM practices when human capital is seen as particularly vital to firm success (MacDuffie, 1995).

In the second part of our study, we examined whether the use of bureaucratic forms of control in PSFs was made possible through more flexible application of bureaucratic forms of control. That is, did firms facing MCS challenges from the PSF characteristics modify their control systems to allow for greater flexibility in order to reduce the nature of the work and the nature of the individual challenges, while allowing for greater consistency, efficiency, and better decision making. Consistent with the traditional definition of formalization, we argued that when the management challenges from the PSF characteristics were low, firms would increase or decrease explicit and implicit form of control simultaneously, in other words, based on our conceptual model, firms would choose either a flexible guidelines or rigid standardization approach to management control. As the management challenges increased with the degree of the PSF characteristics, management could address these challenges by trading-off between explicit and implicit forms of control, leading to a negative interaction effect and causing firms to choose either flexible standardization or strict guidelines approaches to management control. We reasoned

that by trading-off between explicit and implicit forms of control, management could benefit from the improved decision-making and information-sharing without suffering the potential negative consequences of an overly rigid control system.

Overall, we found that implicit control was significantly positively associated explicit control for behavior and cultural control, with no significant relationship between explicit and implicit forms of control for results and personnel control. We also found limited interaction effects between the PSF characteristics and implicit and explicit forms of control suggesting that the presence of PSF characteristics does not significantly affect the direction or strength of the relationship between implicit and explicit forms of control, and when the interaction effects were significant, the nature of the relationship was different than predicted. We now examine these interaction effects in greater detail.

Below we present interaction plots of our PSF characteristics and explicit and implicit control tightness. For the sake of brevity, we present only the results of the significant interactions, interaction plots of the full results are presented in Appendix D. As shown in the plots, for task complexity (see Figure 2.23) and customer reliance (see Figure 2.24), the relationships are different than predicted either by the traditional model of formalization or by our conceptual model.

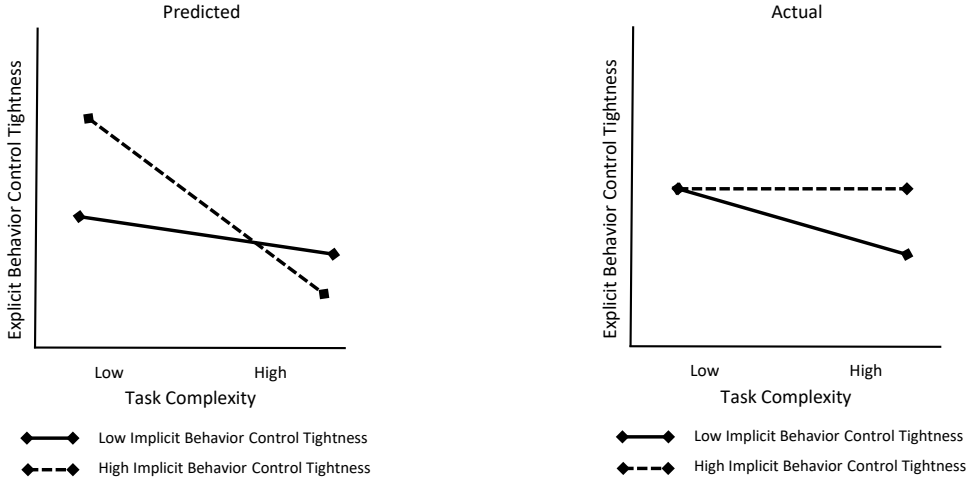


Figure 2.23: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Task Complexity (H2e)

For task complexity, we predicted that the increased uncertainty from task complexity would cause firm to introduce more flexibility into their MCS by combining high explicit behavior control tightness with low implicit behavior control tightness and vice versa. As the plot of the actual interaction in Figure 2.23 suggests, when task complexity is low, there is no difference in explicit behavior control tightness for high and low implicit behavior control tightness firms. This indicates that under low task complexity the extent of the behavior controls in terms of size and scope is similar, but firms choose to observe these rules strictly (high implicit behavior control tightness) or loosely (low implicit behavior control tightness).

In other words, rather than choosing a behavior control rigid standardization (*BCRS*) or behavior control flexible guidelines (*BCFG*) approach to control as predicted, firms choose either a behavior control rigid standardization (*BCRS*) or behavior control rigid guidelines (*BCRG*) approach to control. Under high task complexity, we predicted that firms would benefit by combining control with flexibility leading to either a behavior control flexible standardization (*BCFS*) or behavior control rigid guidelines (*BCRG*) approach to control. In contrast, the results show that under high task complexity firms choose either high explicit and implicit behavior control or vice versa. Rather than balancing flexibility with control, it appears that under high task complexity firms choose either a *BCFG* or *BCRS* approach to management control. While a *BCFG* approach to increased uncertainty as a result of task complexity is in line with traditional models of control such as Ouchi (1979) and Perrow (1967), the presence of a *BCRS* control approach seems counterintuitive since complex tasks are assumed to be poorly suited to rigid controls and should be met with considerable resistance from professionals. As we do not test performance effects of the chosen control approaches in this chapter, we cannot determine whether this *BCRS* control strategy is in fact suboptimal in terms of performance, but it does appear that a subset of professional service firms in our sample choose the *BCRS* control approach in response to task complexity.

For customer reliance, the unexpected positive direct effect of customer reliance on explicit behavior control means that this relationship is reversed (see Figure 2.24). Under low customer reliance firms combine high implicit behavior control with high explicit behavior control and vice versa. This is consistent with the traditional definition of formalization and with implicit and explicit behavior control being complements. However, as customer reliance increases, behavior control flexible guidelines (*BCFG*) firms increase rather than decrease explicit behavior control

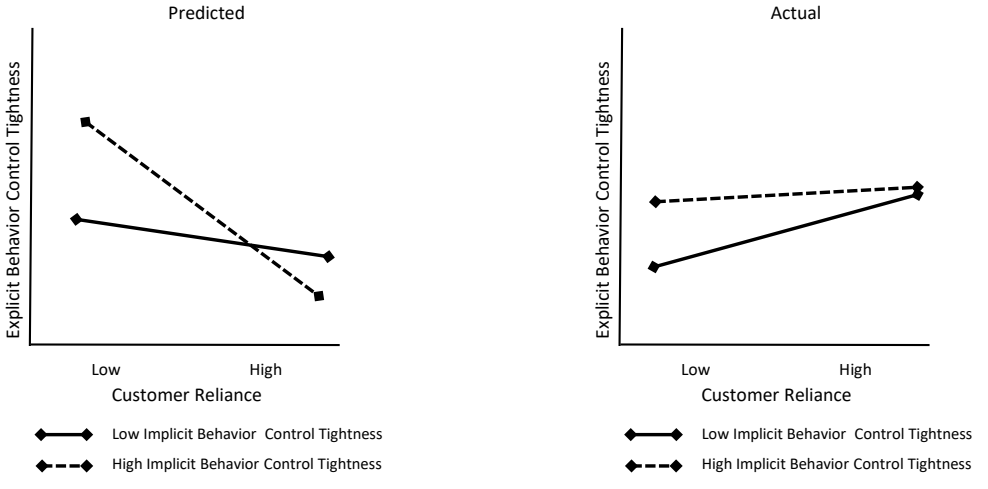


Figure 2.24: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Customer Reliance (H3e)

tightness, while high implicit behavior control tightness firms maintain their level of explicit control tightness. Therefore, as customer reliance increases, firms either maintain a behavior control rigid standardization (*BCRS*) control system or increase their degree of control tightness from behavior control flexible guidelines (*BCFG*) to that of behavior control flexible standardization (*BCFS*). Once again, the presence of a behavior control rigid standardization control system under high customer reliance appears counterintuitive, since the uncertainty created by increased customer reliance should make the control system less suited to behavior control and may limit the actions of professionals to pre-defined scripts rather than allowing them to adjust their behavior to face this uncertainty. In contrast, for low implicit behavior control tightness firms, the increasing degree of explicit behavior control tightness in response to increasing customer reliance appears to suggest that firms attempt to manage the uncertainty created by customer reliance by providing professionals with additional rules, procedures and scripts to following when dealing with customers (high explicit behavior control tightness). This allows professionals to deviate from this rules and procedures to suit the situation at hand (low implicit control tightness).Thus partially supporting our assertion that in response to the PSF characteristic customer reliance, some firms opt for an MCS that balances control and flexibility.

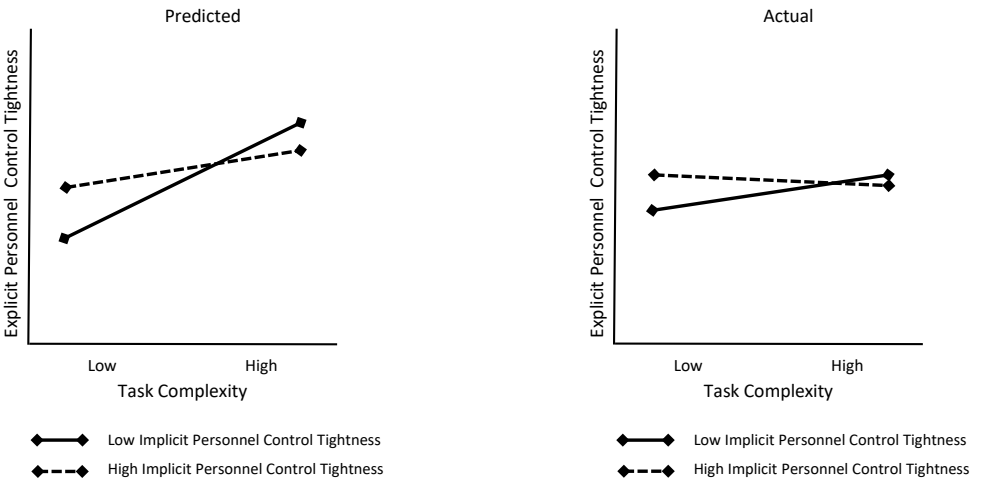


Figure 2.25: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Task Complexity (H2g)

For results control we found no significant interaction effects suggesting that the presence or absence of PSF characteristics do not modify the relationship between implicit and explicit control tightness. The poor reliability of our implicit results control measure may affect the results though further examination with a more reliable measure would be useful to determine whether this substitution relationship holds.

For personnel control, the direct effects of both implicit personnel control tightness and the PSF characteristics on explicit personnel control tightness were limited. Customer reliance, capital intensity, professionalized workforce, and outside ownership do not affect the nature of the relationship between implicit and explicit personnel controls as either increase or decrease concurrently. In contrast, the results for task complexity (see Figure 2.25) and outside ownership public/non-profit (see Figure 2.26) indicate that a trade-off between explicit and implicit personnel control tightness does occur, with high task complexity and inside ownership (partnership) both combining low implicit personnel control tightness with high explicit personnel control tightness and vice versa, while for low task complexity and outside ownership public/non-profit, firms combine high implicit personnel control tightness with low implicit personnel control tightness and vice versa. However, under high task complexity the difference between low and high implicit personnel control tightness firms is quite small as evidenced by the lack of significant direct effect of task complexity in model 57. This appears to suggest that while some trade-off between implicit and explicit personnel control tightness does occur in response to the PSF characteristics, under high task complexity firms tend to converge toward an extensive employee selection procedure (high explicit personnel control tightness).

This lends support to the importance of human capital and employee selection in more complex firms. For ownership structure the trade-off in explicit and implicit personnel control tightness is more pronounced, with insider ownership firms combining high explicit personnel control tightness with low explicit personnel control tightness and vice versa, and public/non-profit firms combining high explicit personnel control tightness with high implicit personnel control tightness. This suggests that inside ownership firms tend towards flexibility in their personnel control system, while public/non-profit firms tend toward either a very tight or very loose personnel control system.

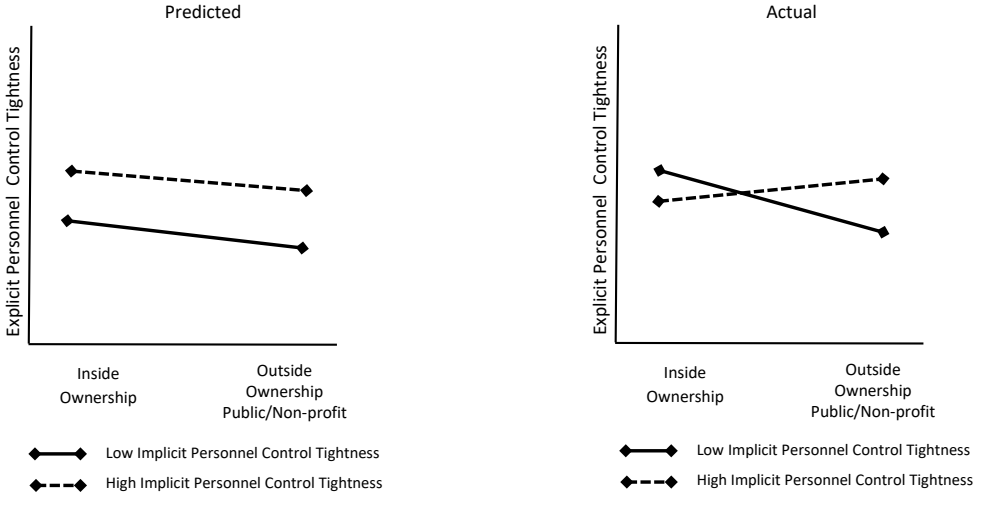


Figure 2.26: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Ownership Structure (H6g)

For cultural control, the direct effects of the PSF characteristics on explicit cultural control tightness was limited, with only outside ownership public/non-profit having a significant negative impact on explicit cultural control tightness. This suggests the PSF characteristics have little effect on the firm's application of cultural control. Rather than increasing the degree of explicit cultural control tightness in response to PSF characteristics, the choice of high or low explicit cultural control tightness appears to be largely independent of these characteristics. This fails to support the notion that PSF increase their use of non-bureaucratic forms of control is response to the management challenges created by the PSF characteristics.

Furthermore, a strong significant and positive relationship between implicit and explicit cultural control tightness suggests that firms increase both types of control simultaneously. This strong positive relationship may indicate that increased use of employee socialization procedures (explicit cultural control tightness) results in cultural homogeneity (implicit cultural control tightness). A summary of the interaction plots in Figures 2.27-2.28 show that the strong positive relationship between implicit and explicit cultural control tightness dominates the relationship between implicit and explicit cultural control tightness. High implicit cultural control tightness is combined with high explicit cultural control tightness and vice versa. When there is a significant interaction, such as for task complexity, capital intensity and outside ownership INC, the interaction effect continues to be dominated by the strong significant main effect of implicit cultural control tightness on explicit cultural control tightness. For task complexity (see Figure 2.27) this results in low implicit personnel control tightness firms increasing explicit personnel control tightness as task complexity increases. This increase in explicit personnel control tightness suggests increased use of employee socialization procedures, which may be necessary to compensate for the increased uncertainty stemming from higher task complexity. We see a similar pattern for ownership structure, (see Figure 2.29), though here the trade-off effect is a bit more pronounced. For capital intensity, we find no evidence of a trade-off effect. As indicated by the interaction plot (see Figure 2.28), as capital intensity increases high implicit cultural control tightness firms increase explicit cultural control tightness and low implicit cultural control firms further decrease explicit cultural control tightness.

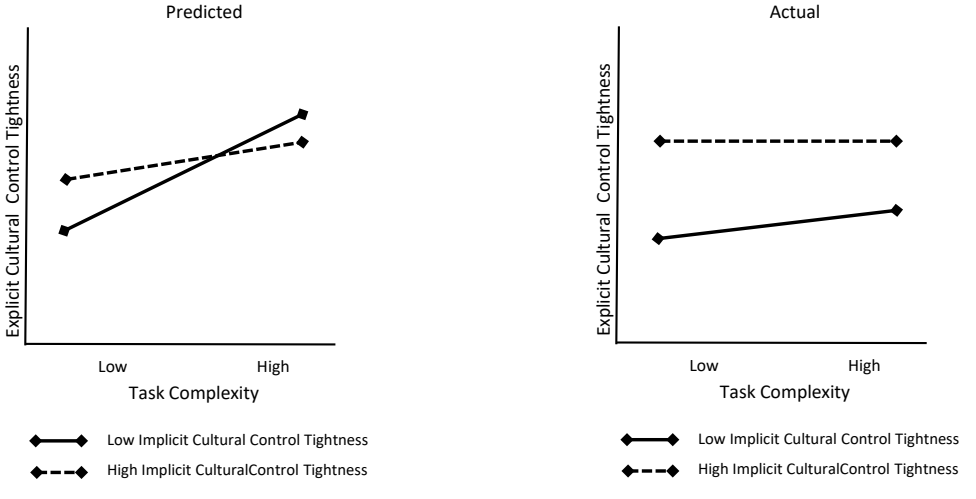


Figure 2.27: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Task Complexity (H2h)

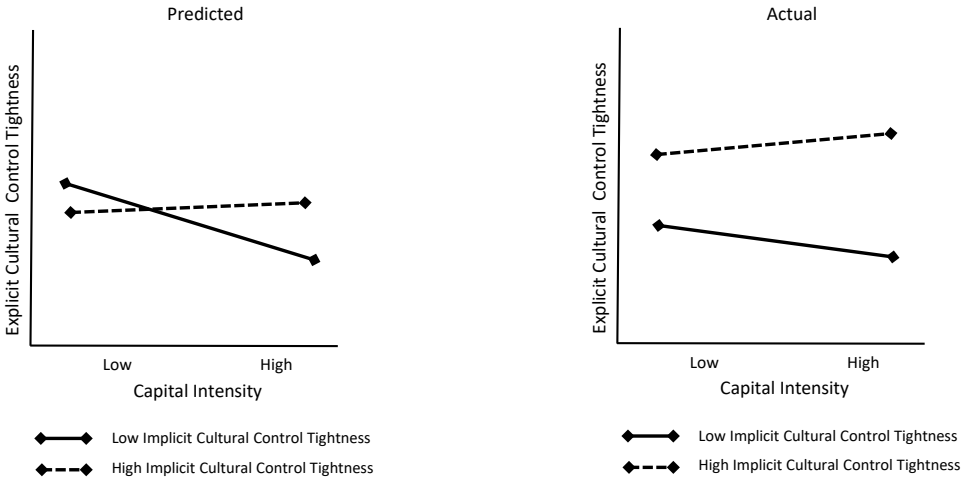


Figure 2.28: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Capital Intensity (H4h)

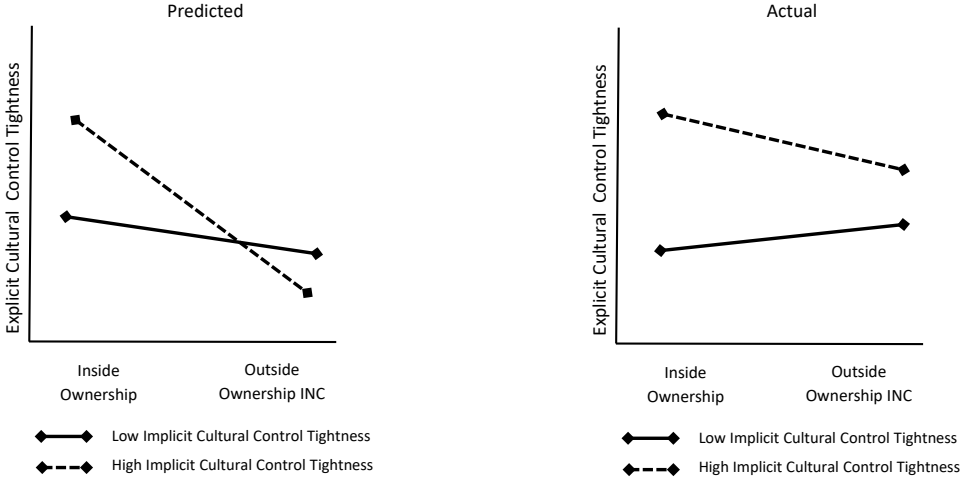


Figure 2.29: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Ownership Structure (H6h)

7 Conclusion

This study examines the design of management control systems in professional service firms. Traditionally, theory on management control is PSFs has assumed that bureaucratic forms of control are not suitable for the unique management challenges presented by these firms. We tested these assumptions by defining PSF based on the unique characteristics which make them difficult to manage using bureaucratic forms of control.

In the first part of our study, we aimed to show that uncertainty created by these characteristics would increase non-bureaucratic control use and decrease bureaucratic control use. Our findings largely do not support these assertions and instead appear to show that the PSF characteristics examined either have no effect on the use of bureaucratic controls or that they actually increase bureaucratic control use in the firms we examined. Of the characteristics we examined, only task complexity and capital intensity produced results in the expected direction, with task complexity being associated with decreases in explicit behavior control and increases in explicit personnel control and capital intensity causing increases in behavior controls. In contrast, customer reliance and professionalized workforce led to significant increases in both behavior and results controls. These findings suggest that rather than responding to uncertainty with less bureaucratic forms of control, firms respond by creating more rules and targets to guide employee behavior. We suggest that for customer reliance this may be an attempt to signal service quality by making the service provision more tangible to the client, while a more clearly defined body of knowledge may make the application of bureaucratic controls less problematic for more professionalized occupations. However, further research is necessary establish the motivation for increased use of explicit bureaucratic controls in response to customer reliance and professionalized workforce.

Our findings also do not suggest that firms with a high degree of the PSF characteristics we examined increase their use of non-bureaucratic controls. The PSF characteristics had little effect on the explicit personnel and cultural control tightness of the firms in our study suggesting that these forms of control are influenced by other factors.

In the second part of our study, we examined whether the use of bureaucratic forms of control in PSFs was made possible through more flexible application of bureaucratic forms of control. The results indicate that for the most part the PSF characteristics do not impact the relationship between implicit and explicit and firms do not trade-off between explicit and implicit forms of control. When a trade-off does occur, it is not as extreme or is different in nature than predicted by our hypotheses. Nonetheless,

our findings suggest that explicit and implicit forms of control are not always complements as often assumed by the literature and under certain conditions firms do appear to trade-off between implicit and explicit forms of control suggesting that their joint effects should be examined further. Additional research is necessary to determine why some firms choose to trade-off between implicit and explicit forms of control tightness, while other firms choose to increase or decrease both forms of control simultaneously.

While some researchers have advocated for a single measure professional service firm intensity based on the characteristics unique to professional service firms (Von Nordenflycht, 2010), our research suggests that the use of such a measure may be premature. The lack of consistency in our findings and the unexpected effects of customer reliance and professionalized workforce suggest that too little is known about how professional service firms cope with these management challenges. While a wide variety of case studies have helped to illustrate the unique aspects of management in professional service firms, attempts to create a theory of management control in professional service firms have been hindered by the lack of broad based empirical research in the field. Our study represents one of the first steps in the attempt to understand how professional services firms respond to the control challenges they face. Clearly more empirical research is necessary to understand how management control differs in these firms as opposed to non-professional firms, but also how these firms differ from each other. Future research should also examine how firms combine both bureaucratic and non-bureaucratic controls as part of their management control system since these modes of control do not operate in isolation (Malmi and Brown, 2008) and firms may augment combinations of bureaucratic and non-bureaucratic control measures to suit their specific needs.

This study is not without its limitations. First of all, while we used established instruments for our survey whenever possible, a number of the construct are new and had to be developed. This led to problems with reliability in some of our measures (implicit results control tightness in particular) which affect our results. Future research should focus on refining the implicit results control measure. Professionals may interpret goals and targets differently from employees which have more tangible measures of performance (such as salespeople), and results control measures which are better suited to the ways that professionals are evaluated in their jobs may be necessary. Secondly, because we relied on professionals for our survey responses rather than hiring managers, we had to rely on outcome measures for implicit personnel and implicit cultural control tightness, which provide an indirect measure of the degree of observance (implicit control tightness) of the personnel and cultural control systems. A more direct measure of implicit personnel and cultural control may

yield different results. Future research may try to work with manager and employee pairs to address the problems with using these outcome measures. We also rely on respondent-driven sampling to acquire respondents which could lead to bias in our sample. However, this approach has been used in numerous studies, (i.e., Dalton et al., 2013; Lander et al., 2013; Neu et al., 2014; Raschke et al., 2014), and has been shown to be asymptotically unbiased independent of one's starting point (Salganik and Heckathorn, 2004). In addition, the meta-analytic study of Derfuss (2009) suggests that results of studies utilizing random versus non-random sampling techniques are comparable. Therefore, while our sample is not random, we have no a priori reason to suggest that it is systematically biased.

CHAPTER 3
Performance and Attitudinal Consequences of Management Control in Professional Service Firms

1 Introduction

Bureaucratic forms of control have traditionally been considered antithetical to performance in professional service firms prompting some to warn that their application in these types of firms may be "dangerously wrong" (Maister, 1993, p. XV). The nature of the work performed by professionals and the characteristics of the professionals as individuals has traditionally been assumed to limit the ability of the firm to use bureaucratic control measures, such as behavior and results controls, in the exercise of management control. Professional work is typically defined as requiring a high degree of knowledge intensity to find customized, innovative, and/or creative solutions to complex problems together with an involved client (Greenwood et al, 2005; Hedberg, 1990; Homberg and Stebel, 2009; Sveiby and Risling, 1986). The uncertain and complex nature of work in professional service firms makes it difficult to apply valid and reliable rules and performance measures (Kärreman et al., 2002).

The use of bureaucratic forms of control is further complicated by the nature of professionals as individuals. Professionals are thought to adopt a professional orientation which manifests itself thorough resistance to bureaucratic standards and supervision (Scott, 1966). The socialization process professionals undergo during their education and job training gives rise to a number of attitudinal characteristics of professionals, including autonomy and commitment to the profession, which influence their behavior and work (Hall, 1968). Professional bureaucratic conflict, or inconsistencies between professional and organizational roles, assumes that professionals who are highly committed to their profession will suffer role conflict as a result of bureaucratic control measures, while at the same time, resisting bureaucratic control as a threat to their autonomy (Gouldner, 1957, 1958; Kornhauser, 1962; Sorensen and Sorensen, 1974; Wilensky, 1964).

The difficulty in applying standardized work processes and performance measures to the complex tasks performed by professional service firms and the anticipated resistance of professionals to these forms of control has led many researchers to focus on the use informal controls in professional service firms, such as professional, ideological or cultural controls, rather than the use of bureaucratic forms control (Alvesson, 1993, 1994, 1995; Hedberg 1990; Kanter 1983; Kunda 1992; Mintzberg 1998; Smigel, 1963, Wilkins and Ouchi 1983). This focus is also reflected in the limited body of empirical research which examines the antecedents to performance in professionals service firms, which has primarily focused on the importance of human capital (Hitt et al., 2001; Hitt et al., 2006; Kor and Leblebici, 2005; Lander, 2012; Sherer, 1995; Skaggs and Youndt, 2004), reputation (Amonini et al., 2010; Greenwood et al, 2005; Lander, 2012; Nachum, 1996; Smets, 2008), diversification (Dhandapani and Upadhyayula, 2015; Hitt et al., 2001; Kor and Leblebici, 2005; Nachum, 1996) and ownership structure (Greenwood et al., 2005; Greenwood et al., 2007; Kärreman and Alvesson 2004; King and Clarkson, 2015; Richter and Schröder, 2008; Suddaby et al. 2009). Not until recently has the management literature begun to examine the role of bureaucratic forms of control in PSFs (e.g. Alvesson and Kärreman, 2001; Briscoe, 2007; Brivot, 2011), but empirical research on the impact of management control systems (MCSs) on PSF performance remains limited (for some exceptions see Hitt et al., 2000; King and Clarkson, 2015; Lander, 2012).

However, recent research suggests that the use of bureaucratic forms of control may be beneficial to performance in complex firms and professionals may not be as resistant to bureaucratic forms of control as once thought, bringing the above claims into question. Bureaucratic control measures have increasingly been found to be beneficial to performance even in complex work such as software development, new

product development and information systems (Abernethy and Brownell, 1999; Ahrens and Chapman, 2004; Bart, 1993; Bisbe and Otley, 2004; Brown and Eisenhardt , 1997; Cardinal, 2001; Chapman, 1998; Davila, 2000; Davila and Foster, 2005; Davila et al., 2009; Ditillo, 2004; Jansen et al., 2006; Kren, 1992; Nixon, 1998). Research also suggests that professional and organizational commitment may be complementary rather than conflicted (Aranya et al., 1981; Bamber and Iyer, 2002; Bartol, 1979; Baugh and Roberts, 1994; Flango and Brumbaugh, 1974; Lachman and Aranya, 1986; Lui et al., 2001). Furthermore, findings on the relationship between formalization and (professional) role conflict have been inconsistent (Bamber et al., 1989; Greene and Organ, 1975; Lee and Mathor, 1999; Nicholson and Goh, 1983, Organ and Greene, 1981; Podsakoff et al., 1986; Rogers and Molnar, 1976; Senatra, 1980) suggesting there may be no inherent conflict between professional and bureaucratic norms. If the bureaucratic system is designed to closely resemble the professional value system than the two may be compatible (Engel, 1970; Glaser, 1964; Hall, 1968; Miller, 1967) and no such conflict should arise.

The inconsistencies in the literature appear to be based on different interpretations (Davila, 2000), styles(Simons, 1990, 1991, 1995) or roles (Chapman, 1997, 1998) of the management control system (MCS). While the traditional controlling role of the MCS assumes that bureaucratic forms of control are rigid and coercive and therefore provide limited benefit to the complex work of professionals whilst threatening their sense of autonomy. An enabling MCS allows for flexible implementation of bureaucracy, which can limit negative attitudinal response to bureaucratic control measures and provide employees' with rules to assist in decision making together with discretion to modify formalized rules to suit their specific work demands (Adler and Borys, 1996). While formalization can induce negative attitudinal responses from professionals, some degree of formalization can also provide guidance to professionals on how to perform their jobs resulting in a positive attitudinal response and improved performance (Organ and Greene, 1981). Formalization can also induce a positive attitudinal response by providing the professional with other benefits such as improving performance on routine tasks to free up time for more enjoyable tasks or by allowing more flexibility in working hours (Briscoe, 2007; Jaakkola, 2011). Rules and procedures in and of themselves do not appear to create incompatibilities between these roles unless they are enforced (Agarwal and Ramaswami, 1993). The net benefit to formalization will depend on the degree to which bureaucratic control measures can reduce ambiguity while minimizing the incompatibility between the employees' role as a professional and their role as a member of the organization.

The purpose of this paper is to explore the impact of flexibility in the control system on the individual performance and attitudinal responses of professionals. We define flexibility as the degree of tightness in the control system. Tightness can be created in two ways: 1) increasing the extent or scope of the MCS or 2) expanding the level of tolerance for deviations from the MCS. In the first case, tightness is achieved by creating more controls, more rules, and more procedures. We call this explicit tightness. In the second case, tightness is achieved by minimizing the difference in scope between the actions defined by the control system and those deemed acceptable within the organization. Tightness created by decreasing the level of tolerance for deviations from the MCS we call implicit tightness. By combining different degrees of implicit and explicit tightness into one of four different modes of control (behavior, results, personnel and cultural), the organization can adjust the tightness of the control system to meet its own unique needs for flexibility versus control. We suggest that by utilizing systems of control that are more flexible, firms can maximize the individual performance of employees while minimizing the negative attitudinal responses to the management control system.

Our study contributes to the literature in three ways. First of all, it adds to limited body of research examining the effects of MCS on performance in professional service firms. While a number of studies have examined performance of professional service firms, these studies rarely consider the impact of the management control system, and when they do, they tend to focus on a single firm or firm type whereas our study examines a wide range of professional services (i.e. law, accounting, medicine, architecture, consulting, engineering, graphic design and recruiting). Secondly, by deconstructing control into implicit and explicit types we are able to examine both flexible and rigid MCS use, which contributes to the literature on both the controlling and enabling use of management control. Finally, by exploring the attitudinal responses of professional to the MCS, we add to the literature that examines the net benefit of control to the firm.

The remainder of this paper is organized as follows. We begin by briefly reviewing the controlling and enabling roles of the MCS and explain why these roles lead to different expectations regarding the impact of bureaucratic forms of control on the attitudinal and performance outcomes in professional service firms. In section 3, we outline our theoretical model of management control. Section 4 develops the hypotheses based on our model followed by details of our methods in section 5. In Section 6, we present our results and section 7 concludes.

2 Opposing Roles of MCS and Their Impact on Performance and Attitudinal Responses in PSFs

The primary goal of management control systems is to increase the probability that the organization will achieve its goals (Merchant and Van der Stede, 2007). Two different roles (Chapman, 1997, 1998), styles of use (Simons, 1990, 1991, 1995), or design rationales (Adler and Borys, 1996) of MCS have been suggested in the literature to increase the probability of goal attainment.

First of all, the coercive, controlling or deskilling use of MCS, aims to increase goal attainment by influencing and constraining the decisions of employees (Ahrens and Chapman, 2004; Zimmerman, 2011). Consistent with cybernetic types of control, coercive use suggests that organizational goals are specified in advance and control is achieved through monitoring and minimizing deviations from pre-set standards. Performance is maximized by increasing predictability and efficiency and control systems are designed to cover a broad range of contingencies to limit employee actions to pre-defined behaviors or performance measures. Under this approach, bureaucratic forms of control are typically seen as rigid since the aim is to create a foolproof system by limiting employee discretion and policing adherence to preplanned objectives and standards (Anthony, 1965).

In contrast, enabling use of the management control system does not aim to increase goal attainment by creating a foolproof system but instead seeks to increase goal attainment by reducing uncertainty and aiding in decision-making (Adler and Borys, 1996; Sprinkle, 2003; Zimmerman, 2011). Performance is maximized through flexibility, as contingencies are considered to be inevitable, and the purpose of formal controls is not to cover all possible contingencies but to enable employee to deal with these contingencies more effectively (Ahrens and Chapman, 2004). Under this approach, bureaucratic forms of control may be experienced as flexible, since employees have the autonomy to depart from pre-established procedures when necessary.

The two roles of MCS predict different consequences to the use of bureaucratic control measures in professional service firms both in terms of performance and in terms of attitudinal outcomes. In the sections below, we outline these differences.

2.1 Bureaucratic Control Measures as Detrimental to PSF Performance and Employee Attitudes - Coercive Use of MCSs

Under the coercive role of management control, the use of bureaucratic control measures in professional service firms is thought to lead to diminished performance due to the unsuitability of bureaucratic forms of control to complex work both directly and indirectly through the creation of negative employee attitudes.

A number of modes of control have been defined to exercise management control (Merchant and Van der Stede, 2007; Ouchi, 1979), for example, formal and informal controls (Anthony et al., 1992), mechanistic and organic controls (Burns and Stalker, 1961), output and behavior controls (Ouchi, 1977) market, bureaucracy and clan controls (Ouchi, 1979) administrative and social controls (Hopwood, 1976), impersonal and interpersonal controls (Whitley, 1999) and behavior, results, personnel and cultural controls (Merchant and Van der Stede, 2007). The suitability of the various modes of control is determined by the characteristics of the tasks performed (Eisenhardt, 1985; Hofstede, 1978; Kirsch, 1996; Ouchi, 1979, Perrow, 1967; Snell, 1992). Ouchi (1979) described these task features as ability to measure outputs and knowledge of the transformation process, while Perrow (1967) defined these features as task analyzability and number of exceptions. They argue that more routine, repetitive and predictable tasks are expected to be more effectively controlled using formal control mechanisms such as behavior and results control, while non-routine, varied, and unpredictable tasks are more effectively controlled through informal controls such as culture and personnel controls. A number of empirical studies appear to confirm these assertions. They find that more predictable tasks are associated with greater use of results and/or behavior controls (Abernethy and Brownell, 1997; Daft and Macintosh, 1981, Hirst, 1983, Kirsch, 1996; Rockness and Shields, 1984; Snell, 1992), and when task analyzability is low and exceptions are many, personnel control leads to significantly better performance (Abernethy and Brownell, 1997).

For routine, programmable tasks rigid application of bureaucratic forms of control are thought to improve efficiency and performance by ensuring that employees respond to situations in a manner congruent with organizational goals (Blau and Scott, 1962). If the task is programmable or the outputs are measureable, then desirable behaviors and/or goals can be easily codified and control can be achieved by monitoring and incentivizing employee adherence to procedures and goals. The creation of rules and procedures outlining desirable performance and behavior together with incentives to

induce this behavior ensure that employees' actions are consistent, predictable, and congruent with organizational goals (Foster, 1990).

For non-routine or complex tasks, such as those performed in professional service firms, the use of rigid bureaucratic forms of control is thought to be more problematic. Complex tasks are by definition unpredictable and ambiguous. They lack programmability and desired outputs can often not be specified. This presents difficulties in the application of bureaucratic forms of control because it is difficult to specify the actions necessary for goal attainment, the goals to be attained, or both, limiting the application of behavior and results controls. To the extent that organizational goals can be codified into rules or performance measures, the non-routine nature of these tasks may mean that attempts to codify all potential contingencies may be prohibitively costly (Abernethy and Brownell, 1997). On the other hand, failure to codify all potential contingencies may result in the professional encountering tasks that are not fully compatible with existing rules, procedures, and goals. Since under a coercive system formal controls are applied strictly, the employee is constrained to applying these existing rules and procedures, which may apply to the given situation in varying degrees, and may not necessarily be congruent with organizational goals. As a result, strict application of bureaucratic forms of control may lead to lower performance.

Coercive use of MCS may also may illicit different attitudinal responses from employees depending on the characteristics of the task. The use of bureaucratic forms of control is presumed to reduce autonomy and lead to negative attitudinal responses for both routine and non-routine work. However, for routine tasks, negative attitudinal responses to bureaucratic forms of control may be minimized because fit is achieved between the degree of formalization and the routineness of the task (Adler and Borys, 1996). The task lends itself well to formalization because the clarity of the tasks may also provide fewer options for interpretation. Employees may be less likely to resist bureaucratic forms of control for routine tasks because there is a single logical way of doing things. In addition, increased formalization of routine tasks may help to create positive attitudinal responses to the control system by decreasing role ambiguity, or the discrepancy between job-related information available to the person and information needed by the person for adequate job performance (Kahn et al., 1964). The information provided by these controls can serve a coordinating function by providing guidance and direction for employees through the specification of duties, roles requirements, and goals of their job position (Rizzo et al. 1970). For the point of view of the employee, this ensures that the employee knows how to perform their job well and how their performance will be judged which can result in

reduced job stress, absenteeism and employee turnover and improved performance (Tubre and Collins, 2000). In the absence of such guidance, employees may fail behave in a manner congruent with organizational goals because they do not know what those goals are or how they are expected to attain them.

On the other hand, strict adherence to bureaucratic forms of control for non-routine tasks is more likely to create negative attitudinal responses than for routine tasks. If applied inflexibly, these forms of control reduce the ability of the employee to respond appropriately to contingencies. Non-routine tasks are more likely to result in situations where no existing rule or procedure is applicable. The professional is then forced to choose between applying a procedure that they know is not compatible with the situation or modifying the rules or procedures to best suit the situation but is in violation of their role as employee. This leads to organizational professional role conflict (OPC), or stress on the individual due to incompatibilities between performance and professional role requirements (Aiken and Hage, 1966). Organizational professional conflict has been linked to a variety of negative outcomes in the literature including job dissatisfaction, motivation, employee turnover, and lower performance (Acker, 2004; Aranya and Ferris 1983, 1984; Bamber and Iyer, 2002; Lui et al., 2001; McGregor, 1987; Shafer, 2002; Shafer et al., 2002; Sorensen and Sorensen, 1974, Michaels et al., 1987, Tubre and Collins, 2000).

Therefore, based on a coercive application of MCS, the rigid application of bureaucratic control measures may affect the performance and the attitudinal response of employees differently depending on the characteristics of the task (Eisenhardt, 1985). For routine tasks, the coercive approach is likely to lead to improved performance and minimal negative employee response, while for non-routine and complex tasks, the rigid application of bureaucratic forms of control is more likely to lead to decreased performance. Performance may suffer due to the misapplication of existing rules or procedures to deal with contingencies, or the increased negative attitudinal response of employees because of incongruities between the requirements set by the MCS and the desired action of the professional.

2.2 Bureaucratic Control Measures as Beneficial to PSF Performance and Employee Attitudes - Enabling Use of MCSs

Unlike coercive use of the management control, which suggests that rigid application of bureaucratic forms of control to complex tasks may diminish performance and promote negative employee attitudes. The enabling use of management control suggests that application of flexible application of bureaucratic forms of control to

non-routine tasks offers many of the same benefits, but do not suffer the same shortcomings, as the application of strict controls.

First of all, bureaucratic forms of control can serve the same coordinating function for non-routine tasks as they do for routine tasks, but because they are flexible, they can be adjusted to potential contingencies to assure compliance with organizational goals. The complexity of professional work may still present problems in terms of codification, but under the enabling approach the MCS does not have to take into account all potential contingencies, so codification can be restricted to the most commonly occurring contingencies, making the use of bureaucratic forms of control more cost efficient. Furthermore, although professionals have a core body of knowledge and professional norms on which to base their behavior, they can still suffer from a lack of clarity in performing their role in an organizational context (Organ and Greene, 1981). Behavior and results controls can serve to reduce role ambiguity in these individuals by providing direction for their work and behavior. Since under the enabling approach these rules are not strictly enforced and provisions are made for exceptions, formalization can aid employees in the performance of their tasks by providing guidelines based on prior experiences with similar but not identical tasks (Agarwal, 1993). The creation and use of standard procedures and protocols can be used as tools, templates, or guidelines to guide employee behavior, reduce the complex and ambiguous nature of the professionals' tasks and improve coordination (Adler and Borys, 1996).

Secondly, enabling control is thought to foster positive attitudes to formalization and flexibility is considered one of the features of enabling control (Adler and Borys, 1996). Therefore, the flexible application of rules should limit the negative attitudinal response of employees and mitigate the potential negative effects on motivation, job satisfaction, and performance. Rules and procedures in and of themselves also do not appear to increase role conflict unless they are strictly enforced (Agarwal and Ramaswami, 1993). If role conflict occurs when incompatible sets of demands are placed on an individual making compliance to all sets of demands difficult (Katz and Kahn, 1978). Then if rules and procedures are applied flexibly, there should be no incompatible sets of demands placed on the individual. Role conflict should not occur, nor should any decrease in performance that may have occurred because of role conflict.

In summary, the flexibility in the use of bureaucratic controls under the enabling approach should mitigate negative attitudinal responses to the MCS, while providing employees with additional guidance in the performance of their work. This suggests that the application of bureaucratic controls has the potential to improve performance in PSFs much as it has been shown to improve performance in other

types of complex work (Abernethy and Brownell, 1997; Bisbe and Otley, 2004; Chapman, 1998; Davila, 2000). However, because the enabling approach allows for employee discretion, the relationship between the MCS and performance will also partly depend on the ability of the professional to adapt these bureaucratic forms of control to existing contingencies correctly. As such, the effect of the MCS on performance remains an empirical question. In the section that follows, we develop our conceptual model to empirically examine the relationship between MCS, employee attitudes, and performance in PSFs.

3 A Typology of Control Tightness

The discussion above suggests that flexible application of bureaucratic measures of control has the potential to reduce negative attitudinal outcomes to control and improve performance. Though traditional models such as Ouchi (1979), Perrow (1967), and Burns and Stalker (1961) argue that their models represent a continuum and organizations will rarely if ever be found in the extremes, they focus on the coercive role of MCS and do not provide a manner in which to distinguish controls between these two extremes. In contrast, more recent models, such as Simon's levers of control (1994) and Adler and Borys' (1996) enabling bureaucracy, focus on both the enabling and coercive roles of the MCS and inherent tensions between control and flexibility. However, Simons' levers of control framework has been criticized as having concepts which are vague and ambiguous (Ahrens and Chapman, 2004; Bisbe et al.; 2007; Ferreira and Otley, 2009; Tessier and Otley, 2012) making it difficult to apply in empirical research. In addition, although the notions of enabling and coercive bureaucracy have been used to study the features, design and implementation of management controls systems (Ahrens and Chapman 2004; Chapman and Kihn, 2009; Free, 2007; Jørgensen and Messner, 2009; Wouters and Wilderom, 2008), the typology of Adler and Borys is not a model of management control systems per se, but an examination of when these systems are viewed as helpful (enabling) or controlling (coercive) by employees. Adler and Borys (1996) focus on the attitudinal outcomes of control, but these characteristics are modeled separately from the control measures making it difficult to link them to specific examples of control.

We model the flexibility of a given mode of control based on the tightness with which the control is applied. Tightness can be created in two ways: 1) increasing the extent or scope of the MCS or 2) restricting the level of tolerance for deviations from the MCS. In the first case, tightness is achieved by creating more controls, more rules, and more procedures. We call this explicit control tightness. In the second case, tightness

is achieved by minimizing the difference in scope between the actions defined by the control system and those deemed acceptable within the organization. Tightness created by increasing the expected degree of observance to the MCS we call implicit control tightness.

The above definition of tightness is akin to a deconstruction of Adler and Borys' (1996) commonly used definition of formalization as the "extent of formalized rules governing work behavior and the extent to which they are enforced" (p. 77). The separation of these two components has been proposed and utilized in the literature previously, and is commonly referred to as codification (explicit control tightness) and rule enforcement (implicit control tightness), respectively (Aiken and Hage, 1966, 1971; Hage and Aiken, 1967a/b).

However, studies which measure these two aspects of formalization often combine the two constructs into a single summary measure (Cohn and Turyn, 1980; Kaluzny et al., 1974). Other studies measure the two aspects separately, but fail to examine the interaction between these two aspects of formalization (Aiken and Hage, 1966, 1971; Hage and Aiken, 1967a/b, Hall, 1961, 1963; Kim, 1980). Such application of these constructs may obscure the relationship between them if their separate joint effect influences organizational outcomes (Bodewes, 2002). The professional service firm setting provides a unique environment to examine this joint effect as the challenge of management control is related to both the complex nature of the work and the nature of the individual, exemplifying the need for a balance between flexibility and control. We argue that professional service firms balance the need for efficiency with the need for flexibility by modifying both explicit and implicit control tightness of the modes of control to suit these unique control challenges.

In Figure 3.01, we use these two dimensions of control tightness to propose four configurations of control tightness for each mode of control. Cell 4 in Figure 3.01 represents the traditional definition of bureaucracy as a form of control where the degree of formalized standards is extensive and adherence to these standards is strictly enforced. This is akin to a coercive role of the MCS. We term this form of control *"rigid standardization"* since the standards cover a broad scope of work activities and employees have little flexibility in how these standards are applied. The MCS is designed to create compliance by limiting employee decisions to a set of predetermined rules, procedures, or strict adherence to outcomes measures. For example, in many hospitals, adherence to a surgical safety checklist which details the steps to be taken before, during and after a surgical procedure is mandatory and subject to sanctions such as verbal reprimands (Healy, 2011) or financial penalties if the failure to comply leads to an adverse incident (Davis and Leape, 2005).

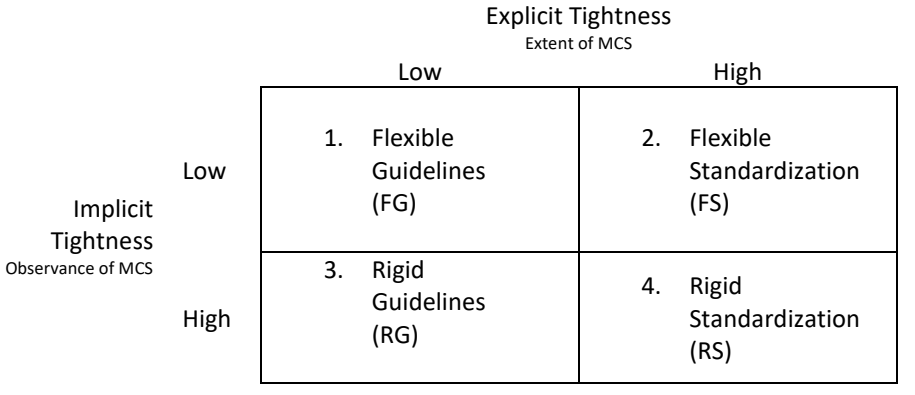


Figure 3.01: Conceptual Model of Control Tightness

In contrast, Cell 1 in Figure 3.01 represents an MCS with small extent and a limited observance of standards. We term this form of control tightness *"flexible guidelines"*, since this degree of control tightness represents maximum flexibility for the employee. Under this system, the MCS has a limited number of standards to guide the employee and these standards do not have to be observed closely. That is, the employee may adapt the limited standards to suit their particular situation. For example, the Medical Research Council Unit (MRCU), the world's leading molecular biology laboratory, was for years headed by Max Perutz, who attributed its success to doing away with committees, reports, referees, and interviews. Control was exercised by careful hiring of gifted, highly motivated people who were free to exercise their best judgement in the exercise of their work (Tucker, 2002; West, 2017).

Cell 2 and cell 3 in Figure 3.01 represent a degree of flexibility between these two extremes. These cells are similar to the enabling role of the MCS, where the purpose of control is to coordinate and aid in decision-making. Cell 2, termed "*flexible standardization"*, is characterized by an extensive MCS in terms of the amount and scope combined with a low emphasis on the strict observance of the MCS. This form of control tightness attempts to standardize service provision as much as possible but creates flexibility to deal with contingencies by allowing the employees a significant degree of flexibility in the application of these standards. For example, in terms of behaviors controls, "*flexible standardization"*, would be characterized by a large number of rules and procedures that cover a broad scope of work activities but which allow or considerable deviations from these rules and procedures to deal with contingencies. For example, architects may be provided with a database of templates for different types of buildings, which can then be customized based on the client's needs (Canavan, 2013).

Cell 3 in Figure 3.01 is characterized by limited MCS in terms of the extent of the MCS combined with strict observance of MCS standards. Termed the "*rigid guidelines"* approach, this form of tightness provides a limited number of standards to guide employees in their work, but these limited standards must be strictly observed and little to no deviation from these standards is permitted. Rather than creating flexibility by allowing employees discretion in the application of standards as in the *flexible standardization* approach, this approach creates flexibility by providing only broad standards in terms of "golden" rules, guidelines, principles and targets to guide the employees' behavior but allows for control by requiring strict adherence to these broad standards. For example, for results control, the *rigid guidelines* approach could be characterized by a single performance target that the employee is expected to meet with no exceptions. Failure to meet this target may results in withholding of a bonus, punishment or firing. For example, university lecturers hired to teach a course may be required to provide a certain number of hours of in-class instruction and achieve a minimum score on student evaluations, but they are free to determine the content and examination method for the course.

The typology above suggests that PSFs may be able to improve their performance by varying the degree of implicit and explicit control tightness in their management control system. Bureaucratic forms of control may improve performance by providing professionals with additional information to guide their decision-making provided they are applied in a flexible, enabling manner such as under the flexible standardization or rigid guidelines approach. In the next section, we further develop our hypotheses based on this typology of control tightness.

4 Hypothesis Development

Controls have been characterized in a variety of ways and the above typology could arguably be used to examine the flexibility of a variety of different control types. We focus on four modes of control that are commonly discussed in the literature (behavior, results, personnel, and clan control) (Merchant, 1998; Ouchi, 1979). Using the typology developed above, we examine the impact of different degrees of control tightness on the performance and professional tension of professionals. These relationships are summarized in Figure 3.02.

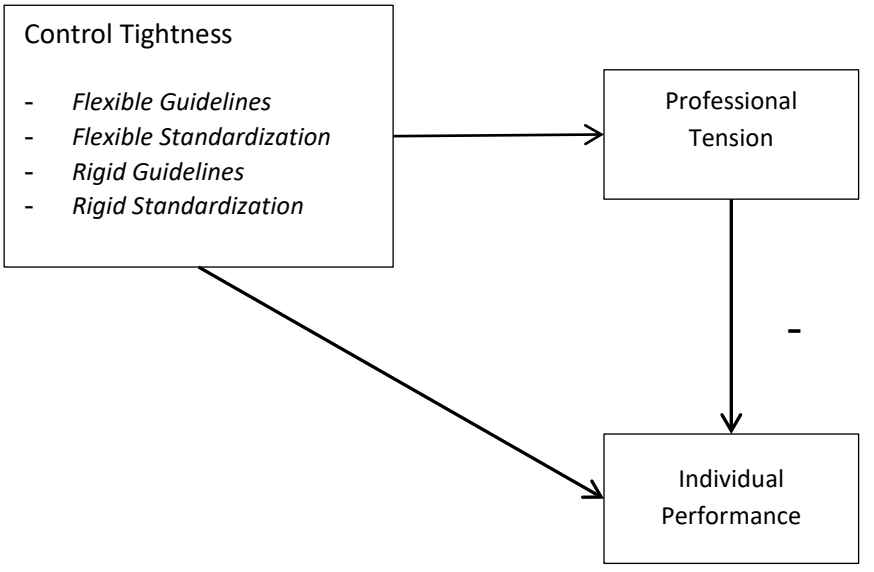


Figure 3.02 Theoretical Model

4.1 MCS Tightness and Performance

4.1.1 Behavior and Results Controls

Although the primary goal in implementing management controls is to improve performance, the empirical evidence on the relationship between control and performance is unclear (Cardinal et al., 2017) and remains largely unexplored in professional service firms (for some exceptions see Hitt et al., 2000; King and Clarkson, 2015; Lander, 2012). The complex and non-routine nature of work in professional service firms has traditionally been seen as ill-suited to the use of bureaucratic forms on control (Abernethy and Stoelwinder, 1991), such as behavior and results controls, which emphasize consistency and efficiency at the cost of flexibility. However, recent research suggests that bureaucratic forms of control can also service to guide employee decision-making and improve the ability of the employee to perform their job by reducing role ambiguity provided these controls are applied flexibly (Adler et al., 1999; Ahrens and Chapman, 2004; Jørgensen and Messner, 2009). We therefore expect that individual performance will be higher under the flexible standardization (*FS*) or rigid guidelines (*RG*) approach to behavior and results control, as these control provide additional guidance to the employee in performing their job, while also allowing for flexibility to handle potential

contingencies. In contrast, individual performance will be lower under the flexible guidelines (*FG*) and rigid standardization (*RS*) approaches to management control. The *FG* approach fails to provide the employee with the additional guidance (control) to perform their job while the *RG* approach provides for additional guidance, but does not allow for flexibility, which limits the employees' ability to respond to contingencies. Though we expect that *FS* and *RG* will lead to higher performance, we have no theoretical or empirical basis to predict which approach will lead to better performance overall, leading to leading to the following hypotheses:

H1: Individual performance will be higher under behavior control flexible standardization (*BCFS*) and behavior control rigid guidelines (*BCRG*) and lower under behavior control flexible guidelines (*BCFG*) and behavior control rigid standardization (*BCRS*).

H2: Individual performance will be higher under results control flexible standardization (*RCFS*) and results control rigid guidelines (*RCRG*) and lower under results control flexible guidelines (*RCFG*) and results control rigid standardization (*RCRS*).

4.1.2 Personnel Control

Personnel control refers to the selection and placement of personnel, training, and job design and provision of necessary resources (Merchant and Van der Stede, 2007). Unlike behavior and output controls, which attempt to modify employee behavior after entry into the control system (ex-post), personnel controls operate as ex-ante control mechanisms (Widener, 2004) aimed at modifying the inputs into the control system to improve performance. By controlling the antecedent conditions of performance such as "the knowledge, skills, abilities, values, and motives of employees" (Snell, 1992; p. 297), personnel controls may reduce the need for behavior or output controls. Through more extensive screening and selection of employees prior to their entry into the organization, organizations can maximize employee capabilities and goal congruence between the employee and the organization (Campbell, 2012). Furthermore, according to the industrial and organizational psychology literature more standardized selection procedures outperform less standardized ones (Schmidt and Hunter, 1998) and individual standardized selection procedures often have incremental value in predicting work outcomes (Schmidt and Hunter, 1998).

Thus, at first glance, it may appear that a personnel control rigid standardization (*PCRS*) system, where the selection process is extensive and employees must meet all selection standards in order to be hired, would be most effective in maximizing goal congruence between the employee and the hiring firm. However, this interpretation assumes that the firm can accurately predict and measure the antecedents to employee performance. Research on the topic provides some support for this hypothesis, with more extensive employee selection practices being positively linked to future employee performance (Swaney, 2017; Terpstra and Rozell, 1993) and extensive evidence showing that more standardization in employee selection leads to better performance outcomes (Kuncel, 2008; Schmidt and Hunter, 1998). However, these studies fail to account for discretion in the hiring process. Just as the complex nature of professional work makes it difficult to codify behavior and results controls, it may also make it difficult to identify the factors which predict employee success. Though estimates vary, research in organizational and industrial psychology suggests that between 50% and 80% of employee future performance cannot be predicted ex-ante (Campbell, 1990; Highhouse, 2008; Rundquist, 1969).

Based on our typology of control tightness, we suggest that PSFs deal with the difficulty of identifying antecedents of employee performance much in the same way that they deal with the problems of unpredictability and variety when using behavior and results controls. That is, by introducing flexibility into the control system. In professional fields, hiring managers may rely on holistic judgement or intuition to deal with the complexity, uncertainty, and time pressure inherent in these fields (Burke and Miller, 1999; Klein, 2003). Intuition has also proven valuable is assessing interpersonal task-related skills (Miles and Sadler-Smith, 2014) which may be particularly important in professional services due to substantial face-to-face interaction with the client (Ambady and Rosenthal, 1992; Løwendahl, 1997; Maister, 1993).

Therefore, we predict that PSFs can optimize performance by adopting a *personnel control flexible standardization (PCFS)* approach to control. Under this approach, the firm has an extensive hiring process, which allows the firm to maximize the incremental value of using additional selection procedures, while also allowing the person responsible for the hiring decision to make exceptions to these criteria based on experience, intuition, or gut feeling to address the unpredictable aspects of job performance. Performance should then be lower under the *personnel control rigid guidelines (PCRG)* approach because, while this approach may benefit from more

extensive use of hiring processes, it does not allow the hiring manager discretion to deal with the unpredictable aspects of job performance. Finally, *personnel control rigid guidelines (PCRG)* and *personnel control flexible guidelines (PCFG)* will result in the lowest performance because they do not provide the benefits of more extensive hiring procedures demonstrated by the literature. While the *PCFG* approach may partially correct for this by allowing for discretion in the hiring process, it seems unlikely that this discretion can fully compensate for the less extensive hiring process. We therefore predict the following:

> **H3:** Individual performance will be highest under personnel control flexible standardization (*PCFS*) and lowest under personnel control rigid guidelines (*PCRG*) and personnel control flexible guidelines (*PCFG*) with personnel control rigid standardization (*PCRS*) falling somewhere in the middle.

4.1.3 Cultural Control

Cultural control is defined as the ceremonies and rituals that serve to reward the individuals who display the underlying values, attitudes and norms of the group (Ouchi, 1979). Unlike personnel control, which aims to maximize goal congruence between the firm and the employee ex-ante, cultural controls aim to maximize goal congruence between the firm and the employee ex-post. Through the process of socialization into the firm, employees come to understand "the way we do things around here," which creates a consistent set of implicit understandings for employees that act as "common law to supplement its statutory laws" (Pascale, 1985, p.14).

Cultural controls are typically seen as relatively unobtrusive and are therefore less likely to create harmful side effects such as resistance from employees. For this reason, many have argued that cultural control is more suitable for use in PSFs where the use of formal controls is difficult due to the variability of tasks and the professionals' preference for autonomy. The norms and values created by cultural control serve to increase self-control, or employee monitoring of oneself, but they also serve to encourage social control, or mutual monitoring of employees (Merchant and Van der Stede, 2007). By decreasing the goal divergence between employees and the firm cultural control may serve as an effective means of coordination and integration than formal control mechanisms, which rely on rules and regulations (O'Reilly, 1989; Pascale, 1985; Saffold, 1988; Weick, 1987).

The relationship between culture and performance has been difficult to examine largely due to the difficulties in operationalizing the culture construct (Lee and Yu, 2004). Early studies tend to focus on the effects of "strong" culture on performance, with "strong" culture being defined as having clearly identifiable and consistent values, with a distinctive way of doing things (Lim, 1995). A number of studies suggest that "strong" culture can have a positive influence on performance (Deal and Kennedy, 1982; Peters and Waterman, 1982), which appears to suggest that cultural control rigid standardization (*CCRS*) may improve performance. However, the relationship between "strong" culture and performance appears to hold primarily for the short-term. Research on the relationship between "strong" culture and performance in the long-term has shown more modest correlations (Heskett and Kotter, 2008).

We suggest that more flexible cultures may lead to higher performance in PSFs than rigid cultures. Adaptive values have been positively associated with both long and short-term performance (Barley and Kunda 1992; Collins and Porras, 2002; De Geus, 1997; Heskett and Kotter, 2008). Highly consistent cultures, much like tight formal controls, may serve to create consistency and efficiency in the short term, but they are often resistant to change and adaptation (Denison and Mishra, 1995). For complex firms, such as PSFs, this consistency may limit the firms' ability to respond to changes in its environment. By introducing flexibility into the cultural control system, the firm signals to employees the importance of flexibility and adaptation in the firm and allows them to translate environmental signals into internal cognitive, behavioral, and structural changes (Starbuck 1971, Kanter 1983) which could lead to better performance in the long term.

On the other hand, less homogeneous cultures may require more active management of organizational culture. Homogeneous cultures are more likely to develop group cohesion and effective interaction than heterogeneous cultures due to the similarities in their worldview (Berthon, 1993), but group cohesion can also be fostered through increased social interaction (Mullen and Copper, 1994). Therefore, firms that allow for more heterogeneity in their workforce may need to encourage social interaction through company social activities in order for employees to develop a shared understanding of the organization and to understand its values and mission (Bolino et al., 2002, Feldman, 1984).

Based on the above, we predict that individual performance will be higher when cultural is either homogeneous or when it is heterogeneous, but this heterogeneity is compensated through more extensive management of organizational culture. This leads to the following hypothesis:

H4: Individual performance is higher under cultural control flexible standardization (*CCFS*), cultural control rigid guidelines (*CCRG*) and cultural control rigid standardization (*CCRS*) than under cultural control flexible guidelines (*CCFG*).

4.2 MCS Tightness and Professional Tension

The management control system is also thought to impact the behavioral attitudes of employees (Adler and Borys, 1996). Professional norms such as autonomy, self-regulation and the use of the professional organization as reference for ideas and judgements about work (Hall, 1968) are expected to conflict with bureaucratic tenants of control such as hierarchy of authority and organizationally determined rules and procedural specifications (Alexander, 1981). A discrepancy between professional norms and bureaucratic controls imposed by the organization may lead to these negative behavioral attitudes. We conceptualize these behavioral attitudes as *professional tension*, which we define as the degree to which the professional feels they cannot perform work in the way they believe it should be done. This definition is similar to that of role conflict in the literature, which occurs when incompatible sets of demands are placed on an individual making compliance to all sets of demands difficult (Katz & Kahn, 1978), but is more specific to professionals.

4.2.1 Behavior and Results Controls

The degree of flexibility in the control system is expected to directly impact professional tension. Professional and organizational norms may be compatible to the extent that the bureaucratic system more closely resembles the professional value system (Engel, 1970; Glaser, 1964; Hall, 1968; Miller, 1967). If control is exercised in such a way that it does not conflict with professional norms, then such conflict should not arise (Aranya and Ferris, 1983) and we should therefore expect fewer negative consequences on work attitudes and performance. Although we do not measure the degree of conflict between organizational and professional norms directly, a tighter control system provides less room for employee discretion, which increases the potential for conflict between professional and organizational norms. In contrast, a flexible guidelines control system provides for maximum compatibility between professional and bureaucratic norms. Under this approach, professionals are subject

to few organizational controls and may thus have the freedom to focus fully on professional norms for control. This should result in little to no professional tension. As a result, we propose the following hypotheses:

H5: Professional tension is highest under behavior control rigid standardization (*BCRS*) and lowest under behavior control flexible guidelines (*BCFG*), with behavior control flexible standardization (*BCFS*) and behavior control rigid guidelines (*BCRG*) falling somewhere in the middle.

H6: Professional tension is highest under results control rigid standardization (*RCRS*) and lowest under results control flexible guidelines (*RCFG*), with results control flexible standardization (*RCFS*) and results control rigid guidelines (*RCRG*) somewhere in the middle.

4.2.2 Personnel Controls

Personnel control aims to maximize congruence between the employee and firm values ex-ante. As such, firms may attempt to minimize professional tension by sorting employees based on the extent to which they "fit" the control system of the organization. Therefore, irrespective of the behavior, results, and cultural controls utilized by the firm, we predict that firms with tighter personnel control should do a better job of selecting employees whose values conflict less with those of the firm. Employees in firms with tighter personnel control systems should therefore not experience as much professional tension once employed within the organization as those employed by firms with loose personnel control systems.

Nevertheless, we contend that a personnel control rigid standardization (*PCRS*) personnel control system will result in greater professional tension than either personnel control flexible standardization (*PCFS*) or personnel control rigid guidelines (*PCRG*) system due the difficulty in accurately assessing "fit" between the firm and the organization. In contrast to the relationship between personnel control and performance, which suggests that more standardized selection procedures outperform less standardized ones (Schmidt and Hunter, 1998), research on the relationship between person-organization fit suggests that subjective measures of fit appear to be more strongly correlated with attitudinal outcomes than either objective or perceived measures of fit (Cable and Judge, 1996; Judge and Cable, 1997; Verquer et al., 2003). By removing the ability of the hiring manager to rely on intuition or their subjective assessment in assessing fit with the organization, a *PCRS* control system may limit the ability of the firm to sort individuals based on their congruence with the control system, which may lead to more professional tension once the professional

enters the organization. On the other hand, under *PCFS* and *PCRG* forms of personnel control, the hiring manager can utilize their intuitive judgement to assess the candidates fit with the firms' control system. We therefore predict that professional tension will be lower under the *PCFS* and *PCRG* approaches than under the *PCRS* system.

We make no prediction as to the differences in professional tension between the *PCFS* approach and the *PCRG* approach. While there may be inherent trade-offs between objective and subjective measurement of person-organization fit, we cannot predict the net effect of these trade-offs, therefore, we leave these differences as an empirical question. To summarize, we hypothesize the following:

H7: Professional tension is highest under personnel control flexible guidelines (*PCFG*) and lowest under personnel control flexible standardization (*PCFS*) or personnel control rigid guidelines (*PCRG*), with personnel control rigid standardization (*PCRS*) somewhere in the middle.

4.2.3 Cultural Control

Firms may also seek to minimize professional tension through the use of cultural controls once the employee has entered the organization. Though cultural controls are generally seen as relatively unobtrusive (Merchant and Van der Stede, 2007) and often are seen as a good substitute for formal controls in professional service firms, we argue that cultural control rigid standardization (CCRS) could promote professional tension much in the same way that bureaucratic controls do. As with bureaucratic forms of control, the literature suggests that the firm can minimize professional tension fostering a high degree of organizational commitment together with a high degree of professional commitment (Aranya and Ferris, 1984). However, professional commitment precedes the development of organizational commitment because commitment to the profession develops through the long process of socialization into the profession (Goode, 1957; Greenwood, 1957; Larson, 1977; Wilensky, 1964), and commitment to the organization must be developed once the employee has entered the organization. Therefore, the ability of the organization to foster organizational commitment will depend on its ability to fulfill the professional norms the professional acquired as part of their socialization into the profession.

Once again, though we do not directly measure the degree to which cultural control of the organization is complimentary or conflicted with professional norms, we suggest that a *CCRS* system is more likely to run counter to professional norms since it places greater restrictions on the individual professional. The professional may interpret these restrictions as threats to their autonomy much in the same way that

rigid bureaucratic forms of control may restrict autonomy. Conversely, a cultural control flexible guidelines *(CCFG*) system presents no tension for the individual as they can perform their duties based fully on their professional norms, with the cultural control flexible standardization *(CCFS*) and cultural control rigid guidelines (*CCRG*) approaches fall somewhere in between. We therefore hypothesize the following:

H8: Professional tension is highest under cultural control rigid standardization (*CCRS*) and lowest under cultural control flexible guidelines (*CCFG*), with cultural control flexible standardization (*CCFS*) and cultural control rigid guidelines (*CCRG*) somewhere in the middle.

4.3 Professional Tension and Performance

The behavioral attitudes of employees are also thought to impact performance, though empirical evidence is less clear. While role conflict has been linked to decreased job satisfaction and increased turnover intentions for professional employees (Acker, 2004; Aranya and Ferris, 1983, 1984; Shafer, 2002; Shafer et al., 2002), the link between role conflict and performance has been inconsistent. A number of meta-analytic studies conducted on the subject (Fisher and Gitelson, 1983; Jackson and Schuler, 1985; Tubre and Collins, 2000) find that the relationship between role conflict and job performance in small and highly variable. Findings do indicate however, that role conflict and job performance are somewhat more related for professional, technical, and managerial jobs than for the other job types (Tubre and Collins, 2000), therefore, we predict the following:

H9: Professional tension is negatively associated with performance.

Finally, our model suggests that while the MCS may directly impact individual performance by improving coordination and decision-making for professionals, it may also indirectly impact individual performance through professional tension. As predicted by hypotheses 5-8, an overly tight MCS is likely to increase professional tension, which H9 predicts will decrease performance. The decrease in performance will mediate the direct relationship between MCS and performance, as predicted by H1-H4. We therefore predict the following:

H10: The relationship between MCS tightness and performance will be mediated by professional tension.

A summary of our hypotheses is provided in Figures 3.03-3.09.

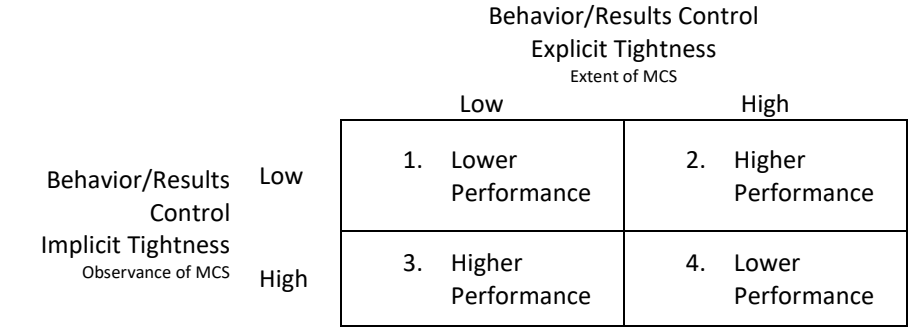


Figure 3.03 Summary of Hypotheses H1 and H2 for the Relationship between MCS and Performance for Behavior and Results Control Tightness

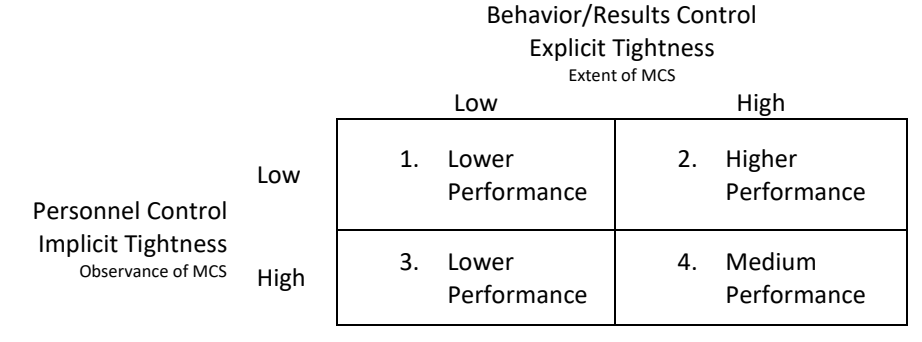


Figure 3.04 Summary of Hypothesis H3 for the Relationship between MCS and Performance for Personnel Control Tightness

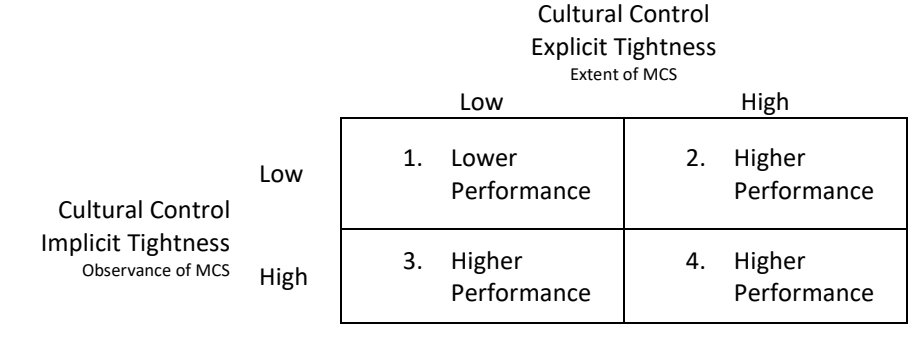


Figure 3.05 Summary of Hypothesis H4 for the Relationship between MCS and Performance for Cultural Control Tightness

Behavior/Results Control Implicit Tightness (Observance of MCS)		Behavior/Results Control Explicit Tightness (Extent of MCS): Low	Behavior/Results Control Explicit Tightness (Extent of MCS): High
	Low	1. Lower Tension	2. Medium Tension
	High	3. Medium Tension	4. Higher Tension

Figure 3.06 Summary of Hypotheses H5/H6 for the Relationship between MCS and Professional Tension for Behavior and Results Control Tightness

Personnel Control Implicit Tightness (Observance of MCS)		Personnel Control Explicit Tightness (Extent of MCS): Low	Personnel Control Explicit Tightness (Extent of MCS): High
	Low	1. Higher Tension	2. Lower Tension
	High	3. Lower Tension	4. Medium Tension

Figure 3.07 Summary of Hypothesis H7 for the Relationship between MCS and Professional Tension for Personnel Control Tightness

Cultural Control Implicit Tightness (Observance of MCS)		Cultural Control Explicit Tightness (Extent of MCS): Low	Cultural Control Explicit Tightness (Extent of MCS): High
	Low	1. Lower Tension	2. Medium Tension
	High	3. Medium Tension	4. Higher Tension

Figure 3.08 Summary of Hypothesis H8 for the Relationship between MCS and Professional Tension for Cultural Control Tightness

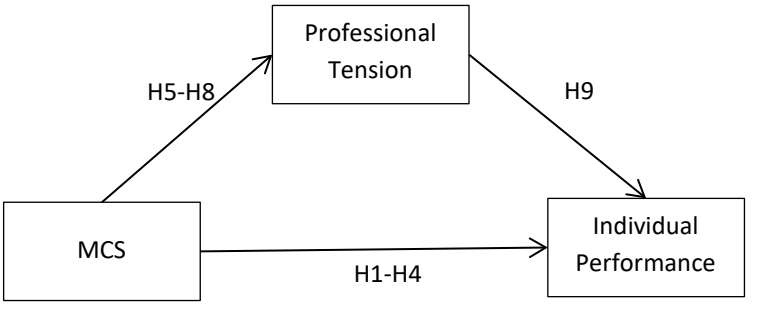


Figure 3.09 Summary of Hypothesis H9/H10 for the Relationship between MCS, Professional Tension, and Performance

5 Sample and Measurement

Our target population for this study focuses on mid-level professionals. Because we seek to compare professionals from a variety of professions and organizations types, we lack a sampling frame for our population and thus obtain responses through convenience sampling. We use Master students in Accounting from a Dutch university to identify potential respondents. This network based approach is a variation on "respondent-driven" ("snowball") sampling (Salganik and Heckathorn, 2004), which has been shown to work well for populations where a sampling frame is not available (e.g., Derfuss 2009).

Students were provided with a cover letter explaining the goal of our study and outlining the criteria for respondents. In order to be included in the study, respondents must 1) work in a professional field, 2) have more than 3 years of experience but less than 10, 3) not be owners or board members of their employing organization, 4) work for a medium/large size organization of more than 50 employees and 5) speak and understand English at a business level. As an additional source of verification, students were asked to provide a business card from each of the respondents who filled-out the survey. In return for providing a minimum of 10 respondents for the study, students were given access to the study data for the completion of their master thesis.

Since we are interested in how MCSs are defined based on the PSF characteristics defined above, we defined a "professional field" rather broadly and accepted respondents from a variety of occupations, which have previously been included under the umbrella of professional services in the literature (see Von Nordenflycht, 2010 for a summary). We focus on professionals with at least three years of experience, but less than 10 years of experience, since previous research indicates that the goals and response to the MCS by novice professionals differs from that of experienced professionals (Bol and Leiby, 2011; Chang and Birkett, 2004). Similarly, professionals who actively design the MCS, such as owners and board members, have different incentives are likely to respond differently to the MCS than employees who are subject to the MCS, therefore we focus on the latter. Finally, we focus on respondents who work in large organizations since we are interested in examining the inherent conflict between flexibility and control. Size is considered an important driver in the emergence of MCSs (Flamholtz and Randle, 2000; Greiner, 1998; Simons, 2000), and we are therefore less likely to find this conflict in smaller organization since informal controls may be sufficient for the control of these firms (Davila, 2005).

A total of 750 responses[4] were collected (see Table 3.01). Of these responses, 94 were eliminated because they were incomplete and 16 responses were removed because they did not fulfill our broad definition of a professional occupation. A further 278 responses were removed because they did not meet our experience criteria, either because experience was below 3 years (61 respondents), exceeded 10 years (195 respondents), or was not filled out (22 respondents). Finally, 54 respondents were removed due to company size. This reduced our sample to a total of 308 responses. The large number of respondents whose experience exceeds 10 years is somewhat puzzling given that students were provided specific instructions to approach professionals with less than 10 years of experience. Based on our discussion with the students involved with our survey, many students encouraged their respondents to approach professionals in their own network to complete the survey. It is unclear how well the respondents communicated these requirements to the professionals in their network, which may account for the large number of responses with more than 10 years of experience. While this reduces the number of respondents collected within our target population, it also suggests that respondents answered the survey truthfully rather than trying to conform to the target population requirements. We choose to limit our analysis to this smaller sample, despite the reduction in respondents, as it most closely reflects our target population.

Table 3.01
Survey Response

	Respondents Removed	Respondents Remaining
Total Sample		750
Unfinished	94	656
Occupation not professional	16	640
Experience not filled out	22	618
Less than 3 years experience	61	557
More than 10 years experience	195	362
Company Size <100	54	308

Our respondents come from a variety of professional occupations (see Table 3.02), though the field of accounting and medicine are somewhat overrepresented as compared to other fields. The employing firms tend to be large (> 5,000 total employees), though there is considerable variation in the size of the work unit. The majority of firms are owned by employees within the firm (49.7%), though firms with outside ownership are also well represented (36.4%). Male respondents outnumber female respondents 66.1% to 33.9%. A review of the labor

[4] A copy of the digital survey is available in Appendix A.

statistics in the Netherlands and the United States, the two individual countries that make up the largest portion of our sample, appear to indicate that the composition of males and females varies dramatically based on the specific professional field, which may help explain the large disparity in males and females in our sample. Finally, the vast majority of respondents are from Europe, specifically the Netherlands and the US and Canada.

5.1 Variable Measurement

Whenever possible, we relied on previously validated instruments in building our survey. However, the conceptualization of two separate aspects of control tightness, explicit and implicit, was not available in the literature and had to be developed. Development of the new measures took place through a series of stages.

First of all, a thorough review of the literature was conducted to generate a list of possible items for each of the constructs in the study. The complete list was reviewed and a subset of potential items was identified. Whenever possible, previously validated questions from existing research were used, but when questions from existing measures were not available, new items were developed. A total of 52 items was developed for the eight constructs. A number of items are reverse coded to minimize response set bias. Based on this initial subset of measures, an initial pre-test was conducted.

The first pre-test was an item sort task designed to assess the quality of the items used to measure the constructs. For the task, subjects were provided the 52 items and the 8 construct definitions and asked to match the item to the construct definition. Fourteen of the twenty professionals asked to take part in the pre-test completed the task (2 Management Consultants, 1 IT Consultant, 1 Security Consultant, 1 Accountant, 1 Psychologist, 1 Dentist, 1 Architect, 1 Marketing professional, 4 Lawyers, 1 Graphic Designer). The number of correct and incorrect matches identified by the subjects was then tabulated and the four items for each type of control with least number of incorrect matches were selected for inclusion in the survey. The 32 items included in the survey ranged from a low of zero incorrect matches (explicit behavior control tightness) to a high of six incorrect matches (implicit behavior control tightness). These items were included in the survey and subjected to an additional pre-test.

Table 3.02
Sample Characteristics

Employee Characteristics			
Occupational Field	%	Total Experience (years)	%
Accounting	22.4	3	24.7
Actuarial Services	0.6	4	21.8
Biotechnology	2.3	5	15.6
Consulting Engineering	1	6	14
Consulting IT	6.8	7	8.8
Consulting HR	4.2	8	10.4
Consulting Management Strategic	8.4	9	4.9
Consulting Technology	0.3		
Engineering	6.8	Experience with Current Organization (years)	
Financial Advising	2.6	< 1	8.4
Graphic Design	0.3	1	5.5
Insurance Brokerage	0.3	2	9.4
Investment Banking	2.3	3	20.1
Banking	0.3	4	14.6
Investment management (hedge funds, VC, mutual funds)	2.3	5	11
Law and legal services	1.9	6	10.1
Marketing/public relations	1.3	7	3.9
Media Production (film, TV, music)	1.3	8	6.8
Medicine and Healthcare	11	9	4.5
Pharmaceutical	1.6	10 or more	5.5
Project Management	3.6		
Real Estate	2.3		
Recruiting - executive	1.9	Age (in years)	
Research/R&D	5.2	Less than 30	31.4
Risk management services	3.9	30 - 39	54.2
Software Development	1.6	40 - 49	12.4
Talent management/agency	0.6	50 - 59	2
Education	0.6		
Other	1.9	Sex	
		Female	33.9
		Male	66.1

Organizational Characteristics			
Organization Size	%	Organization Location	%
100-499	24	Netherlands and territories	73.7
500-4999	29.5	Other Europe	10.1
≥ 5000	46.4	United States and Canada	7.5
		Asia	7.8
Unit Size		Middle East	0.9
< 10	15.6		
10 - 49	35.7	Ownership Structure	
50 - 99	17.5	Inside Ownership (i.e. Partnership)	49.7
≥ 100	30.8	Outside Ownership (i.e. Corporation)	36.4
		Other (i.e. Public, NGO, non-profit)	14

Sample Size n = 308

The second pre-test was designed to assess the face validity of the survey as a whole. An additional 20 professionals from a variety of fields were asked to view the survey online and answer a series of questions regarding the content, clarity, and appearance of the survey as well as the amount of time required to complete the survey. Thirteen subjects provided written answers to the questions and the remaining (seven) provided answers by telephone. The comments provided by the subjects resulted in only minor changes in wording and the inclusion of additional options in a few of the multiple-choice questions.

The data used for this article was part of a larger survey on management control in professional service firms. Following acquisition of the data, principle component analysis (PCA) was performed on the 112 items used to measure the constructs for the entire survey. Many of our existing constructs have not been tested in the professional sector and new constructs, while based in theory, have not been tested to see how they group together to explain the same underlying concept, therefore we perform factor analysis to test for unidimensionality (De Vaus, 2013; Hair et al., 1998). We expected to extract a total of 27 factors based on our use of previous constructs and the design on new constructs. Initial analysis extracted a total of 31 factors with an eigenvalue greater than one. The Bartlett test and KMO measure of sampling adequacy indicated the suitability of factor analysis. Individual item correlations were low (< 0.5) so we selected varimax rotation and repeated the factor analysis with a fixed number of 31 factors. The results of the EFA for the constructs used in this paper are presented in Table 3.03. Results of the full factor analysis, for all items used in the survey, is available in Appendix B. We discuss the findings of the factor analysis and the measurement of the individual constructs below.

5.1.1 Control Tightness

The dependent variable is control tightness, which is divided into four modes of control (results, behavior, personnel and cultural) each of which is separated into two components of control (implicit and explicit) resulting in a total of eight forms of control tightness. We define each of these in detail below.

5.1.1.1 Behavior Control Tightness

Explicit behavior control tightness (*EBCT*) is comprised of four items designed to measure the extent of use of standardized processes, procedures, rules and routines as part of the management control system. All control tightness items are measured on a five point Likert scale with one equal to Strongly Disagree and five equal to Strongly Agree where high values indicate tight control. Two items are based on Van den Ven and Ferry's (1980) measure of job standardization, a single items is adopted from Bodewes' (2000) measure of observation which was adapted from Hall (1963)

and the final item is adapted from Hage and Aiken's (1968) measure of job specificity. As shown in Table 3.03, a total of five items loaded on a single factor. Four of these items we expected to comprise the construct of *EBCT*. The remaining item, with a high negative loading, we expected to load on implicit behavioral control tightness. Examination of the item reveals that it is a reverse coded item that may have been more difficult for respondents to interpret. We exclude this item from further analysis. Cronbach's alpha for the remaining items is 0.759, which is above the limits of exploratory research, which are considered to be between 0.50 and 0.60 (Nunnally, 1978).

Implicit behavior control tightness (*IBCT*) is comprised of four items designed to measure the degree to which deviation from established processes procedures, rules and routines is tolerated and/or encouraged, where a tight system is defined as one which does not allow any deviation from standard processes, procedures, rules and routines. Two items are adapted from Bodewes' (2000) measure of the extent of observation and more specifically, the respondents' subjective evaluation of the frequency of procedure skirting. A single item is based on Morgenson and Humphrey's (2006) measure of work methods autonomy and the final item is adapted from Van der Stede's (2001) emphasis measure of tight budgetary control. As discussed above, one of these items loaded on explicit behavior control and was excluded from further analysis. The remaining three items all load on a single factor with an acceptable Cronbach's alpha of 0.779

5.1.1.2 Results Control Tightness

Explicit results control tightness (*ERCT*) comprises four items, designed to measure the extent of use of goals/targets/performance measures as part of the management control system, where a tight system is defined as one with a lot of controls in terms of number and scope. Two of these items are based on Van den Ven and Ferry's (1980) measure of job standardization, and two measures adapted from Hage and Aiken's (1967b) measure of rule observation, which is based on Hall's (1961) six dimensions of bureaucracy. A total of six items load on a single factor for *ERCT*. Two of these items we expected to load on implicit results control tightness. One of these items has a negative loading below 0.4 and is thus excluded from the construct. The final item has a positive loading above 0.4, but the as the difference between this item and the other individual items exceeds 0.2, it is also excluded. The Cronbach's alpha of the remaining items is 0.804.

Table 3.03†
Condensed Factor Analysis

Variable		Items	Component Loading			
			Factor 1†	Factor 2	Factor 3	Factor 4
Explicit Behavior Control Tightness Cronbach's α = 0.759		In my organization, we have rules for everything.	0.742			
		Established processes, procedures and rules cover all of my job tasks.	0.729			
		Whatever situation arises, we have existing processes, procedures or rules to follow in dealing with it.	0.698			
		My supervisor frequently monitors the extent to which I follow established process, procedures and rules.	0.594			
	***	*The organization I work in primarily uses established processes, procedures and rules to give broad guidelines as to how activities are to be performed.*	-0.685			
Implicit Behavior Control Tightness Cronbach's α = 0.779		Employees in my organization are encouraged to adjust procedures to suit the situation.		0.762		
		Employees in my organization are encouraged to use procedures flexibly.		0.759		
		My job allows me to decide how to adjust rules to best perform my job tasks.		0.723		
Explicit Results Control Tightness Cronbach's α = 0.804		Employee attainment of goals/targets is checked constantly.			0.794	
		My supervisor frequently checks to make sure that I am meeting my performance targets.			0.773	
		My organization sets a large number of performance goals/targets that I am expected to meet.			0.662	
		In my job, there is a performance measure for everything.			0.630	
	***	*In my organization, employees are expected to meet pre-established goals/targets with no exceptions.*			0.486	
	***	*My supervisor is very considerate of my explanations of deviations from pre-established goals/targets.*			-0.347	0.286
Implicit Results Control Tightness Cronbach's α = 0.428		In our organization, goals/targets are essentially a guideline rather than a true commitment.				0.814
		Responding to new, unforeseen opportunities is considered more important by my supervisor than achieving pre-established goals/targets.				0.602

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.

[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.

† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Table 3.03† ***continued***
Condensed Factor Analysis

Variable	Items	Component Loading						
		Factor 5†	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
Explicit Personnel Control Tightness Cronbach's α = 0.723	You have to go through many steps in order to be hired at this firm.	0.780						
	The hiring process to become employed at my firm is extensive.	0.728						
	I interviewed with several people in my organization before being offered a position.	0.678						
	*** *The hiring process at my organization evaluates the knowledge, skills, abilities, values and motives of prospective employees.*		0.353					
Implicit Personnel Control Tightness Cronbach's α = 0.704	Before being hired, most of my colleagues and I acquired the same kind of job experience.			0.810				
	Before being hired, most of my colleagues and I followed the same type of education and training.			0.685				
	*** *The competence of employees within my job title varies greatly.*			0.409				
	*** *There seems to be little consistency in the type of professional that gets hired for my job.*				0.380			
Explicit Cultural Control Tightness Cronbach's α = 0.772	My organization plans team-building events for employees.					0.749		
	My organization creates company sponsored teams for sporting events/fundraisers/volunteer events.					0.698		
	My organization regularly hosts social events for employees.					0.646		
	My organization communicates its core values to employees.					0.511		
Implicit Cultural Control Tightness (Formative)								
Friends Cronbach's α = 0.620	I am not friends with any of my colleagues.						0.759	
	I socialize with my colleagues outside of work.						0.652	
Values Cronbach's α = 0.587	Since starting this job, my personal values and those of this organization have become more similar.							0.595
	I feel a sense of "ownership" for this organization rather than just being an employee.							0.523

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.

[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.

† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Table 3.03† ***continued***
Condensed Factor Analysis

Variable		Items	Factor 21†	Factor 22	Factor 25	Factor 26	Factor 31
Reputation Cronbach's α = 0.756		My organization is well respected in its field.	0,786				
		My organization has a strong reputation for consistent quality and service.	0,742				
		My organization is perceived to provide good value for the price.	0,603				
	***	*My organization has strong brand name recognition in its service area.*	0,546	0,426			
Human Capital Intensity		Our employees are highly skilled.			0,756		
Cronbach's α = 0.837		Our employees are experts in their particular jobs and functions.			0,725		
		Our employees are creative and bright.			0,688		
		Our employees are widely considered the best in our industry.			0,685		
		Our employees develop new ideas and knowledge.			0,555		
Individual Performance In-Role Cronbach's α = 0.837		This employee always performs all essential duties.				0,807	
		This employee always performs all tasks that are expected of him/her.				0,790	
		This employee always completes all duties specified in his/her job description.				0,784	
		This employee always meets all formal performance requirements of the job.				0,769	
		This employee always fulfills all responsibilities required by his/her job.				0,755	
		This employee never neglects aspects of the job that he/she is obligated to perform.				0,674	
		This employee always engages in all activities that will directly affect his/her performance evaluation.				0,636	
Professional Tension Cronbach's α = 0.829		My organization hinders me from doing my work properly.					0,756
		I could do my job much better without the conditions imposed by my organization.					0,718
		In this organization, I can't perform my job the way that I think I should.					0,713
		Due to a lack of adequate resources and materials, I cannot execute my assignments properly.					0,699
		In my organization, there is a conflict between the work standards and procedures of the organization and my own ability to act according to my professional judgment.					0,640
		I do not have enough time to complete my work the way that I think it should be done.					0,606
		I have to alter my professional behavior in order to perform my job the way my organization wants me to.					0,544
		The type and structure of my employment gives me the opportunity to fully express myself as a professional.					0,524

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.

[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.

† Factors may not appear in numerical order as factor analysis only contains items relevant to the current study. Full factor analysis of all items in the survey is available in Appendix B.

Implicit Results Control Tightness (*IRCT*) comprises four items designed to measure the degree to which deviation from goals/targets/performance measures is tolerated and/or encouraged, where a tight system is defined as one which does not permit any deviation from established goals/targets/performance measures. The items are based on an adaptation of Van der Stede's (2001) measure of budget tightness (3 items) and Hage and Aiken's (1967b) measure of job specificity (1 item). Only two of these four items load on the single factor *IRCT.* The Cronbach's alpha of 0.428 is below the generally accepted minimum threshold for exploratory research of 0.5, indicating a lack of reliability in this construct. Nevertheless, we use this construct for our primary analysis, but interpret our findings with caution.

5.1.1.3 Personnel Control Tightness

Explicit personnel control tightness (*EPCT*) is comprised of four items designed to measure the extent of use of employee selection procedures as part of the management control system, where a tight system is one in which the employee selection procedure is extensive. As no existing scale was available, a new scale we developed. Factor analysis revealed that three of the items loaded on a single factor, while a third item had a low component loading (0.353) on a separate factor. This separate item was removed from further analysis and the Cronbach's alpha of the remaining items is 0.723.

Implicit personnel control tightness (*IPCT*) was also a newly developed scale based on four items designed to measure the degree to which deviation from human resource standards is tolerated. Since our respondents are the subjects of the personnel control system rather than the persons making the hiring decision, their ability to judge the tolerance for deviation in the hiring process may be limited. Therefore, the items measuring *IPCT* rely on measuring the outcome of personnel control tightness, as measured by the degree to which employees have the same training, experience and competencies are their colleagues. The scale loaded on two separate factors with three items loading on a single factor and a single item with a low component loading (0.380) on a separate factor. This factor was removed from further analysis. Of the three remaining items, one item had a fairly low component loading of 0.409. Reliability analysis revealed that Cronbach's alpha of all three factors is 0.600, but increases to 0.704 with this item removed. To improve reliability of the construct, we remove this item from our construct.

5.1.1.4 Cultural Control Tightness

Explicit cultural control tightness (*ECCT*) is comprised of four new items designed to measure the extent to which the organization makes use of employee socialization procedures to actively bring employees into the organization's culture and communicates core values to employees. As indicated in Table 3.03, all items from this construct loaded on a single factor with an acceptable Cronbach's alpha of 0.772.

Implicit cultural control tightness (*ICCT*) is comprised of four new items designed to measure the degree to which employees' norms values and beliefs are tolerated to deviate from those of the organization. Once again, since our respondents are the subjects of the cultural control system, their ability to judge the tolerance for deviation from firm's norms and values may be limited. Therefore, the items measuring *ICCT* rely on measuring the expected outcome of cultural control tightness. On the one hand, we expect that less tolerance for deviation from organizational norms and values will result in more similar values between the professional and the organization. Therefore, two of the items for *ICCT* focus on value congruence between the professional and the organization. On the other hand, a low degree of tolerance for deviation from organizational norms also suggests that the values of the professional will be similar to others within the organization. Research indicates that individuals tend to form relationships with people who are similar to themselves (Byrne, 1997; Monsour, 2002) and friendship is associated with co-orientation, or developing corresponding values, beliefs and interests (Newcomb, 1953). We therefore expect that organizations which allow little deviation from organizational norms will result in stronger social ties between the respondent and other employees in the organization and include two items to measure the strength of social ties within the organization. As expected, results of the factor analysis reveal that our four items split into two separate factors. One of these factors focuses on the value congruence of employees and the organization (*Cultural Implicit Values*), while the other factor focuses on the strength of social ties between the respondent and other employees in the organization (*Cultural Implicit Friends*). As a low degree of tolerance for deviation from organizational norms suggests not only that the values of the professional will be similar to that of the organization but that the values of the professional will also be similar to others within the organization, we measure *ICCT* as formative construct of the factors *Cultural Implicit Values* and *Cultural Implicit Friends.* The Cronbach alpha's for the individual factors are 0.620 for *Cultural Implicit Friends* and 0.587 for *Cultural Implicit Values*.

5.1.2 Construction of Control Combinations

Following the construction of the scales for explicit and implicit control tightness for each mode of control (behavior, results, personnel, culture); we construct variables to match these control types to the control combinations specified in Figure 3.10.

		Explicit Tightness (Extent of MCS)	
		Low (0)	High (1)
Implicit Tightness (Observance of MCS)	Low (0)	1. Flexible Guidelines (0,0)	2. Flexible Standardization (0,1)
	High (1)	3. Rigid Guidelines (1,0)	4. Rigid Standardization (1,1)

Figure 3.10 Median Split Scoring Typology of Control Tightness

To construct the control combinations, we perform a median split on each mode of control. For example, for behavior control, we perform a median split on explicit behavior control tightness and on implicit behavior control tightness. Values above the median are assigned a value of one for high control tightness and values below the median are assigned a value of zero for low control tightness. Respondents which score high (1,1) on both explicit behavior and implicit behavior control tightness are then assigned to the behavior control rigid standardization (*BCRS*) group. Those who score high on explicit behavior control tightness but low on implicit behavior control tightness (1,0) are assigned to the behavior control flexible standardization (*BCFS*) group. Those who score low on explicit behavior control tightness but high on implicit behavior control tightness (0,1) are assigned to the behavior control rigid guidelines (*BCRG*) group and those which score low on both explicit and implicit behavior control tightness (0,0) are assigned to the behavior control flexible guidelines (*BCFG*) control group. This process is then repeated for results, personnel, and cultural controls.

5.1.3 Individual Performance

We measure individual performance (*IndividualPerformance*) using a self-reported seven item scale originally developed by Williams (cf. Williams and Anderson, 1991), and later revised and shortened by Podsakoff and MacKenzie (1989). All seven items in the scale loaded on a single factor with a Cronbach's alpha of 0.837.

5.1.4 Professional Tension

Traditionally, the organizational and professional orientations of professional employees were assumed to conflict due to the incompatibility of professional and organizational-bureaucratic values (Aranya and Ferris, 1984). The degree of conflict experienced by professionals may be determined by the degree to which the professional is allowed to act in accordance with their professional judgement (Blau, 1968; Litwak, 1961). Therefore, we define professional tension (*ProfessionalTension*) as the degree to which the employees feels they cannot perform work in the way they believe it should be done. We measure professional tension using 8 items. Two of these items are adapted from Aranya and Ferris' (1984) measure of organizational-professional conflict, three items are adapted from Rizzo et al.'s (1970) measure of role conflict and the remaining three items are new items developed specifically for this study. Factor analysis indicates that all eight items load on a single construct with a Cronbach's alpha of 0.829.

5.1.5 Control Variables

To reduce the effect of confounding variables, we utilize a number of control variables which previous literature suggests may influence our dependent variable.

5.1.5.1 Size

To control for possible size effects, we control for both organization and unit size. Studies suggest that as organization size increases, the problem of coordination increases leading to increased reliance on bureaucratic forms of control rather than direct supervision to control behavior (Child, 1974; Inkson et al., 1970; Samuel and Mannheim, 1970). We control for organization size by using organizations of more than five thousand employees as our reference group and creating dummy variables for organization with more than 100 but less than 500 (*OrgSizeSmall*) employees and more than 500 but less than 5000 employees (*OrgSizeMedium*).

In addition, even if organizational size is large prior research has found that individual units in professional service firms may operate autonomously from the whole of the firm (Scott, 1965). Small organizational units in large companies may therefore create separate management control systems that operate much like small informal firms.

We therefore also control for unit size, using unit size of more than 100 as our reference group and creating separate dummy variables for units of less than 10 people (*UnitSize<10)*, more than 10 people but less than 50 (*UnitSizeSmall)* and more than 50 but less than 100 (*UnitSizeMedium)*.

5.1.5.2 Firm Type

Professional service firms can typically be divided into two distinct types. In autonomous professional service firms, professionals perform the core service and are often supported by an administrative staff to in the performance of their work. In a heteronomous professional organization, the work of the professional serves auxiliary goals of the organization rather than the central goal (Scott, 1965). For example, a lawyer working in a law firm is an example of an autonomous professional organization, while a lawyer who works as in-house council for a technology company is employed in a heteronomous professional organization. Heteronomous organizations are typically associated with less autonomy, more administrative controls and more routine supervision than autonomous organizations (Scott, 1965). We control for these effects by creating a dummy variable (*FirmType)* equal to one for autonomous organizations and zero otherwise.

5.1.5.3 Ownership

Previous research suggests that inside ownership (i.e. partnership) may affect performance by allowing for the creation of slack and allowing for the pursuit of a service ideal rather than a focus on profit (Von Nordenflycht, 2010). In addition, a portion of our sample consists of non-profit or public institutions with no profit focus. We therefore control for ownership type to allow for these different performance focuses. We create dummy variables for outside ownership firms (*OwnershipINC*) (i.e. public corporation) and public/non-profit firms (*OwnershipPublic*) and use inside ownership (i.e. partnership) firms as our reference group.

5.1.5.4 Reputation

Reputation is highly important in professional services due to the intangibility of the service and the importance of the professional in service delivery and has been positively linked to performance in accounting firms (Greenwood et al., 2005; Lander, 2012; Nachum, 1996; Smets, 2008). We measure reputation (*Reputation*) by adopting a four-item measure previously used in the service industry by Combs and Ketchen (1999). Three of the four items loaded on a single factor, while the fourth item loaded on the same factor with a cross-loading of 0.432 on a separate factor. We therefore eliminate the cross-loaded factor. Cronbach's alpha of the remaining three items is 0.756.

5.1.5.5 Human Capital Intensity

The quality of human capital has been found to be positively associated with performance in PSFs (Hitt et al., 2001; Skaggs and Youndt, 2004). We measure human capital intensity (*HumanCapitalIntensity*) using a five item measure developed by Subramaniam and Youndt (2005) that is designed to reflect the overall skill, expertise and knowledge of an organization's employees. All five items load on a single factor with a Cronbach's alpha of 0.837.

6 Results

To test our hypotheses we utilize multiple regression with ordinary least squares. With one exception (noted below), we utilize separate regression models for each mode of control (behavior, results, personnel and cultural). Equations BCT1-BCT4 below show the sample regression equations for the analyses for behavior control. Similar analyses were then conducted for results, personnel, and cultural control (as indicated by models RCT, PCT, and CCT, respectively).

Hypotheses 1-4 examine the effect of MCS tightness on individual performance, as illustrated by the following sample model for behavior control:

$$\begin{aligned} IndividualPerformance = {} & a_0 + b_1 OrgSizeSmall + b_2 OrgSizeMedium \\ & + b_3 UnitSize<10 + b_4 UnitSizeSmall + \\ & b_5 UnitSizeMedium + b_6 FirmType + \\ & b_7 OwnershipINC + b_8 OwnershipPublic + \\ & b_9 Reputation + b_{10} HumanCapitalIntensity \\ & + b_{11} BCLC + b_{12} BCFS + b_{13} BCRG + e_1 \end{aligned} \quad \text{(BCT1)}$$

As our hypotheses predict individual performance will vary based on the control combination utilized by the firm (*BCFG*, *BCFS*, *BCRG*, *BCRS*) we need to conduct a comparison of means for all groups. To this end, we use *BCRS* as our reference group in our initial analysis in BCT1 and then conduct separate regressions with *BCFG*, *BCFS,* and *BCRG* as reference groups.

Hypotheses 5-8 predict the effect of MCS tightness on professional tension. To test these relationships we use a model identical to BCT1, but change the dependent variable to professional tension as illustrated by the following sample regression for behavior control (BCT2):

$$\begin{aligned} ProfessionalTension = {} & a_1 + b_{14}OrgSizeSmall + b_{15}OrgSizeMedium \\ & + b_{16}UnitSize<10 + b_{17}UnitSizeSmall + \\ & b_{18}UnitSizeMedium + b_{19}FirmType + \\ & b_{20}OwnershipINC + b_{21}OwnershipPublic + \\ & b_{22}Reputation + b_{23}HumanCapitalIntensity \\ & + b_{24}BCLC + b_{25}BCFS + b_{26}BCSG + e_2 \end{aligned} \quad \text{(BCT2)}$$

Hypothesis 9 tests the direct effect of professional tension on performance. As we are testing the direct effect, we remove the control combination variables (*BCFG*, *BCFS*, *BCRG*, *and BCRS*) from the analysis. As a result, the analysis of H9 is identical for all four modes of control as illustrated by model BCT3 below:

$$\begin{aligned} IndividualPerformance = {} & a_2 + b_{27}OrgSizeSmall + b_{28}OrgSizeMedium \\ & + b_{29}UnitSize<10 + b_{30}UnitSizeSmall + \\ & b_{31}UnitSizeMedium + b_{32}FirmType + \\ & b_{33}OwnershipINC + b_{34}OwnershipPublic + \\ & b_{35}Reputation + b_{36}HumanCapitalIntensity + \\ & b_{37}ProfessionalTension + e_3 \end{aligned} \quad \text{(BCT3)}$$

Finally, H10 suggests that the relationship MCS tightness and individual performance will be mediated by professional tension. To test this mediation effect, we conduct a mediation analysis using the four-step method suggested by Baron and Kenny (1986). In step one, we test the direct relationship between the independent variable (management control tightness) and the dependent variable (*IndividualPerformance*) using model BCT1. In step two, we test the direct relationship between the independent variable (management control tightness) and the mediator variable (*ProfessionalTension*) using model BCT2. In step 3, we test the direct relationship between the mediator variable (*ProfessionalTension*) and the dependent variable

(*IndividualPerformance*) using model BCT3. Finally, in step 4, we regress the dependent variable (*IndividualPerformance*) on both the independent variable (management control tightness) and the mediator variable (*ProfessionalTension*) using the following sample regression for behavior control (BCT4):

$$\begin{aligned} IndividualPerformance = {} & a_3 + b_{38}OrgSizeSmall + b_{39}OrgSizeMedium \\ & + b_{40}UnitSize<10 + b_{41}UnitSizeSmall + \\ & b_{42}UnitSizeMedium + b_{43}FirmType + \\ & b_{44}OwnershipINC + b_{45}OwnershipPublic + \\ & b_{46}Reputation + b_{47}HumanCapitalIntensity \\ & + b_{48}BCLC + b_{49}BCFS + b_{50}BCSG + \\ & b_{51}ProfessionalTension + e_4 \end{aligned} \quad \text{(BCT4)}$$

A mediation relationship is indicated by significant results for the direct relationship between the control configuration and individual performance in step 1 (BCT1), the control configuration and professional tension in step 2 (BCT2) and professional tension and individual performance in step 3 (BCT3) (Baron and Kenny, 1986; James and Brett, 1984; Judd and Kenny, 1981). The strength of the mediation effect is then determined by comparing the coefficient on the control configuration in BCT1 to that of BCT4. If the coefficient on the control configuration is smaller or loses significance, than a mediation relationship is implied.

Table 3.04 presents the summary statistics for the sample used to test our hypotheses. Table 3.05 presents descriptive statistics for the sample divided based on control combination type, and Table 3.06 gives the correlation matrix. To prevent possible multicollinearity problems, we standardized all continuous variables in the correlation matrix and in our analyses. The highest common variance among any two independent variables is below 3.00 which is well below the common threshold of 10 (Hair et al., 1998) and also below the stricter threshold of 6 or 7 (Cohen et al., 2003), which does not indicate a problem with multicollinearity.

Table 3.04
Summary Statistics

	N	Mean	Median	Std. Deviation	Variance	Range	Minimum	Maximum
Reputation	308	4.166	4.333	0.683	0.466	3.333	1.67	5.00
Human Capital Intensity	308	3.752	3.800	0.688	0.473	3.400	1.60	5.00
Individual Performance In-role	308	4.089	4.000	0.575	0.331	3.286	1.71	5.00
Work Unit Performance	308	3.413	3.500	0.785	0.616	4.000	1.00	5.00
Professional Tension	308	2.419	2.375	0.714	0.509	3.375	1.00	4.38

Table 3.05
Descriptive Statistics per Control Combination

	1 Behavior Control Flexible Guidelines	2 Behavior Control Flexible Standardization	3 Behavior Control Rigid Guidelines	4 Behavior Control Rigid Standardization	Total
n	71	81	71	83	306
Org Size Small	26	16	20	11	
Org Size Medium	21	26	18	25	
Org Size Large	24	39	33	47	
Unit Size < 10	12	8	14	13	
Unit Size Small	27	31	22	30	
Unit Size Medium	14	11	13	15	
Unit Size Large	18	30	22	25	
Missing	0	1	0	0	
Autonomous Firm	36	52	36	46	
Heteronomous Firm	35	28	33	37	
Missing	0	1	0	0	
Inside Ownership	39	48	35	31	
Outside Ownership INC	27	20	26	39	
Public/Non-profit	5	13	10	13	
Means					
Reputation	4.1221	4.1914	4.1315	4.2349	
Human Capital Intensity	3.7549	3.9679	3.5887	3.6747	
Performance In-role	4.0946	4.0935	3.9956	4.1512	
Professional Tension	2.2377	2.4433	2.5863	2.4189	

	1 Results Control Flexible Guidelines	2 Results Control Flexible Standardization	3 Results Control Rigid Guidelines	4 Results Control Rigid Standardization	Total
n	74	73	76	85	308
Org Size Small	14	16	24	20	
Org Size Medium	29	24	25	13	
Org Size Large	31	33	27	52	
Unit Size < 10	13	10	15	10	
Unit Size Small	28	25	23	34	
Unit Size Medium	15	13	15	11	
Unit Size Large	18	25	22	30	
Missing	0	0	1	0	
Autonomous Firm	39	44	42	46	
Heteronomous Firm	34	29	34	37	
Missing	1	0	0	2	
Inside Ownership	33	46	33	41	
Outside Ownership INC	32	21	29	30	
Public/Non-profit	9	6	14	14	
Means					
Reputation	4.1824	4.0868	4.1184	4.2608	
Human Capital Intensity	3.8162	3.8247	3.5974	3.7718	
Performance In-role	4.1931	4.0352	4.0508	4.0784	
Professional Tension	2.3378	2.4567	2.4081	2.4670	

Table 3.05 ***continued***
Descriptive Statistics per Control Combination

	1 Personnel Control Flexible Guidelines	2 Personnel Control Flexible Standardization	3 Personnel Control Rigid Guidelines	4 Personnel Control Rigid Standardization	Total
n	90	71	64	82	307
Org Size Small	29	17	17	11	
Org Size Medium	21	21	17	32	
Org Size Large	40	33	30	39	
Unit Size < 10	17	16	10	5	
Unit Size Small	29	33	18	30	
Unit Size Medium	19	5	14	16	
Unit Size Large	25	17	22	30	
Missing	0	0	0	1	
Autonomous Firm	47	24	45	54	
Heteronomous Firm	41	46	19	28	
Missing	2	1	0	0	
Inside Ownership	49	28	34	42	
Outside Ownership INC	31	39	19	22	
Public/Non-profit	10	4	11	18	
Means					
Reputation	4,1185	4,2160	4,1745	4,1646	
Human Capital Intensity	3,4778	3,7803	3,6625	4,0902	
Performance In-role	3,9651	4,2143	3,9933	4,1902	
Professional Tension	2,4228	2,3773	2,4545	2,4238	

	1 Cultural Control Flexible Guidelines	2 Cultural Control Flexible Standardization	3 Cultural Control Rigid Guidelines	4 Cultural Control Rigid Standardization	Total
n	96	65	42	104	307
Org Size Small	29	14	13	18	
Org Size Medium	30	14	13	33	
Org Size Large	37	37	16	53	
Unit Size < 10	23	8	5	11	
Unit Size Small	25	23	19	43	
Unit Size Medium	24	12	7	11	
Unit Size Large	24	22	11	38	
Missing	0	0	0	1	
Autonomous Firm	50	37	23	60	
Heteronomous Firm	45	28	19	42	
Missing	1	0	0	2	
Inside Ownership	44	37	17	55	
Outside Ownership INC	31	25	18	37	
Public/Non-profit	21	2	7	12	
Means					
Reputation	4,0139	4,1000	4,1270	4,3542	
Human Capital Intensity	3,4958	3,7600	3,7000	3,9923	
Performance In-role	4,0670	3,9062	4,1565	4,1928	
Professional Tension	2,6499	2,4212	2,4851	2,1830	

Table 3.06
Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1 Behavior Control Flexible Guidelines	1											
2 Behavior Control Flexible Standardization	-0.330 **	1										
3 Behavior Control Rigid Guidelines	-0.302 **	-0.330 **	1									
4 Behavior Control Rigid Standardization	-0.335 **	-0.366 **	-0.335 **	1								
5 Results Control Flexible Guidelines	0.092	-0.162 **	0.092	-0.014	1							
6 Results Control Flexible Standardization	-0.068	0.226 **	-0.086	-0.078	-0.313 **	1						
7 Results Control Rigid Guidelines	0.078	-0.122 *	0.114 *	-0.061	-0.322 **	-0.319 **	1					
8 Results Control Rigid Standardization	-0.099	0.058	-0.116 *	0.147 *	-0.347 **	-0.344 **	-0.353 **	1				
9 Personnel Control Flexible Guidelines	0.056	-0.104	0.056	-0.004	0.039	-0.074	0.078	-0.042	1			
10 Personnel Control Flexible Standardization	0.064	-0.046	-0.028	0.012	0.016	0.002	-0.046	0.027	-0.353 **	1		
11 Personnel Control Rigid Guidelines	-0.036	-0.014	0.059	-0.008	-0.008	-0.061	0.133 *	-0.063	-0.331 **	-0.281 **	1	
12 Personnel Control Rigid Standardization	-0.085	0.165 **	-0.085	-0.001	-0.048	0.130 *	-0.159 **	0.075	-0.389 **	-0.331 **	-0.310 **	1
13 Cultural Control Flexible Guidelines	-0.069	-0.160 **	0.182 **	0.050	0.014	-0.158 **	0.199 **	-0.056	0.151 **	-0.100	0.154 **	-0.202
14 Cultural Control Flexible Standardization	-0.002	-0.001	-0.002	0.006	0.081	0.014	-0.076	-0.018	0.038	0.007	-0.067	0.015
15 Cultural Control Rigid Guidelines	-0.012	0.027	0.010	-0.025	-0.047	0.026	0.057	-0.035	-0.007	-0.014	0.028	-0.005
16 Cultural Control Rigid Standardization	0.078	0.137 *	-0.183 **	-0.036	-0.049	0.124 *	-0.171 **	0.095	-0.175 **	0.102	-0.115 *	0.189
17 Reputation	-0.042	0.016	-0.034	0.056	0.014	-0.064	-0.040	0.086	-0.044	0.041	0.007	0.000
18 Human Capital Intensity	0.003	0.189 **	-0.13 *	-0.068	0.053	0.059	-0.129 *	0.018	-0.255 **	0.024	-0.065	0.299
19 Professional Tension	-0.143 *	0.018	0.127 *	-0.003	-0.064	0.029	-0.009	0.042	0.003	-0.032	0.025	0.004
20 Org Size Small	0.165 **	-0.058	0.056	-0.152 **	-0.067	-0.028	0.101	-0.007	0.122 *	-0.002	0.029	-0.151
21 Org Size Medium	0.002	0.035	-0.049	0.009	0.119 *	0.041	0.042	-0.193 **	-0.089	-0.001	-0.035	0.124
22 Unit Size < 10	0.023	-0.089	0.066	0.004	0.030	-0.030	0.068	-0.066	0.057	0.104	-0.001	-0.157
23 Unit Size Small	0.023	0.033	-0.058	0.001	0.024	-0.018	-0.061	0.054	-0.050	0.121 *	-0.084	0.014
24 Unit Size Medium	0.034	-0.057	0.014	0.011	0.040	0.003	0.036	-0.076	0.059	-0.153 **	0.057	0.033
25 Firm Type (Autonomous)	-0.060	0.107	-0.043	-0.008	-0.030	0.048	-0.009	-0.008	-0.032	-0.238 **	0.150 **	0.122
26 Outside Ownership INC	0.016	-0.148 **	0.000	0.132 *	0.080	-0.088	0.021	-0.014	-0.023	0.214 **	-0.069	-0.117
27 Outside Ownership Public/Non-profit	-0.103	0.047	0.011	0.041	-0.029	-0.092	0.074	0.045	-0.054	-0.132 *	0.047	0.138

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.06 ***continued***
Correlation Matrix

	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
13 Cultural Control Flexible Guidelines	1														
14 Cultural Control Flexible Standardization	-0.350 **	1													
15 Cultural Control Rigid Guidelines	-0.269 **	-0.206 **	1												
16 Cultural Control Rigid Standardization	-0.483 **	-0.371 **	-0.285 **	1											
17 Reputation	-0.148 **	-0.048	-0.021	0.201 **	1										
18 Human Capital Intensity	-0.249 **	0.009	-0.028	0.256 **	0.398 **	1									
19 Professional Tension	0.217 **	0.000	0.036	-0.239 **	-0.199 **	-0.297 **	1								
20 Org Size Small	0.096	-0.031	0.064	-0.114 *	-0.025	-0.102	-0.019	1							
21 Org Size Medium	0.029	-0.089	0.014	0.038	-0.128 *	0.041	-0.075	-0.364 **	1						
22 Unit Size < 10	0.161 **	-0.044	-0.038	-0.092	0.000	-0.091	-0.011	0.324 **	-0.061	1					
23 Unit Size Small	-0.140 *	-0.006	0.077	0.086	0.002	0.091	-0.054	0.198 **	0.056	-0.322 **	1				
24 Unit Size Medium	0.130 *	0.011	-0.010	-0.130 *	-0.117 *	-0.048	0.026	-0.160 **	0.078	-0.199 **	-0.345 **	1			
25 Firm Type (Autonomous)	-0.045	0.011	-0.009	0.042	0.015	0.094	0.005	0.032	0.029	-0.270 **	0.044	0.083	1		
26 Outside Ownership INC	-0.054	0.025	0.056	-0.009	-0.032	-0.089	0.018	-0.157 **	0.058	0.046	-0.087	0.005	-0.374 **	1	
27 Outside Ownership Public/Non-profit	0.153 **	-0.140 *	0.031	-0.051	-0.162 **	0.020	0.085	-0.095	0.170 **	0.011	0.019	0.065	0.085	-0.305 **	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

6.1 MCS Tightness and Performance

Table 3.07 presents the results of our analysis. In Panel A, model BCT1, we present the results for behavior control tightness (H1). We predicted that behavior control flexible standardization (*BCFS*) and behavior control rigid guidelines (*BCRG*) would be associated with better individual performance that behavior control flexible guidelines (*BCFG*) or behavior control rigid standardization (*BCRS*). The results show no significant differences in performance between any of the four control configurations, which supports hypothesis H1a and H1f, but fails to support hypotheses H1b-H1e, indicating a general lack of support for hypothesis 1. Contrary to expectations, the pattern of our results indicate that *BCRS* leads to the highest performance followed *BCFG*, *BCFS* and finally, *BCRG*, though none of these differences are significant. These findings provide no support for the argument that extensive and/or strict use of behavior control in a professional setting will lead to lower performance nor do they suggest that a flexible control system can improve performance.

The results for MCS tightness and performance for results control are presented in Table 3.07 Panel B. Much like the hypotheses for behavior control, hypothesis H2 predicted that performance would be higher under results control flexible standardization (*RCFS*) and results control rigid guidelines (*RCRG*) than under results control flexible guidelines (*RCFG*) or results control rigid standardization (*RCRS*). The results show that the only significant difference in individual performance is between *RCFG* and *RCRS*, with *RCFG* being associated with marginally significant better individual performance that *RCRS* ($b = 0.119$; $p<0.10$) which fails to support hypothesis H2a which predicted no difference between *RCFG* and *RCRS*. Only hypothesis H2f, which predicts no difference in individual performance between *RCFS* and *RCRG,* is supported by the data, we therefore find no support for hypothesis 2. The pattern of results indicates that *RCFG* leads to the highest individual performance followed by *RCRG*, *RCFS,* and finally *RCRS,* though only the difference between *RCFG* and *RCRS* is (marginally) significant. This suggests that *RCRS* may negatively impact individual performance, but not compared to results control flexible standardization and results control strict guidelines as predicted by hypotheses H2b and H2c.

For personnel control tightness, hypothesis 3 predicted that the extensive use of hiring procedures combined with the flexibility of personnel control flexible standardization (*PCFS*) would lead to better performance than personnel control rigid standardization (*PCRS*) with personnel control flexible guidelines (*PCFG*) and personnel control rigid guidelines (*PCRG*) being associated with the lowest performance. The results presented in Table 3.07 Panel C largely provide support for hypothesis 3. As predicted, *PCFS* lead to significantly higher individual performance than *PCFG* ($b=-0.186$, $p<0.05$) and PCRG ($b=0.174$, $p<0.05$), providing support for

hypothesis H3d and H3f. Similarly, *PCRS* also leads to significantly higher performance that *PCFG* (b=-0.156, p<0.05) and *PCRG* (b=-0.142, p<0.05), providing support for hypothesis H3a and H3c. Furthermore, as predicted by hypothesis H3e, there is no significant difference in performance between *PCFG* and *PCRG* (b=0.001). However, whereas hypothesis H3b predicted that *PCFS* would lead to significantly higher performance than *PCRS*, results show that while *PCFS* is associated with higher performance (b=0.028), this difference Is not significant and we therefore fail to find support for hypothesis H3b. Collectively, the results suggest that *PCRS* and *PCFS* lead to better performance than *PCFG* or *PCRG*. Overall, the results for personnel control appear to confirm the finding in the psychology literature that more extensive screening of prospective candidates is beneficial to individual performance, but fails to confirm our hypothesis that greater discretion in the hiring process would lead to better individual performance by taking into account the less tangible features of employee performance.

Finally, for cultural control tightness hypothesis H4 predicts that cultural control flexible standardization (*CCFS*), cultural control rigid guidelines (*CCRG*) and cultural control rigid standardization (*CCRS*) will be associated with higher individual performance than cultural control flexible guidelines (*CCFG*). The results in Table 3.07 Panel D indicate little support for hypothesis H4. While there is no significant difference in individual performance between *CCRG* and *CCRS* (b=0.017) which supports hypothesis H4c, we find no support for the remainder of our hypotheses. Instead, the pattern of results indicate that there are no significant differences in individual performance between *CCFG*, *CCRG* and *CCRS*, but all three of these approaches lead to significantly higher individual performance than *CCFS*. These results appear to suggest that when firms allow cultural heterogeneity, actively managing culture through socialization activities may actually be damaging to individual performance.

Table 3.07
Regression Results

PANEL A: Behavior Control

Dependent Variable	Hypothesis	Predicted	Model BCT1 Individual Performance In-Role	Hypothesis	Predicted	Model BCT2 Professional Tension	Hypothesis	Predicted	Model BCT3 Individual Performance In-Role	Model BCT4 Individual Performance In-Role
Org Size Small			0,088			-0,045			0,073	0,080
Org Size Medium			-0,041			-0,104 *			-0,066	-0,061
Unit Size < 10			0,035			-0,034			0,039	0,028
Unit Size Small			-0,048			-0,024			-0,047	-0,052
Unit Size Medium			-0,094			-0,003			-0,093	-0,095
Firm Type (Autonomous)			0,098			0,038			0,107 *	0,106 *
Outside Ownership INC			0,112 *			0,049			0,130 **	0,121 *
Outside Ownership Public/Non-profit			0,030			0,109 *			0,069	0,050
Reputation			0,172 ***			-0,127 **			0,157 **	0,149 **
Human Capital Intensity			0,159 **			-0,254 ***			0,109 *	0,111 *
Behavior Control Flexible Guidelines (*BCFG*)			-0,040			-0,076				-0,054
Behavior Control Flexible Standardization (*BCFS*)			-0,072			0,077				-0,057
Behavior Control Rigid Guidelines (*BCRG*)			-0,094			0,088				-0,078
Professional Tension							H9	-	-0,192 ***	-0,187 ***
R^2			0,116			0,153			0,142	0,146
Adjusted R^2			0,076			0,115			0,11	0,104
F-stat			2,912			4,009			4,403	3,502
Significance F-stat			0,001			0,000			0,000	0,000
BCFG - BCRS	H1a	0	-0,040	H5a	+	-0,076				-0,054
BCFS - BCRS	H1b	+	-0,072	H5b	+	0,077				-0,057
BCRG - BCRS	H1c	+	-0,094	H5c	+	0,088				-0,078
BCFG - BCFS	H1d	-	0,029	H5d	-	-0,151 **				0,001 [1]
BCFG- BCRG	H1e	-	0,055	H5e	-	-0,165 **				0,024 [2]
BCFS - BCSG	H1f	0	0,027	H5f	0	-0,015				0,024

* p < 0.10, ** P < 0.05, *** p < 0.01

Table 3.07 *continued*
Regression Results

PANEL B: Results Control

Dependent Variable	Hypothesis	Predicted	Model RCT1 Individual Performance In-Role	Hypothesis	Predicted	Model RCT2 Professional Tension	Hypothesis	Predicted	Model RCT3 Individual Performance In-Role	Model RCT4 Individual Performance In-Role
Org Size Small			0.089			-0.053			0.073	0.079
Org Size Medium			-0.057			-0.110 *			-0.066	-0.078
Unit Size < 10			0.033			-0.027			0.039	0.028
Unit Size Small			-0.050			-0.027			-0.047	-0.056
Unit Size Medium			-0.097			-0.021			-0.093	-0.101
Firm Type (Autonomous)			0.099			0.039			0.107 *	0.106 *
Outside Ownership INC			0.115 *			0.048			0.130 **	0.124 *
Outside Ownership Public/Non-profit			0.054			0.116 *			0.069	0.076
Reputation			0.175 ***			-0.091			0.157 **	0.157 **
Human Capital Intensity			0.155 **			-0.271 ***			0.109 *	0.104 *
Results Control Flexible Guidelines (*RCFG*)			0.119 *			-0.041				0.111 *
Results Control Flexible Standardization (*RCFS*)			0.008			0.024				0.013
Results Control Rigid Guidelines (RCRG)			0.012			-0.050				0.002
Professional Tension							H9	-	-0.192 ***	-0.189 ***
R^2			0.122			0.125			0.142	0.153
Adjusted R^2			0.083			0.086			0.11	0.112
F-stat			3.104			3.198			4.403	3.738
Significance F-stat			0			0			0	0
RCFG - RCRS	H2a	0	0.119 *	H6a	-	-0.041				0.111 *
RCFS - RCRS	H2b	+	0.008	H6b	-	0.024				0.013
RCRG - RCRS	H2c	+	0.012	H6c	-	-0.050				0.002
RCFG - RCFS	H2d	-	0.111	H6d	-	-0.065				0.099
RCFG - RCRG	H2e	-	0.108	H6e	-	0.008				0.109
RCFS - RCRG	H2f	0	-0.003	H6f	0	0.073				0.011

* p < 0.10, ** P < 0.05, *** p < 0.01

PANEL C: Personnel Control

Dependent Variable	Hypothesis	Predicted	Model PCT1 Individual Performance In-Role	Hypothesis	Predicted	Model PCT2 Professional Tension	Hypothesis	Predicted	Model PCT3 Individual Performance In-Role	Model PCT4 Individual Performance In-Role
Org Size Small			0.103			-0.051			0.073	0.093
Org Size Medium			-0.052			-0.122 *			-0.066	-0.077
Unit Size < 10			0.041			-0.022			0.039	0.037
Unit Size Small			-0.063			-0.026			-0.047	-0.068
Unit Size Medium			-0.074			-0.020			-0.093	-0.078
Firm Type (Autonomous)			0.123 *			0.035			0.107 *	0.130 **
Outside Ownership INC			0.111 *			0.040			0.130 **	0.119 *
Outside Ownership Public/Non-profit			0.053			0.103 *			0.069	0.075
Reputation			0.190 ***			-0.086			0.157 **	0.172 ***
Human Capital Intensity			0.106			-0.299 ***			0.109 *	0.044
Personnel Control Flexible Guidelines (*PCFG*)			-0.156 **			-0.119				-0.181 **
Personnel Control Flexible Standardization (*PCFS*)			0.028			-0.062				0.015
Personnel Control Rigid Guidelines *(PCRG)*			-0.142 **			-0.064				-0.155 **
Professional Tension							H9	-	-0.192 ***	-0.206 ***
R^2			0.141			0.129			0.142	0.178
Adjusted R^2			0.103			0.090			0.110	0.139
F-stat			3.660			3.291			4.403	4.469
Significance F-stat			0.000			0.000			0.000	0.000
PCFG - PCRS	H3a	-	-0.156 **	H7a	+	-0.119				-0.181 **
PCFS - PCRS	H3b	+	0.028	H7b	-	-0.062				0.015
PCRG - PCRS	H3c	-	-0.142 **	H7c	-	-0.064				-0.155 **
PCFG - PCFS	H3d	-	-0.186 **	H7d	+	-0.053				-0.197 ***
PCFG - PCRG	H3e	0	0.001	H7e	+	-0.049				-0.009
PCFS - PCRG	H3f	+	0.174 **	H7f	0	0.004				0.175 **

* p < 0.10, ** P < 0.05, *** p < 0.01

Table 3.07 *continued*
Regression Results

PANEL D: Cultural Control

Dependent Variable	Hypothesis	Predicted	Model CCT1 Individual Performance In-Role	Hypothesis	Predicted	Model CCT2 Professional Tension	Hypothesis	Predicted	Model CCT3 Individual Performance In-Role	Model CCT4 Individual Performance In-Role
Org Size Small			0.068			-0.089			0.073	0.051
Org Size Medium			-0.061			-0.123 **			-0.066	-0.085
Unit Size < 10			0.048			-0.043			0.039	0.040
Unit Size Small			-0.039			-0.017			-0.047	-0.042
Unit Size Medium			-0.086			-0.052			-0.093	-0.096
Firm Type (Autonomous)			0.104 *			0.044			0.107 *	0.113 *
Outside Ownership INC			0.118 *			0.038			0.130 **	0.126 **
Outside Ownership Public/Non-profit			0.024			0.082			0.069	0.040
Reputation			0.159 **			-0.084			0.157 **	0.142 **
Human Capital Intensity			0.166 ***			-0.217 ***			0.109 *	0.123 *
Cultural Control Flexible Guidelines (*CCFG*)			-0.006			0.219 ***				0.038
Cultural Control Flexible Standardization (*CCFS*)			-0.157 **			0.091				-0.139 **
Cultural Control Rigid Guidelines (*CCRG*)			0.017			0.107 *				0.038
Professional Tension							H9	-	-0.192 ***	-0.199 ***
R^2			0.133			0.150			0.142	0.167
Adjusted R^2			0.094			0.112			0.110	0.127
F-stat			3.421			3.918			4.403	4.128
Significance F-stat			0.000			0.000			0.000	0.000
CCFG - CCRS	H4a	-	-0.006	H8a	-	0.219 ***				0.038
CCFS - CCRS	H4b	0	-0.157 **	H8b	-	0.091				-0.139 **
CCRG - CCRS	H4c	0	0.017	H8c	-	0.107 *				0.038
CCFG - CCFS	H4d	-	0.172 **	H8d	-	0.116				0.195 ***
CCFG - CCRG	H4e	-	-0.028	H8e	-	0.075				0.038
CCFS - CCRG	H4f	0	-0.177 **	H8f	0	-0.036				-0.139 **

* p < 0.10, ** P < 0.05, *** p < 0.01

6.2 MCS Tightness and Professional Tension

The tightness of the MCS is expected impact the degree of conflict between professional and organizational norms or professional tension. We predict that tighter bureaucratic controls will lead to greater professional tension than looser bureaucratic controls. That is, rigid standardization in behavior and results controls will lead to the greatest level of professional tension, while flexible guidelines behavior and results controls will be associated with the lowest levels of professional tension with flexible controls (flexible standardization and rigid guidelines) falling somewhere in between.

The results for behavior control tightness are presented in Table 3.07 Panel A. Hypothesis H5 predicts that behavior control rigid standardization (*BCRS*) will be associated with the highest levels of professional tension. Behavior control flexible standardization (*BCFS*) and behavior control rigid guidelines (*BCRG*) will be associated with medium levels of professional tension and behavior control flexible guidelines (*BCFG*) with the lowest levels of professional tension. The results only partially support this hypothesis. *BCFG* is associated with significantly lower levels of professional tension than either *BCRG* ($b = -0.165$, $p < 0.05$) or *BCFS* ($b = -0.151$, $p < 0.05$), which supports hypothesis H5d and H5e, but *BCFG* is not associated with a significantly lower level of professional tension than *BCRS* ($b = -0.076$), which fails to support hypothesis H5a. Furthermore, *BCRG* ($b = 0.088$) and *BCFS* ($b = 0.077$) are actually associated with higher levels of professional tension than *BCRS*. This is the reverse of the prediction made by hypothesis H5, though these differences are also not significant and thus do not support hypotheses H5b and H5c. Taken together, these results suggest while *BCFG* can lead to significant reductions in professional tension as compared to *BCRG* or *BCFS*, it does not lead to significant reduction in professional tension as compared to a *BCRS* system. Human capital intensity also has a strong negative association with professional tension ($b = -0.254$, $p < 0.01$). That is, professionals who work in organizations with other professionals who are the top in their field in terms of skill, expertise, and knowledge actually experience less professional tension than those with lower levels of human capital. This is somewhat surprising, since more educated and experienced individuals are generally expected to value autonomy more that less educated and experienced individuals.

The findings for results control tightness are presented in Table 3.07 Panel B. Akin to behavior control, hypothesis H6 predicts that results control rigid standardization (*RCRS*) will be associated with the highest levels of professional tension. Results control flexible standardization (*RCFS*) and results control rigid guidelines (*RCRG*) will be associated with medium levels of professional tension and results control flexible guidelines (RCFG) with the lowest levels of professional tension. As there are no

significant differences in professional tension between any of the four control system types, the results largely do not support Hypothesis H6. While *RCRG* and *RCFG* are associated with lower levels of professional tension than *RCRS*, these differences are not significant, and for *RCFS* professional tension actually increases but this difference is also not significant. *RCRG* actually appears to be associated with the lowest level of professional tension, though once again, these differences are not significant.

For personnel control tightness, hypothesis H7 predicts the opposite relationship as for behavior and results controls. Since personnel control is an input control which aims to maximize goal congruence between the firm and the employee prior to entry to the firm, we predict that firms which are more selective in their selection procedure will choose candidates which are better suited to those firms and therefore these candidates will be less likely to experience professional tension. Therefore, we predict that personnel control flexible guidelines (*PCFG*) will be associated with the highest levels of professional tension. Furthermore, we argue that personnel control flexible standardization (*PCFS*) and personnel control rigid guidelines (*PCRG*) could improve goal congruence between the firm and the employee by allowing for subjectivity in personnel selection. As a result, we predict that personnel control rigid standardization (*PCRS*) will be associated with a medium level of professional tension and *PCFS* and *PCRG* will be associated with the lowest levels of professional tension. The results in Table 3.07 panel C once again largely do not support hypothesis H7, as there are no significant differences in professional tension between any of the four control systems. The pattern of findings indicates that *PCFG* is actually associated with the lowest level of professional tension and *PCRS* is associated with the highest level of professional tension, though these results are not significant.

For cultural control tightness, hypothesis H8 predicts that cultural control rigid standardization (*CCRS*) is most likely to conflict with professional norms and therefore should be associated with the highest level of professional tension. Cultural control flexible guidelines (*CCFG*) is least likely to conflict with these norms and should therefore be associated with the lowest levels of professional tension, with cultural control flexible standardization (*CCFS*) and cultural control rigid guidelines (*CCRG*) somewhere in the middle. The results in Table 3.07 panel D indicate that *CCRS* is actually associated with the lowest levels of professional tension, and these differences are significant for *CCFG* ($b = 0.219$, $p < 0.01$) and *CCRG* ($b = 0.107$, $P < 0.10$). These findings are the opposite of those predicted by hypothesis H8a and H8c. The remaining three forms of cultural control are statistically indistinguishable from each other, although the pattern of findings indicates that *CCFG* leads to the highest levels of professional tension.

6.3 Professional Tension and Performance

The final part of our model examined the direct effect of professional tension on performance and professional tension as a potential mediator of the relationship between the design of the management control system and performance. Hypothesis H9 predicted that professional tension would be negatively associated with performance. The results in Table 3.07 confirm this hypothesis with professional tension having a strong negative effect on performance ($b= -0.192$, $p < 0.01$).

Our mediation model proposed that while the management control system has a direct effect on performance, the management control system could also affect performance through its effect on professional tension. Although the effect of professional tension on performance is always assumed to be negative, the direct effect of the MCS on professional tension and on performance varies based on the hypotheses in sections 4.1 and 4.2 above. In order to establish mediation for a given control configuration we would have to show significant results for the direct relationship between 1) the control configuration and performance and 2) the control configuration and professional tension (Baron and Kenny, 1986; James and Brett, 1984; Judd and Kenny, 1981). For example, for flexible standardization behavior control, the results of model BCT1 and BCT2 would both have to show significant differences, for flexible standardization results control the results of model RCT1 and RCT2 would both have to be significant and so on. In reviewing the results of Table 3.07, there are no control configurations that show significant effects in both columns 1 and 2. This suggests that professional tension does not mediate the relationship between the MCS and performance.

Recent research suggests that the Baron and Kenny (1986) procedure may be flawed, and there may be a mediation effect despite a lack of direct effect (Zhao et al., 2010). We therefore run additional test using the PROCESS macro for SPSS developed by Hayes (2013), which allows us to directly test for mediation using bootstrapping. Although the PROCESS macro allows for categorical mediator variables, it cannot accommodate multiple categorical variables. We therefore conduct individual pair-wise comparisons for control configurations that led to significant differences in columns 2 and 3 (for example BCT2 and BCT3 for behavior control). Findings from the bootstrap test (untabulated) indicate significant indirect only mediation effects for behavior control flexible guidelines (*BCFG*) as compared to behavior control flexible standardization (*BCFS*) and behavior control flexible guidelines (*BCFG*) as compared to behavior control rigid guidelines (*BCRG*). In other words, *BCFG* leads to significantly less professional tension than *BCFS* or *BCRG*, which reduces the negative effect of professional tension on performance. However, as discussed above, this effect is not large enough to lead to significant differences in individual performance. We also find

evidence of significant indirect mediation for cultural control flexible guidelines (*CCFG*) and cultural control rigid guidelines (*CCRG*) as compared to cultural control rigid standardization (*CCRS*). Cultural control rigid standardization (*CCRS)* is associated with higher levels of professional tension than *CCFG or CCRG*, which increases the negative effect on performance through an increase in professional tension, though once again, the indirect mediation effect is not large enough to result in significant differences in performance.

6.4 Additional Analysis

We chose to apply a median split in order to divide our sample into the four different control configurations (flexible guidelines, flexible standardization, rigid guidelines, rigid standardization). While this allowed us to preserve data, it could inhibit understanding of absolute levels and is highly influenced by the ranges of values in the sample (Jaworski et al., 1993). Firms close to the median may be equally representative of both high and low levels of control which could confound our results. We therefore also applied a distance scoring metric to our data to reflect the distance of control systems as measured by our survey from the pure control system combinations described in our model more accurately. As our survey measured responses on a 1 to 5 Likert scale, with 1 being low tightness and 5 being high tightness, we assigned the following values to the pure forms of control in our model (see Figure 3.11): flexible guidelines (1,1), flexible standardization (1,5), rigid guidelines (5,1) and rigid standardization (5,5). For each mode of control (behavior, results, personnel and culture) we computed a distance score for each respondent that reflected the absolute distance of the respondent from each pure form control combination (flexible guidelines, flexible standardization, rigid guidelines, rigid standardization), where distance scores could vary from 0 (perfect correspondence to one of the pure control systems) to 8.

For example, for behavior control a respondent reported a score of 2 on implicit behavior tightness and 5 on explicit behavior tightness. The distance score for behavior control flexible guidelines would then be the sum of the absolute difference from implicit behavior control tightness and explicit behavior control tightness as compared to the pure model (1,1). So, for implicit behavior control tightness (|2-1| = 1) and for explicit behavior control tightness (|5-1| = 4) for a total distance score of 5 (4+1=5). For behavior control flexible standardization the distance score would be 1 (|2-1|=1 and |5-5|=0), for behavior control rigid guidelines 7 (|2-5|=3 and |5-1|=4) and for behavior control rigid standardization 3 (|2-5|=3 and |5-5|=0). The respondent is then classified into one of the four control systems based on their lowest distance score. In our example, the lowest distance score is 1, which corresponds to behavior control flexible standardization (*BCFS*). If the calculation of

the distance score resulted in a tie between one or more of the control systems, the respondent was eliminated from our sample. This process was then repeated for the other three modes of control (results, personnel, and cultural controls).

The findings under distance scoring were largely similar to our main findings above. We discuss some of the differences in condensed form below. Full results for classification based on distance scoring can be found in Appendix E. By comparing the control system in use to the pure form of the control system, the distance classification system also gives us some insight into the prevalence of the various combination of control among PSFs.

Implicit Tightness (Observance of MCS)	Explicit Tightness (Extent of MCS): Low (1)	Explicit Tightness (Extent of MCS): High (5)
Low (1)	1. Flexible Guidelines (1,1)	2. Flexible Standardization (1,5)
High (5)	3. Rigid Guidelines (5,1)	4. Rigid Standardization (5,5)

Figure 3.11 Distance Scoring Typology of Control Tightness

For behavior control tightness (see Table 3.08), behavior control flexible standardization was the most prevalent control combination for behavior control. This does appear to support the need for flexibility in the MCS in professional service firms, though a fairly large number of firms, especially large firms, also applied highly rigid behavior control as evidenced by the prevalence of the behavior control rigid standardization system. Autonomous firms were more likely than heteronomous firms to apply the behavior control flexible standardization approach. This lends some support to the argument that autonomous firms allow for more flexibility and autonomy in their management control systems. Also noteworthy is the fairly rare use of the behavior control rigid guidelines approach. It appears that firms prefer to provide professionals with many rules but not require strict observance rather than provide a limited number of rules with tight observance. The literature typically mentions the rigid guidelines approach in reference to elite or highly renowned firms (Canavan, 2012; Teece, 2003). However, we find no significant differences in performance between the four behavior control tightness configurations under either

the median or distance scoring classification schemes. Therefore, our findings do not suggest that these firms perform better than firms adopting one of the other three control configurations. Furthermore, under the median split classification behavior control flexible standardization (*BCFS*) and behavior control rigid guidelines (*BCRG*) led to significantly higher professional tension than under behavior control flexible guidelines (*BCFG*). Under distance scoring, only the *BCFS* approach leads to significantly higher levels of professional tension than the *BCFG* approach.

For results controls tightness (see Table 3.08), results control flexible guidelines (*RCFG*) and results control flexible standardization (*RCFS*) were the most prevalent systems, and results control rigid standardization (*RCRS*) was the least prevalent and was most often utilized by large firms. Use of the four control configurations is fairly balanced over the firm characteristics (organization size, unit size, firm type, ownership type). Individual performance was highest under results control flexible guidelines (*RCFG*) for both classification schemes, but for the median split *RCFG* lead to significantly higher individual performance than *RCRS*, whereas under distance scoring individual performance was significantly higher under *RCFG* than under *RCFS*. The findings for results control and professional tension were statistically indistinguishable for the two classification schemes as neither scheme showed any significant differences in professional tension among the control combination types.

For personnel control tightness (see Table 3.08), the majority of firms utilize a personnel control rigid standardization (*PCRS*) control configuration, followed by the personnel control flexible standardization (*PCFS*) configuration, with the other two control configurations are represented fairly equally. This suggests that PSFs tend to use a fairly extensive hiring process. This is expected given the importance of human capital in the performance of professional service firms. Autonomous, inside ownership firms are more likely to apply the *PCRS* approach to control, while the *PCFS* approach appears to be more likely in heteronomous, outside ownership corporations. We find no statistical differences in the findings for the effect of personnel control tightness on professional tension. Neither classification scheme produced any significant differences. For personnel control tightness and performance, under the median split classification we found that personnel control rigid standardization (*PCRS*) and personnel control flexible standardization (*PCFS*) led to significantly better performance than personnel control flexible guidelines (*PCFG*) and personnel control rigid guidelines (PCRG). Under distance scoring, only *PCFS* leads to significantly higher performance as compared to *PCFG*, though when professional tension is taken into account, *PCFS* also leads to significantly higher performance than *PCRG*. Unlike the results under the median split, PCRS does not lead to significantly higher performance than PCFG or PCRG. This lends some support to our hypothesis

that allowing some subjectivity into the hiring process can improve individual performance, though this increase is quite small, since we find no significant differences between PCRS and PCFS.

Finally, for cultural control tightness, distance scoring placed an overwhelming number of respondents in the culture control rigid standardization (*CCRS*) management control configuration. Of the 259 respondents classified, 187 we classified as *CCRS*, with only 25 classified as cultural control flexible guidelines (*CCFG*), 29 as cultural control flexible standardization (*CCFS*) and 18 as cultural control rigid guidelines (*CCRG*). It appears that the majority of professional service firms try to actively manage their culture and also do not allow for much deviance from the established culture. This appears to lead support to the idea of 'strong cultures' in professional service firms. However, while the pattern of findings under distance scoring supported the pattern of findings under the median split, all of the significant differences disappeared under distance scoring for both performance and professional tension.

Contrary to expectations, the overall results of the distance scoring appear to indicate that when we map the control systems in our data to more closely match the pure control system combinations described in our model, we find fewer significant differences in performance and professional tension between the control types. However, the findings in the distance scoring classification support the general thrust of the findings in the median split classification, which do not suggest that flexible use of bureaucratic forms of control is associated with better performance or lower professional tension.

Table 3.08
Descriptive Statistics per Control Combination under Distance Scoring

	1 Behavior Control Flexible Guidelines	2 Behavior Control Flexible Standardization	3 Behavior Control Rigid Guidelines	4 Behavior Control Rigid Standardization	Total	Significant Differences: Median Split	Significant Differences: Distance Scoring
n	54	81	34	63	232		
Org Size Small	18	16	10	9			
Org Size Medium	18	26	9	19			
Org Size Large	18	39	15	35			
Unit Size < 10	9	8	9	10			
Unit Size Small	22	31	8	23			
Unit Size Medium	10	11	7	12			
Unit Size Large	13	31	10	18			
Autonomous Firm	29	53	19	33			
Heteronomous Firm	25	28	15	30			
Inside Ownership	30	48	15	22			
Outside Ownership INC	21	20	13	28			
Public/Non-profit	3	13	6	13			
Means							
Reputation	4.191	4.191	3.931	4.214			
Human Capital Intensity	3.881	3.968	3.476	3.632			
Performance In-role	4.143	4.093	4.101	4.133		None	None
Professional Tension	2.211	2.443	2.555	2.453		2=3 > 1	2>1

	1 Results Control Flexible Guidelines	2 Results Control Flexible Standardization	3 Results Control Rigid Guidelines	4 Results Control Rigid Standardization	Total	Significant Differences: Median Split	Significant Differences: Distance Scoring
n	74	64	44	36	218		
Org Size Small	14	15	11	7			
Org Size Medium	29	22	17	5			
Org Size Large	31	27	16	24			
Unit Size < 10	13	9	7	4			
Unit Size Small	28	24	16	14			
Unit Size Medium	15	10	7	3			
Unit Size Large	18	21	13	15			
Autonomous Firm	40	37	27	21			
Heteronomous Firm	34	27	17	15			
Inside Ownership	33	39	17	16			
Outside Ownership INC	32	19	14	16			
Public/Non-profit	9	6	13	4			
Means							
Reputation	4.182	4.089	4.189	4.306			
Human Capital Intensity	3.816	3.803	3.559	3.694			
Performance In-role	4.193	4.013	4.117	4.116		1 > 4	None†
Professional Tension	2.338	2.496	2.407	2.538		None	None

† Based on results with professional tension included as a mediating variable. For full results, see Appendix E.

Table 3.08 ***continued***
Descriptive Statistics per Control Combination under Distance Scoring

	1 Personnel Control Flexible Guidelines	2 Personnel Control Flexible Standardization	3 Personnel Control Rigid Guidelines	4 Personnel Control Rigid Standardization	Total	Significant Differences: Median Split	Significant Differences: Distance Scoring
n	39	51	41	82	213		
Org Size Small	12	11	11	11			
Org Size Medium	13	17	9	32			
Org Size Large	14	23	21	39			
Unit Size < 10	9	11	5	5			
Unit Size Small	11	25	8	30			
Unit Size Medium	9	3	10	16			
Unit Size Large	10	12	18	31			
Autonomous Firm	18	15	31	54			
Heteronomous Firm	21	36	10	28			
Inside Ownership	19	16	22	42			
Outside Ownership INC	14	32	13	22			
Public/Non-profit	6	3	6	18			
Means							
Reputation	4.120	4.203	4.146	4.165			
Human Capital Intensity	3.467	3.757	3.654	4.090			
Performance In-role	4.029	4.220	4.132	4.190		4=2 >1=3	2>1
							2>1=3†
Professional Tension	2.503	2.356	2.417	2.424		None	None

	1 Cultural Control Flexible Guidelines	2 Cultural Control Flexible Standardization	3 Cultural Control Rigid Guidelines	4 Cultural Control Rigid Standardization	Total	Significant Differences: Median Split	Significant Differences: Distance Scoring
n	25	29	18	187	259		
Org Size Small	9	4	6	40			
Org Size Medium	9	10	5	56			
Org Size Large	7	15	7	91			
Unit Size < 10	9	6	4	17			
Unit Size Small	5	5	6	78			
Unit Size Medium	7	10	3	27			
Unit Size Large	4	8	5	64			
Missing				1			
Autonomous Firm	17	14	7	109			
Heteronomous Firm	8	15	11	76			
Missing				2			
Inside Ownership	10	12	6	101			
Outside Ownership INC	8	12	8	67			
Public/Non-profit	7	5	4	19			
Means							
Reputation	3.867	4.155	3.852	4.268			
Human Capital Intensity	3.472	3.552	3.356	3.904			
Performance In-role	4.120	3.967	3.921	4.138		1=3=4 > 2	None
Professional Tension	2.700	2.532	2.632	2.303		1=3 > 4	None

† Based on results with professional tension included as a mediating variable. For full results, see Appendix E.

7 Discussion and Conclusions

The purpose of this paper was to explore the impact of flexibility in the control system on the attitudinal responses and performance of professionals. We predict that a flexible MCS can provide many of the same benefits of increased control such as improved coordination, aiding in decision-making and greater efficiency, which should directly lead to better individual performance. At the same time, a flexible MCS may limit the potential negative consequences of increased control such as professional tension. This decrease in professional tension should in turn lead to further improvements in individual performance.

For bureaucratic forms of control (behavior and results control) we predicted that rigid standardization would lead to decreased performance as compared to the other three control configurations, both directly and indirectly by increasing professional tension. We found little evidence to support these assertions, as for behavior control tightness there were no significant differences in performance among the four types of behavior control systems. For results controls, the rigid standardization approach to control led to significantly lower performance than the results control flexible guidelines approach, which lends some support to the notion that overly rigid results controls can negatively impact performance, but given the low reliability of the implicit results control tightness measure these findings must be interpreted with caution.

The results also show that behavior control systems can impact professional tension, though somewhat surprisingly professional tension actually increases for behavior control flexible standardization and behavior control rigid guidelines as compared to the flexible guidelines approach, but there are no significant differences in tension between the behavior control rigid standardization approach and the other three approaches. This suggest that firms can minimize professional tension either by creating a very rigid or very flexible behavior control system, but behavior control systems which combine high and low implicit and explicit behavior controls tend to lead to more professional tension. On the other hand, for results controls, there were no significant differences in professional tension among the four control configurations. Overall these findings suggest that the use of bureaucratic forms of control has relatively little impact on the performance of the individual in our sample, though enabling or flexible use of behavior control may actually increase professional tension.

Furthermore, we find support for the importance of human capital and employee selection in determining individual performance. More extensive screening of candidates under the personnel control rigid standardization and personnel control

flexible guidelines approach to control lead to significantly higher individual performance than under the other two approaches. However, once again these differences do not appear to be driven by profession tension, as we find no significant differences in professional tension among the four personnel control types. Therefore, while a more extensive personnel control system leads to better performance, this increase in performance does not appear to be driven by choosing candidates who are a better "fit" for the control system. Furthermore, Greenwood et al. (2005) suggest that reputation may improve performance in PSFs by allowing firms to select the best candidates and charge premiums for service. Our findings support this notion as both reputation and human capital intensity are associated with significantly higher individual performance.

For cultural control tightness, we argued that firms who create homogeneous cultures (cultural control rigid guidelines and cultural control rigid standardization), or firms who allow for cultural heterogeneity but manage this heterogeneity through increased socialization activities, will perform better than firms who allow for considerable cultural heterogeneity and engage in little formal socialization of employees (cultural control flexible guidelines). Instead, we found that cultural control flexible standardization firms had significantly lower individual performance than the other three control approaches. While this supports findings from prior research that stronger, more homogeneous cultures (cultural control rigid standardization and cultural control rigid guidelines), lead to better performance, the finding that heterogeneous cultures perform better when the firm does not engage in formal socialization activities is somewhat puzzling. One possible explanation is that firms which allow cultural heterogeneity (low implicit cultural control tightness), but employ extensive employee socialization procedures (high explicit cultural control tightness), actually send mixed messages to their employees about the desirability of this heterogeneity which translates into lower performance. Robertson and Swan (2003) suggest that the ability of the consulting firm they studied to maintain an heterogeneous culture was predicated on "a highly flexible, almost chaotic working environment and consciously rejecting the imposition of formalized systems and routines is one way of doing this" (p. 853). By combining heterogeneous culture with formalized socialization processes, as is the case under the cultural control flexible standardization approach, firms may actually be signaling to employees that heterogeneity is not desirable. This may cause a mismatch between the culture the firm wishes to represent and the culture is imposes on its employees, which may lead to lower performance.

With respect to professional tension, our findings show that when the respondents in our sample experience professional tension, this negatively impacts their individual performance. This result is in line with the findings from other studies of professionals which show that professional organizational conflict can lead to a multitude of negative job consequence including diminished job performance. However, while this conflict has often been used to argue against the use of bureaucratic controls in professional settings, as mentioned above, we find no evidence that increased use of bureaucratic forms of control is associated with increased professional tension. We do find some evidence that professionals in firms with more heterogeneous cultures (cultural control flexible guidelines and cultural control rigid guidelines) experience significantly higher levels of professional tension as compared to cultural control rigid standardization firms, though this increase in professional tension does not translate into differences in individual performance, as all three of these control configuration perform equally well. Of the variables we examined, professionals working in medium size firms experienced significantly less professional tension than professionals in large firms. Human capital intensity was also consistently associated with lower professional tension indicating that firms which made up of highly qualified and creative experts in the field lead to lower levels of professional tension. This relationship remains significant even when taking into account the personnel control system, suggesting that having good colleagues reduces professional tension even when taking into account employee selection. The importance of human capital intensity may be explained by the fact that professional work is often conducted in teams and thus working with other highly competent individuals allows professionals to better perform their work as they think it should be done.

While the results of this study largely fail to confirm our predication that flexible use of bureaucratic forms of control with lead to better performance and lower professional tension, the fact that even rigid use of bureaucratic controls has little negative effect on individual performance or professional tension has potential implications for the further development on theory on professional service firms. While much of the established literature suggests that bureaucratic forms of control are ill-suited to professional service firms, this study appears to suggest that tight bureaucratic forms on control do not lead to more professional tension or diminished individual performance. It does not appear to be the presence of rules or the observance of rules which is problematic for professionals. However, when professionals do feel that the firm is limiting their ability to do their job as they wish, this does lead to lower levels of performance. Future research should focus on the

source of this professional tension, as the existing literature provides pretty consistent evidence that the presence of such a conflict leads to a variety of negative job outcomes including lower performance and increased turnover, but the cause of this tension remains unclear. Future research may also want to examine how the different control configurations interact with common characteristics of PSFs such as task complexity and customer contact to affect performance. Perhaps specific control configurations are better for PSFs with certain characteristics. Future research may also examine the control configurations (flexible guidelines, flexible standardization, rigid guidelines, rigid standardization) across all four modes of control (behavior, results, personnel, cultural) simultaneously, as different combinations of these modes of control may operate to support or undermine each other leading to differences in performance.

This study is not without its limitations, particularly in the area of measurement. First of all, while we used established instruments for our survey whenever possible, a number of the constructs are new and had to be developed. This led to problems with reliability in some of our measures (implicit results control tightness in particular) which affect our results. Future research should focus on refining the implicit results control measure. Professionals may interpret goals and targets differently from employees which have more tangible measures of performance (such as salespeople), and results control measures which are better suited to the ways that professionals are evaluated in their jobs may be necessary.

Secondly, we use self-reported measures of individual performance which have been found to differ from supervisor reported performance in a number of studies. Self-reporting of measures also requires us to construct implicit personnel control as an outcome measure because the respondent is not actually able to observe the hiring decision directly. Similarly, implicit cultural control tightness is also constructed as an outcome measure since the respondent does not have direct knowledge of the firm's tolerance for deviation from cultural norms. Follow-up research utilizing superior and subordinate pairs would allow for less biased and more direct measures of individual performance, personnel control and cultural control. In addition, our study is limited to the effects of the MCS configurations on individual performance. It is possible that the MCS configurations may impact team or firm performance which is not captured by our models of individual performance. Follow-up research on superior subordinate pairs or teams could help to determine the impact of the MCS configurations on these alternative measures of performance.

Finally, we also rely on respondent-driven sampling to acquire respondents which could lead to bias in our sample. However, this approach has been used in numerous studies, (i.e., Dalton et al., 2013; Lander et al., 2013; Neu et al., 2014; Raschke et al. 2014), and has been shown to be asymptotically unbiased independent of one's starting point (Salganik and Heckathorn, 2004). In addition, the meta-analytic study of Derfuss (2009) suggests that results of studies utilizing random versus non-random sampling techniques are comparable. Therefore, while our sample is not random, we have no a priori reason to suggest that it is systematically biased.

CONCLUDING REMARKS

This thesis examines the antecedents and consequences to management control in professional service firms. We seek to reconcile opposing viewpoints on the use of bureaucratic control measures in professional service firms by empirically examining the impact of PSF characteristics on management control system design and the impact of this design on the individual performance and attitudinal outcomes of employees.

We argue that the inherent assumptions of the nature of the work challenge and the nature of the individual challenge may have caused researchers to focus on the use of non-bureaucratic means of control in professional service firms (Alvesson, 1995; Hedberg, 1990; Kanter, 1983; Kunda, 1992; Mintzberg, 1998; Wilkins and Ouchi, 1983). Based on our review of the literature, we suggest that the extent of these challenges may be overemphasized and at least partly based on the assumption of a rigid, controlling, or coercive role of MCSs. We suggest that adopting an enabling approach to MCSs could help in explaining the use of bureaucratic controls in professional service firms.

We address this gap in the literature by empirically examining the effects of PSF characteristics such as task complexity, customer reliance, capital intensity, professionalized workforce, and ownership structure on management control systems in PSFs. On the one hand, we aim to test whether an increase in PSF characteristics led to an increase in the use of non-bureaucratic forms of control and a decrease in the use of bureaucratic forms of control as suggested by the controlling role of MCSs. On the other hand, we aim to test whether an increase in the use of bureaucratic control measures in response to PSF characteristics could be explained by introducing more flexibility into the management control system, as suggested by the enabling approach to management control. Finally, we aim to test whether a more flexible approach to control would result in better individual performance and improved attitudinal outcomes.

To test this idea of a flexible approach to control, we develop a model of control tightness which allows for flexibility in the control system by changing the amount or scope of the MCS (explicit control tightness) or the degree of observance of the MCS (implicit control tightness). Using these two dimensions of control tightness creates four distinct control configurations, as shown in Figure II, which we apply to each mode of control (behavior, results, personnel and cultural). We suggest that by balancing explicit and implicit control tightness, in the form of flexible standardization or rigid guidelines, professional service firms can achieve both the control necessary for optimal performance and satisfy the need for autonomy and flexibility.

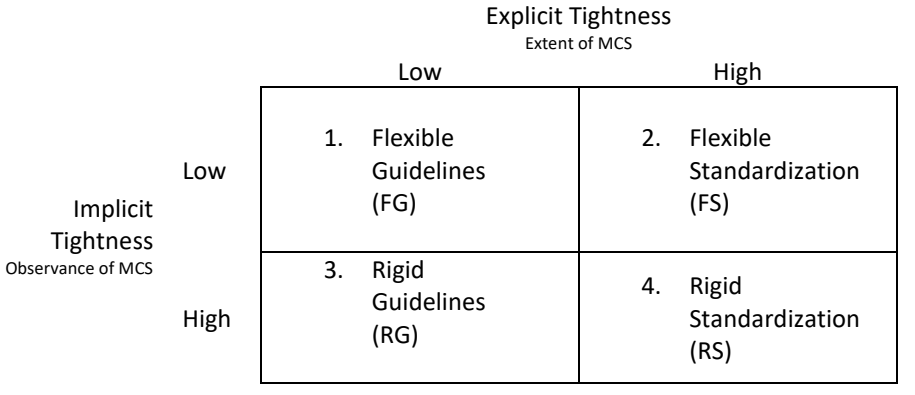


Figure II: Conceptual Model of Control Tightness

We find that, contrary to our hypotheses, professional service firms do not reduce their use of bureaucratic control measures in response to an increase in the presence of the PSF characteristics. With the exception of task complexity, which does lead to significant reductions in the use of bureaucratic control measures, the use of bureaucratic control measures in response to the other PSF characteristics is either unaffected or actually increases. Nor do we find much evidence that professional service firms increase their use of non-bureaucratic forms of control in response to PSF characteristics, as the results of personnel and cultural control largely fail to produce significant results. Taken together, these findings suggest limited support for the commonly held assumption, which we tested in some of our hypotheses, that the characteristics unique to PSFs lead to a decrease in the use of bureaucratic forms of control and an increase in the use of non-bureaucratic forms of control.

Secondly, we find that rather than balancing explicit and implicit control tightness to achieve a balance between flexibility and control, as predicted by our hypotheses, the firms we study tend to increase or decrease explicit and implicit control tightness simultaneously. When there is a significant interaction between the PSF characteristics and implicit and explicit control, this effect tends to result in firms choosing either very tight (rigid standardization) or very loose (flexible guidelines) approaches to control as opposed to leading to a trade-off between implicit and explicit forms of control. While a shift to a loose MCS in response to MCS characteristics is suggested by the literature, the use of a tight approach to control tightness is somewhat surprising, since it is generally expected to result in lower performance and negative attitudinal outcomes.

However, thirdly, we find that the use of flexible forms of bureaucratic controls (flexible standardization and rigid guidelines) perform no worse or better than loose (flexible guidelines) approaches to management control, and even rigid (rigid standardization) approaches to behavior control do not lead to significant differences in individual performance. Only the combination of highly rigid use of results controls (results control rigid standardization) leads to significantly worse performance than a highly loose results control system (results control flexible guidelines). This lends some support to the notion that flexible use of bureaucratic controls can mitigate potential negative effects on performance, at least with respect to results controls.

Fourthly, we find that while professional tension leads to significantly worse individual performance, there is no evidence that the rigid use of bureaucratic controls increases professional tension. While we do find some evidence that flexible use of bureaucratic controls (that behavior control flexible standardization and behavior control rigid guidelines)leads to higher levels of professional tension as compared to a loose approach to control (behavior control flexible guidelines), this effect is not sufficiently strong to significantly impact individual performance.

Finally, we find that differences in the control tightness of non-bureaucratic forms of control are more likely to lead to differences in individual performance than differences in the control tightness of bureaucratic forms of control. We find support for findings from the prior literature suggesting that employee selection is important to performance in PSFs. PSFs with more extensive employee selection procedures were associated with higher individual performance than PSFs with less extensive employee selection procedures. However, the personnel control system had no significant effect on professional tension, suggesting that employee selection was not effective in achieving better fit between the professional and management control system. In addition, our findings suggest that firms that are culturally heterogeneous should not engage in extensive employee socialization procedures as cultural control flexible standardization led to lower individual performance than the other three control configurations.

Overall, we find that the use of bureaucratic forms of control in professional services firms does not appear as problematic as the literature suggests. While the nature of the work challenge suggests that the use of bureaucratic forms of control may be difficult due to the increased uncertainty caused by the complex nature of professional work, our sample shows that firms are just as likely to increase the use of bureaucratic controls in response to this uncertainty as they are to decrease it. Though the nature of the individual challenge suggests that professionals will feel restricted by bureaucratic forms of control, and this will result in increased professional tension, the professionals in our sample feel relatively unaffected by the

use of bureaucratic forms of control, and even if they do, this frustration does not translate into decreased performance. Thus while many have cautioned against the use of bureaucratic forms of control in professional service firms, our findings suggest that while the use of bureaucratic control measures may not lead to significant improvements in individual performance, they also do not appear to be harmful. On the other hand, when professionals experience professional tension, this does lead to diminished performance, but this tension does not appear to be caused by the amount of rules or the strictness with which they are applied. Further examination of the source(s) of this professional tension may be critical to understanding the individual performance of professionals and how management control systems can best be designed to alleviate this tension and maximize performance.

APPENDICES

Appendix A: Digital Survey Used for Data Collection



We are conducting research about the coordination, motivation and performance measurement of professionals working in professional and non-professional organizations. This survey will ask you a series of questions about your industry, organization and job characteristics.

It takes about 15 minutes to complete the survey, and you can save partial responses and complete the survey at a later time if necessary. Your responses are completely confidential.

If you have any questions about the survey, please email the research coordinator, Helena Kloosterman at h.kloosterman@uva.nl

We really appreciate your input!

A NOTE ON TERMINOLOGY

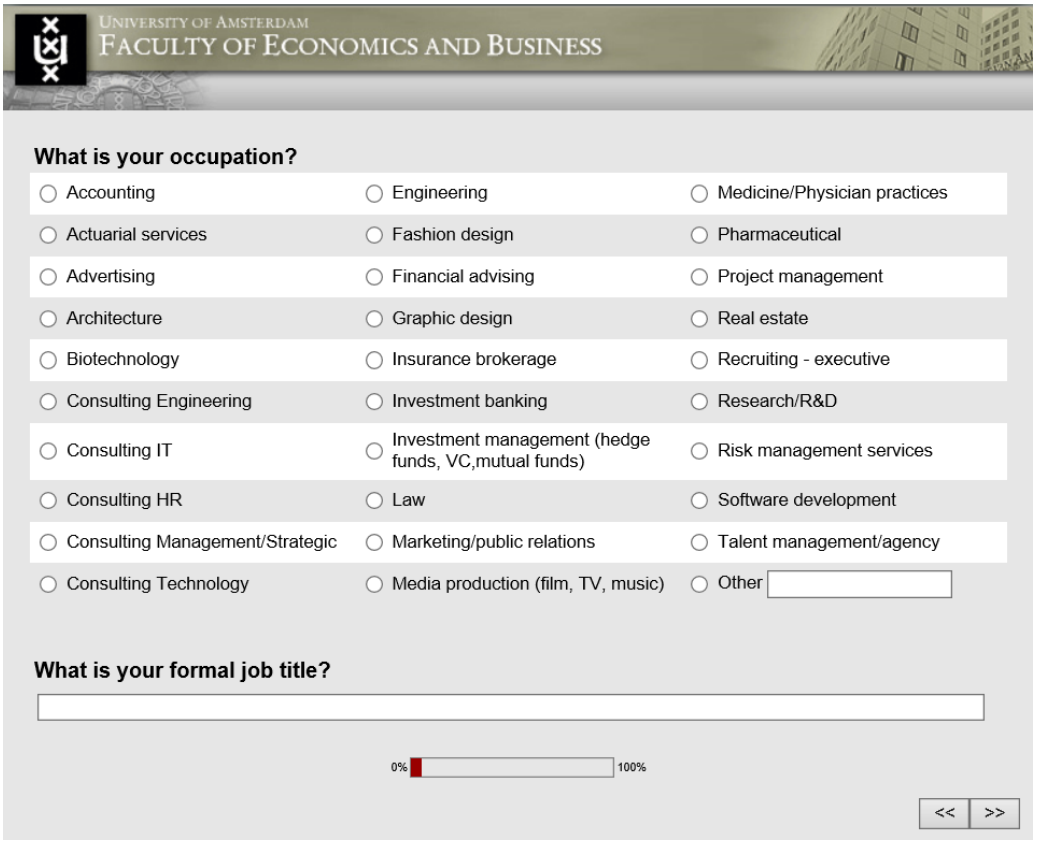
Unless indicated otherwise by the question, when we use the term "organization", we refer to the organizational unit you work in. The organizational unit is the group of people who perform the same type of work as you. It is what you might think of as your immediate work environment. In smaller organizations, you may consider the organization as a whole your organizational unit, while in larger organizations, your work unit might be the particular service branch, division, section or department you belong to.

Have you read the above definition and remarks?

- ○ Yes
- ○ No

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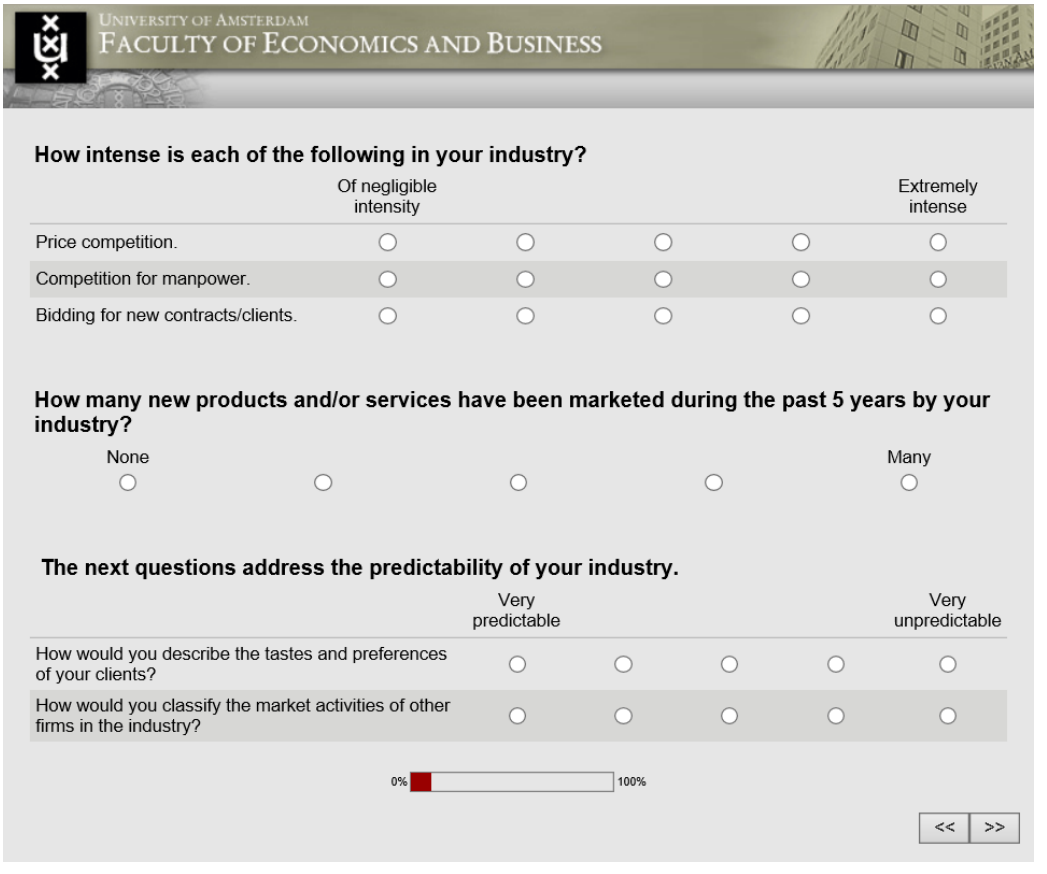
What is your occupation?

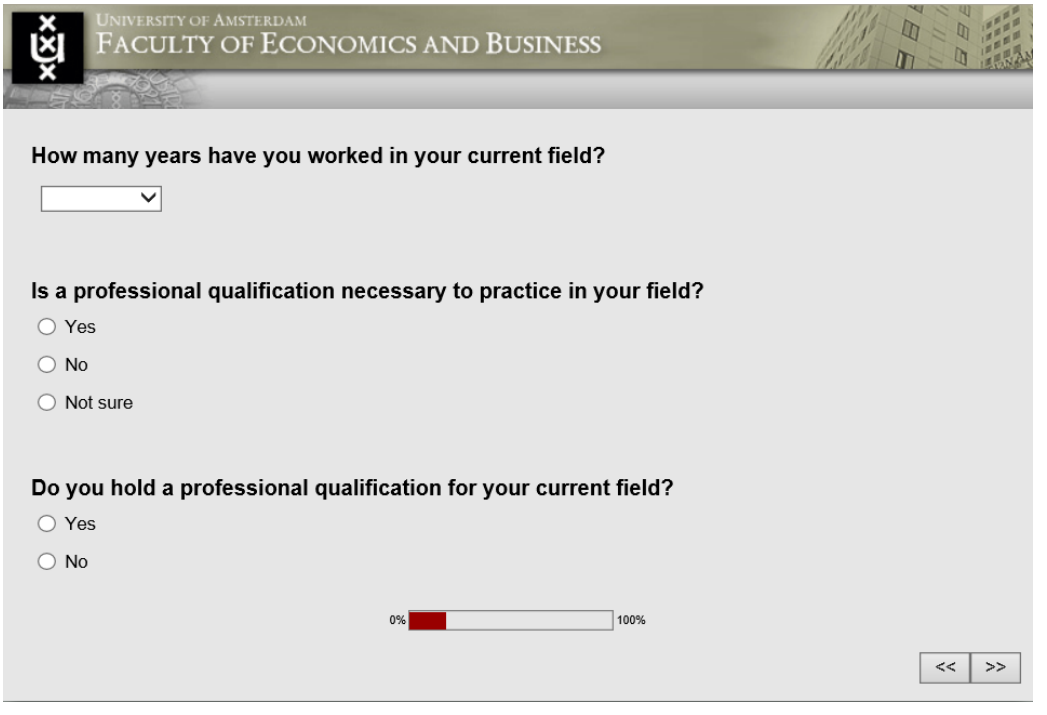
○ Accounting	○ Engineering	○ Medicine/Physician practices
○ Actuarial services	○ Fashion design	○ Pharmaceutical
○ Advertising	○ Financial advising	○ Project management
○ Architecture	○ Graphic design	○ Real estate
○ Biotechnology	○ Insurance brokerage	○ Recruiting - executive
○ Consulting Engineering	○ Investment banking	○ Research/R&D
○ Consulting IT	○ Investment management (hedge funds, VC,mutual funds)	○ Risk management services
○ Consulting HR	○ Law	○ Software development
○ Consulting Management/Strategic	○ Marketing/public relations	○ Talent management/agency
○ Consulting Technology	○ Media production (film, TV, music)	○ Other

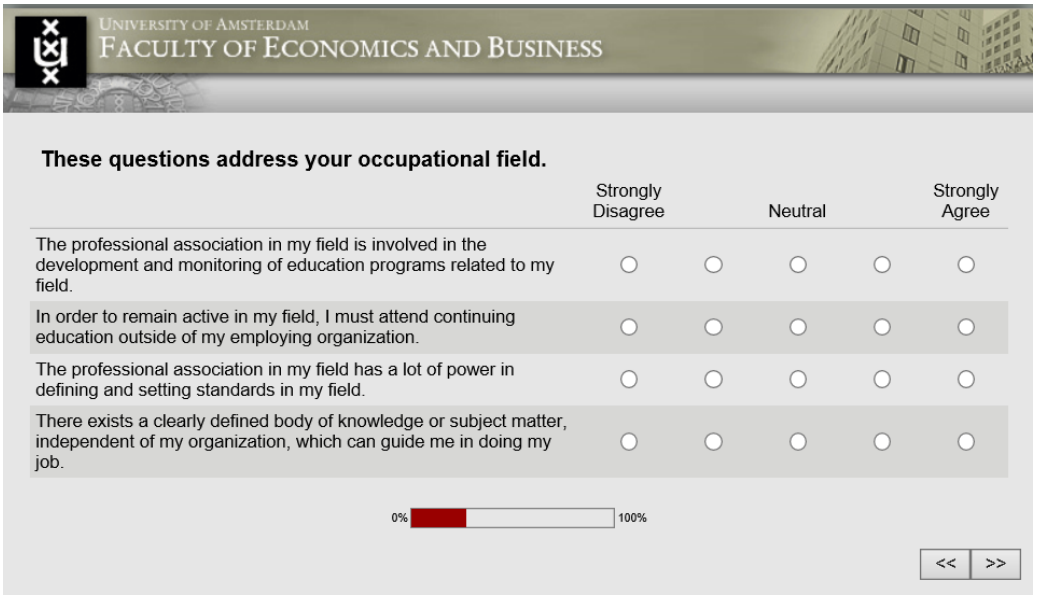
What is your formal job title?

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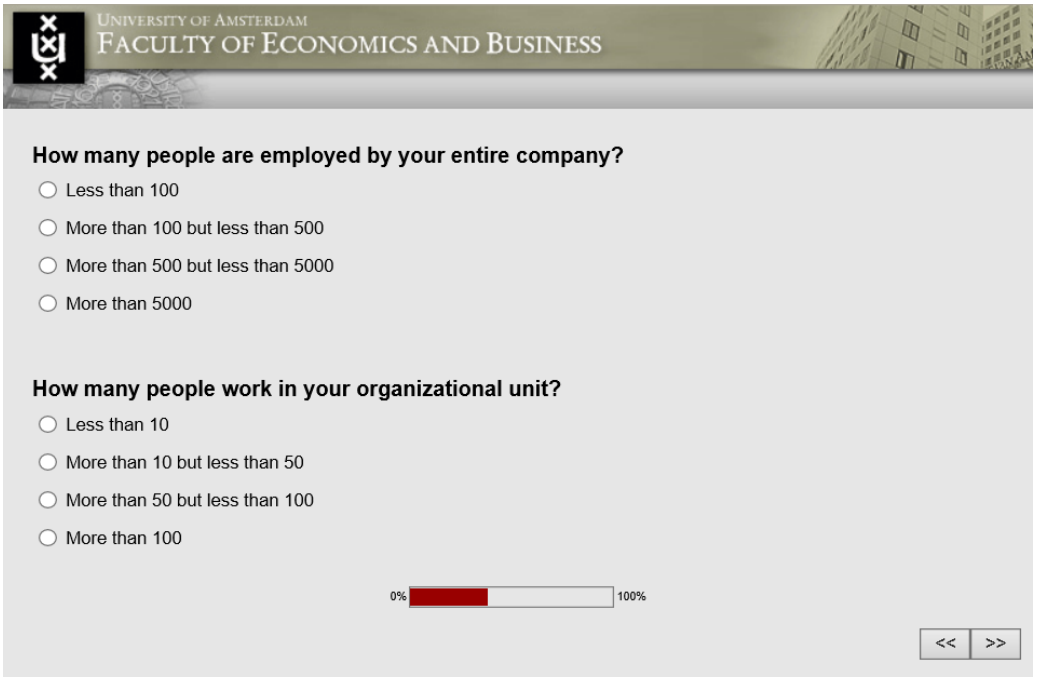
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How intense is each of the following in your industry?
Of negligible intensity
Extremely intense
Price competition.
Competition for manpower.
Bidding for new contracts/clients.
How many new products and/or services have been marketed during the past 5 years by your industry?
None
Many
The next questions address the predictability of your industry.
Very predictable
Very unpredictable
How would you describe the tastes and preferences of your clients?
How would you classify the market activities of other firms in the industry?
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How many years have you worked in your current field?
Is a professional qualification necessary to practice in your field?
Yes
No
Not sure
Do you hold a professional qualification for your current field?
Yes
No
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These questions address your occupational field.
Strongly Disagree
Neutral
Strongly Agree
The professional association in my field is involved in the development and monitoring of education programs related to my field.
In order to remain active in my field, I must attend continuing education outside of my employing organization.
The professional association in my field has a lot of power in defining and setting standards in my field.
There exists a clearly defined body of knowledge or subject matter, independent of my organization, which can guide me in doing my job.
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How many years have you worked in your current organization?
Where is your organization located?
In which country was your organization founded?
0%
100%
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How many people are employed by your entire company?
Less than 100
More than 100 but less than 500
More than 500 but less than 5000
More than 5000
How many people work in your organizational unit?
Less than 10
More than 10 but less than 50
More than 50 but less than 100
More than 100
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Which of the following best describes the ownership type of your organization?
My organization is primarily owned by…
people who work in the organization (i.e. partnership).
people employed outside of the organization (i.e. shareholders, investors).
no one. I work in a non-profit/public organization.
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100%
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How is your organization viewed in general?
Strongly Disagree
Neutral
Strongly Agree
My organization is perceived to provide good value for the price.
My organization has a strong reputation for consistent quality and service.
My organization has strong brand name recognition in its service area.
My organization is well respected in its field.
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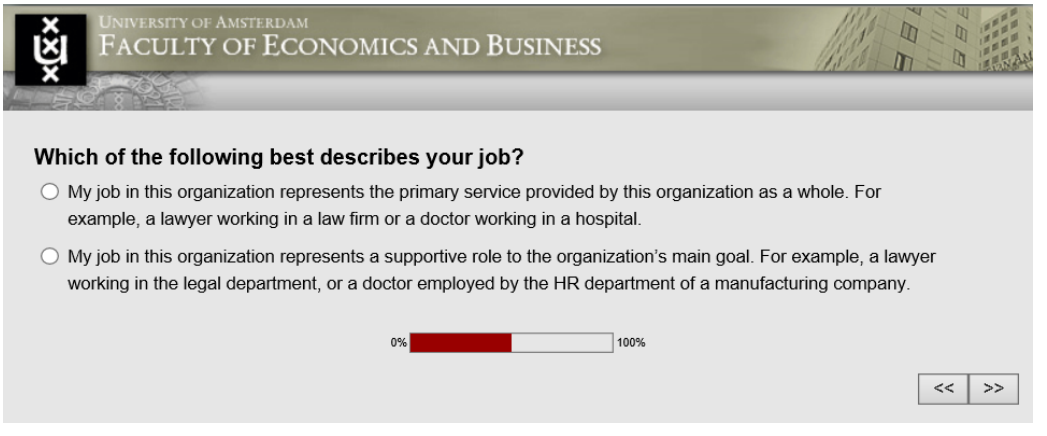

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In your organization, how much emphasis is placed on each of the following activities?

	Very Little Emphasis				A Great Deal of Emphasis
Making services/processes more cost efficient	○	○	○	○	○
Providing after-sale service and support	○	○	○	○	○
Improving the cost required for coordination of various services	○	○	○	○	○
Improving the utilization of available equipment, services and facilities	○	○	○	○	○
Introducing new services/procedures quickly	○	○	○	○	○
Improving the time it takes to provide services to customers	○	○	○	○	○
Offering a broader range of services than the competitors	○	○	○	○	○
Providing services that are distinct from that of competitors	○	○	○	○	○
Achieving lower cost of services than competitors	○	○	○	○	○
Providing high quality services	○	○	○	○	○
Customizing services to customers' needs	○	○	○	○	○

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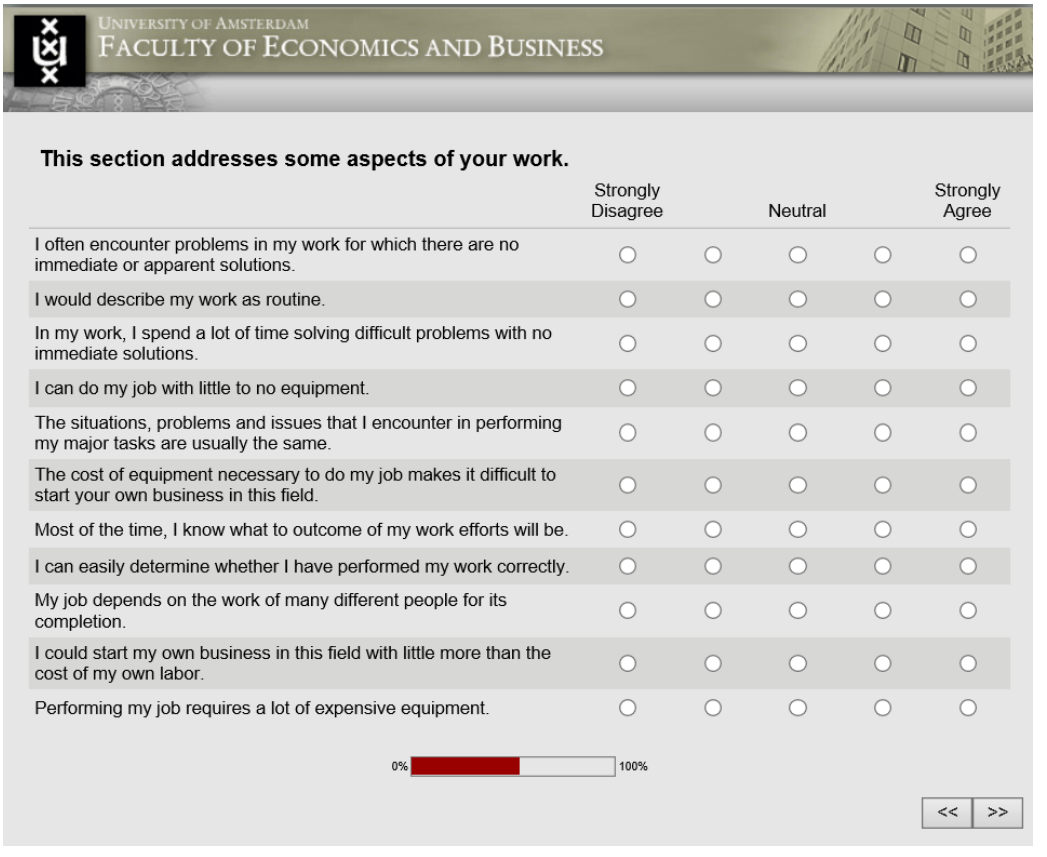
Which of the following best describes your job?

○ My job in this organization represents the primary service provided by this organization as a whole. For example, a lawyer working in a law firm or a doctor working in a hospital.

○ My job in this organization represents a supportive role to the organization's main goal. For example, a lawyer working in the legal department, or a doctor employed by the HR department of a manufacturing company.

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This section addresses some aspects of your work.

	Strongly Disagree		Neutral		Strongly Agree
I often encounter problems in my work for which there are no immediate or apparent solutions.	○	○	○	○	○
I would describe my work as routine.	○	○	○	○	○
In my work, I spend a lot of time solving difficult problems with no immediate solutions.	○	○	○	○	○
I can do my job with little to no equipment.	○	○	○	○	○
The situations, problems and issues that I encounter in performing my major tasks are usually the same.	○	○	○	○	○
The cost of equipment necessary to do my job makes it difficult to start your own business in this field.	○	○	○	○	○
Most of the time, I know what to outcome of my work efforts will be.	○	○	○	○	○
I can easily determine whether I have performed my work correctly.	○	○	○	○	○
My job depends on the work of many different people for its completion.	○	○	○	○	○
I could start my own business in this field with little more than the cost of my own labor.	○	○	○	○	○
Performing my job requires a lot of expensive equipment.	○	○	○	○	○

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These questions address how you work with clients.

	Strongly Disagree		Neutral		Strongly Agree
I often need to coordinate my activities with the client during the performance of my main tasks.	○	○	○	○	○
I often have to wait for client input before I can move on to the next step of my work.	○	○	○	○	○
During my work, I depend a lot on client to provide required data, information, materials, etc.	○	○	○	○	○
In our work, we are also able to perform our tasks successfully without the cooperation of our clients (or their employees).	○	○	○	○	○
In my organization, we must work in close collaboration with our client in order to ensure a successful service outcome.	○	○	○	○	○
In order to do my work (properly), I depend a lot on the client to provide me with data, information and materials.	○	○	○	○	○

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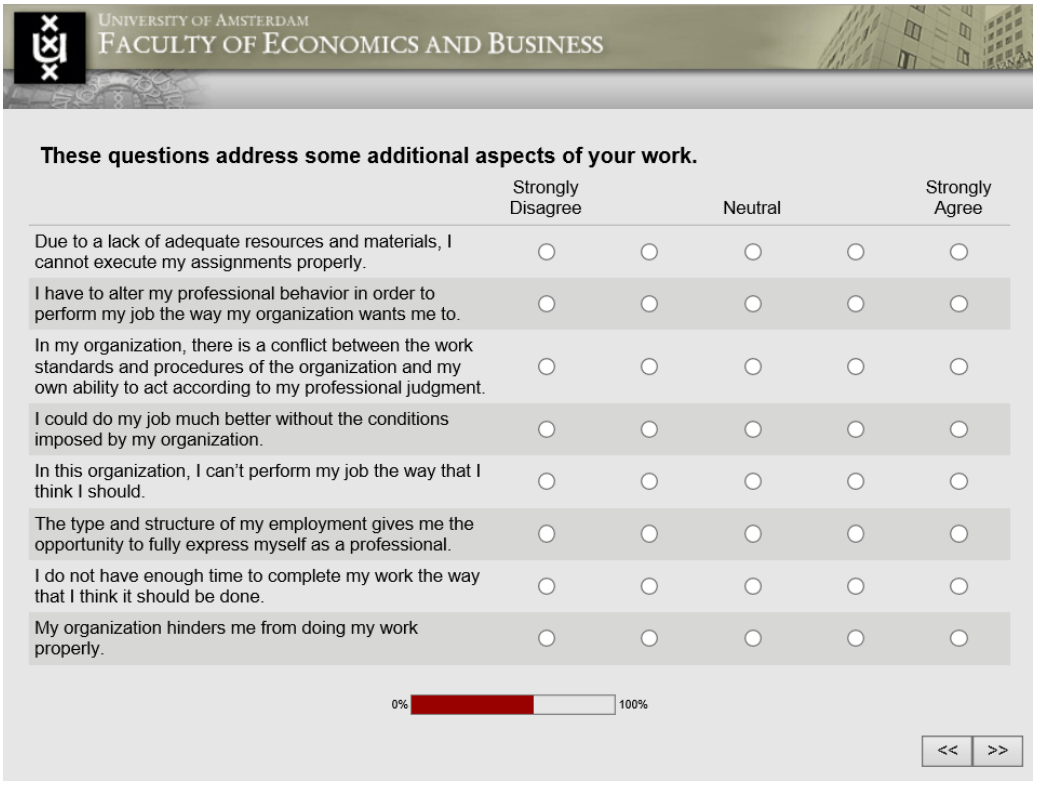


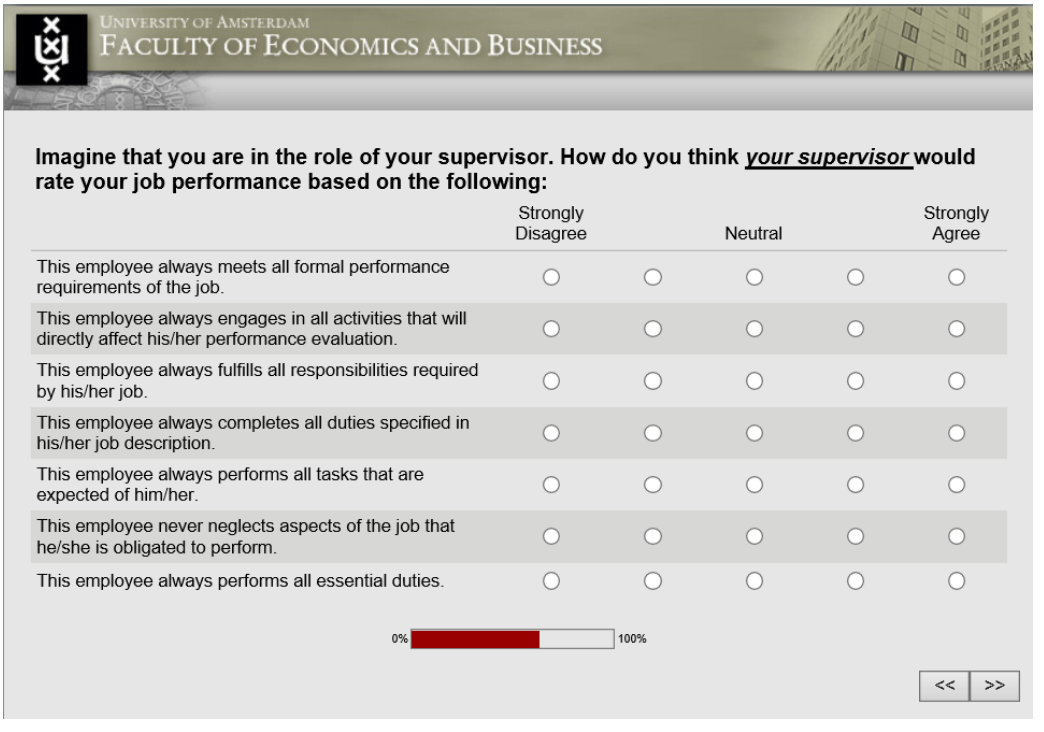
Compared to other organizations, generally my organization :

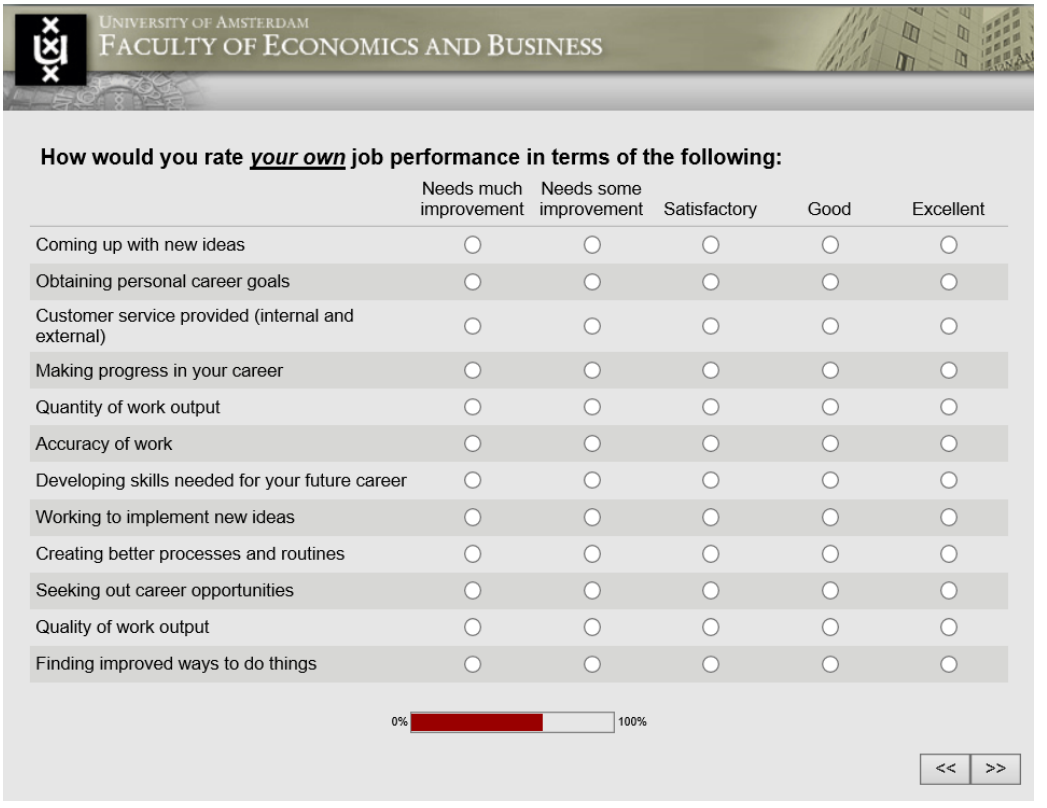
	Strongly Disagree		Neutral		Strongly Agree
Is more innovative	○	○	○	○	○
Is larger in size	○	○	○	○	○
Is more profitable	○	○	○	○	○
Is growing faster	○	○	○	○	○
Has greater market share	○	○	○	○	○
Is more competitive	○	○	○	○	○

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These questions address some additional aspects of your work.
Strongly Disagree
Neutral
Strongly Agree
Due to a lack of adequate resources and materials, I cannot execute my assignments properly.
I have to alter my professional behavior in order to perform my job the way my organization wants me to.
In my organization, there is a conflict between the work standards and procedures of the organization and my own ability to act according to my professional judgment.
I could do my job much better without the conditions imposed by my organization.
In this organization, I can't perform my job the way that I think I should.
The type and structure of my employment gives me the opportunity to fully express myself as a professional.
I do not have enough time to complete my work the way that I think it should be done.
My organization hinders me from doing my work properly.
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100%
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Imagine that you are in the role of your supervisor. How do you think your supervisor would rate your job performance based on the following:
Strongly Disagree
Neutral
Strongly Agree
This employee always meets all formal performance requirements of the job.
This employee always engages in all activities that will directly affect his/her performance evaluation.
This employee always fulfills all responsibilities required by his/her job.
This employee always completes all duties specified in his/her job description.
This employee always performs all tasks that are expected of him/her.
This employee never neglects aspects of the job that he/she is obligated to perform.
This employee always performs all essential duties.
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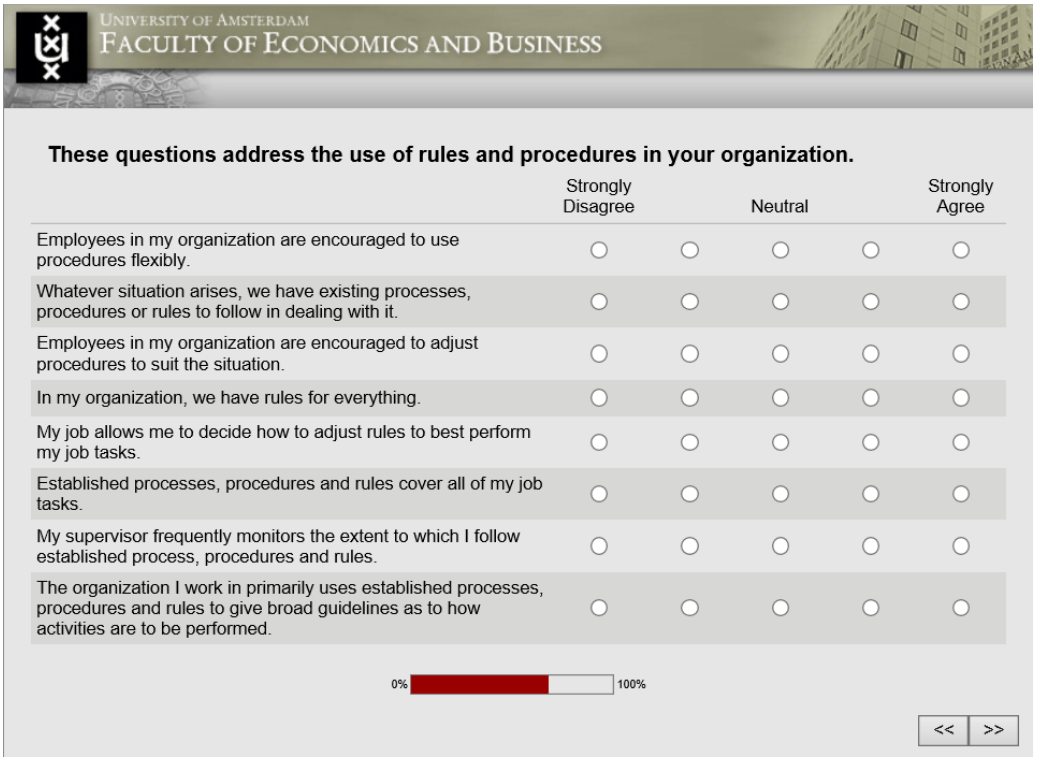
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How would you rate *your own* job performance in terms of the following:

	Needs much improvement	Needs some improvement	Satisfactory	Good	Excellent
Coming up with new ideas	○	○	○	○	○
Obtaining personal career goals	○	○	○	○	○
Customer service provided (internal and external)	○	○	○	○	○
Making progress in your career	○	○	○	○	○
Quantity of work output	○	○	○	○	○
Accuracy of work	○	○	○	○	○
Developing skills needed for your future career	○	○	○	○	○
Working to implement new ideas	○	○	○	○	○
Creating better processes and routines	○	○	○	○	○
Seeking out career opportunities	○	○	○	○	○
Quality of work output	○	○	○	○	○
Finding improved ways to do things	○	○	○	○	○

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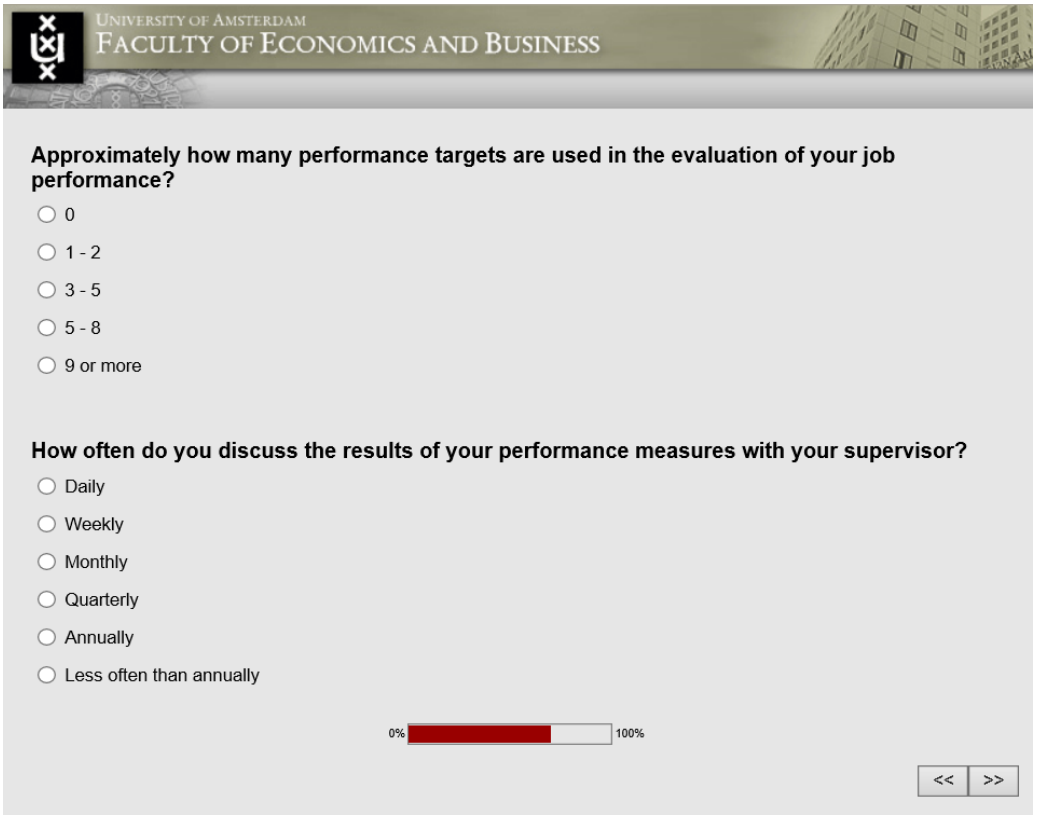
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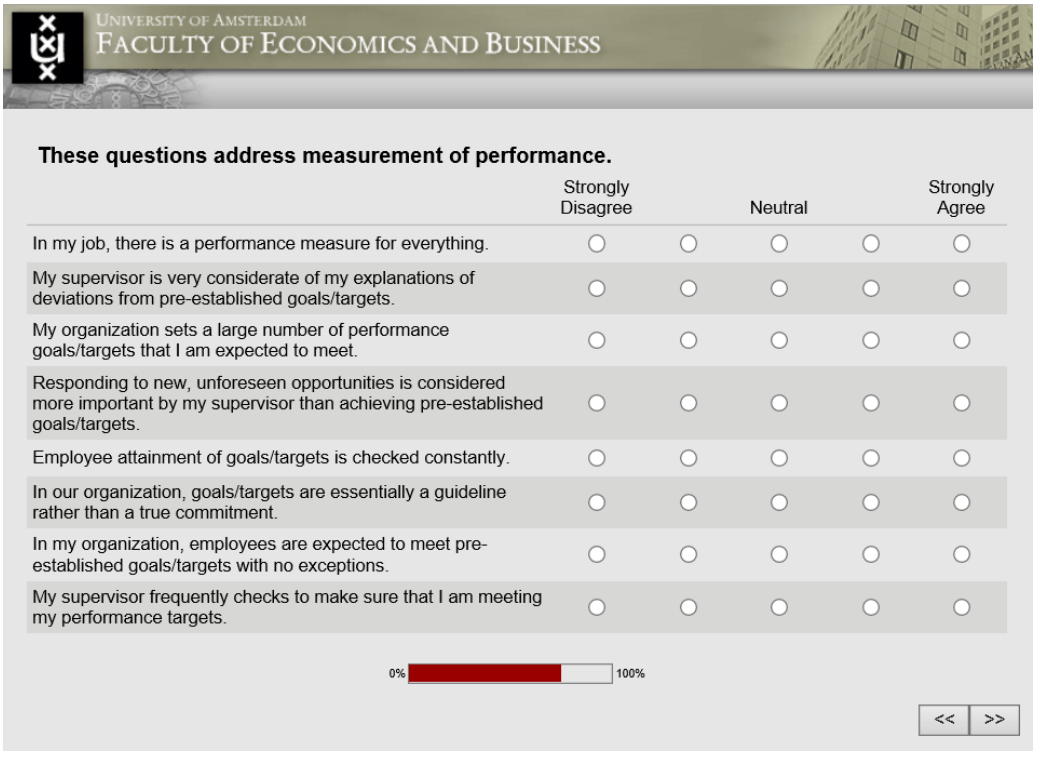
These questions address the use of rules and procedures in your organization.

	Strongly Disagree		Neutral		Strongly Agree
Employees in my organization are encouraged to use procedures flexibly.	○	○	○	○	○
Whatever situation arises, we have existing processes, procedures or rules to follow in dealing with it.	○	○	○	○	○
Employees in my organization are encouraged to adjust procedures to suit the situation.	○	○	○	○	○
In my organization, we have rules for everything.	○	○	○	○	○
My job allows me to decide how to adjust rules to best perform my job tasks.	○	○	○	○	○
Established processes, procedures and rules cover all of my job tasks.	○	○	○	○	○
My supervisor frequently monitors the extent to which I follow established process, procedures and rules.	○	○	○	○	○
The organization I work in primarily uses established processes, procedures and rules to give broad guidelines as to how activities are to be performed.	○	○	○	○	○

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Approximately how many performance targets are used in the evaluation of your job performance?
0
1 - 2
3 - 5
5 - 8
9 or more
How often do you discuss the results of your performance measures with your supervisor?
Daily
Weekly
Monthly
Quarterly
Annually
Less often than annually
0%
100%
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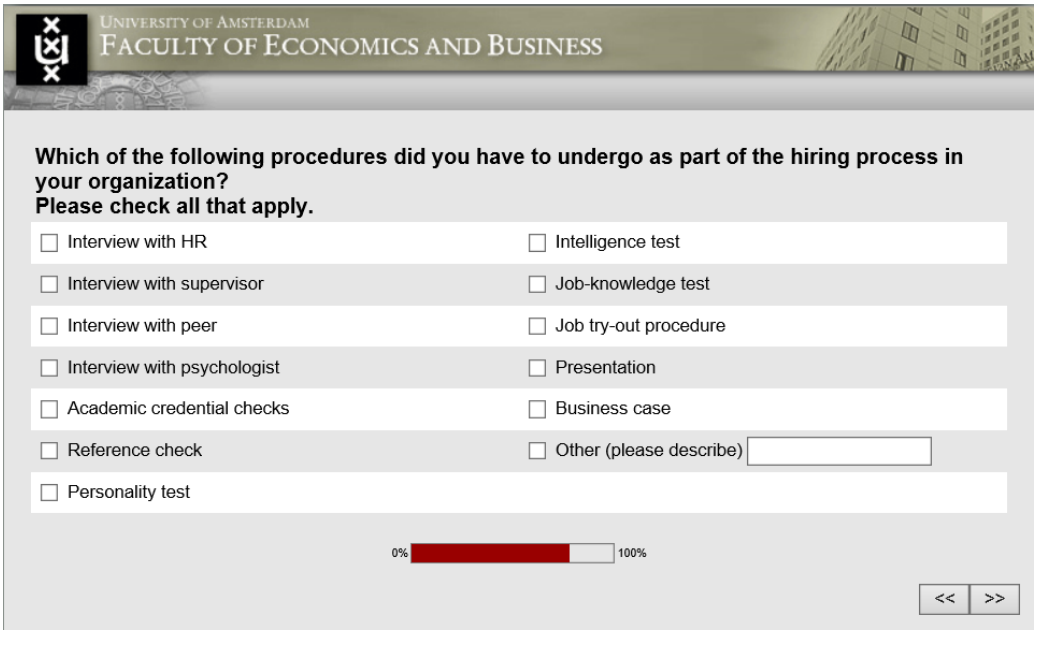
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These questions address measurement of performance.

	Strongly Disagree		Neutral		Strongly Agree
In my job, there is a performance measure for everything.	○	○	○	○	○
My supervisor is very considerate of my explanations of deviations from pre-established goals/targets.	○	○	○	○	○
My organization sets a large number of performance goals/targets that I am expected to meet.	○	○	○	○	○
Responding to new, unforeseen opportunities is considered more important by my supervisor than achieving pre-established goals/targets.	○	○	○	○	○
Employee attainment of goals/targets is checked constantly.	○	○	○	○	○
In our organization, goals/targets are essentially a guideline rather than a true commitment.	○	○	○	○	○
In my organization, employees are expected to meet pre-established goals/targets with no exceptions.	○	○	○	○	○
My supervisor frequently checks to make sure that I am meeting my performance targets.	○	○	○	○	○

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Which of the following procedures did you have to undergo as part of the hiring process in your organization?
Please check all that apply.

☐ Interview with HR	☐ Intelligence test
☐ Interview with supervisor	☐ Job-knowledge test
☐ Interview with peer	☐ Job try-out procedure
☐ Interview with psychologist	☐ Presentation
☐ Academic credential checks	☐ Business case
☐ Reference check	☐ Other (please describe)
☐ Personality test	

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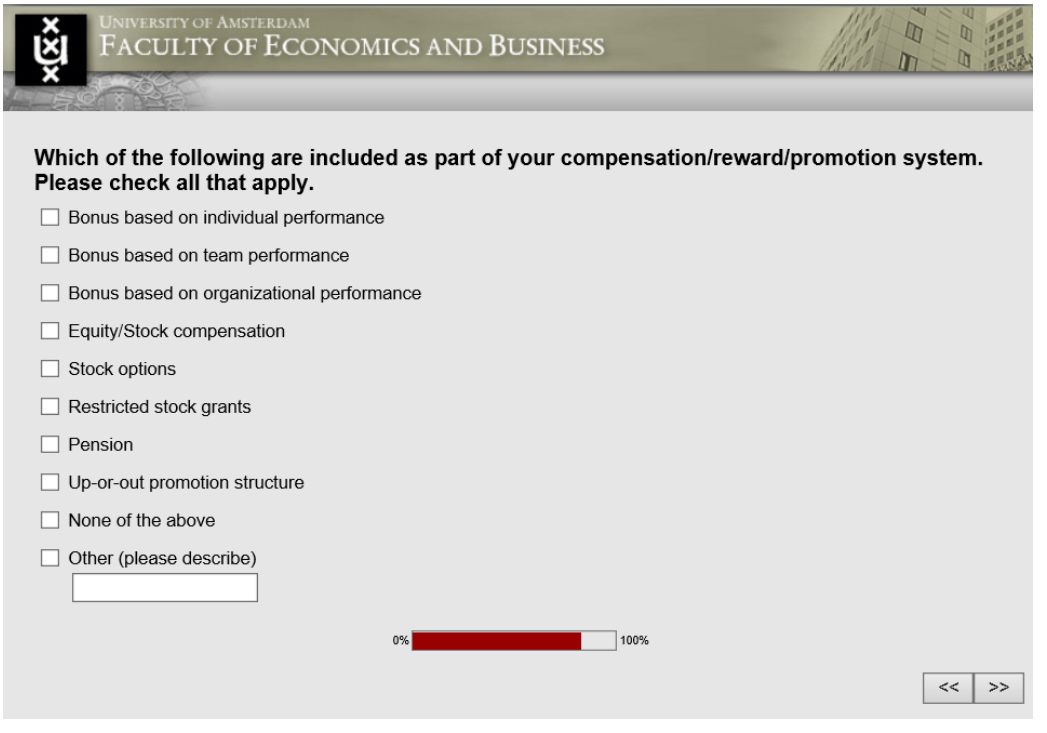
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How would you describe the employees in your organization?

	Strongly Disagree		Neutral		Strongly Agree
Our employees are creative and bright.	○	○	○	○	○
Our employees are experts in their particular jobs and functions.	○	○	○	○	○
Our employees are widely considered the best in our industry.	○	○	○	○	○
Our employees develop new ideas and knowledge.	○	○	○	○	○
Our employees are highly skilled.	○	○	○	○	○

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Which of the following are included as part of your compensation/reward/promotion system. Please check all that apply.

- ☐ Bonus based on individual performance
- ☐ Bonus based on team performance
- ☐ Bonus based on organizational performance
- ☐ Equity/Stock compensation
- ☐ Stock options
- ☐ Restricted stock grants
- ☐ Pension
- ☐ Up-or-out promotion structure
- ☐ None of the above
- ☐ Other (please describe)

0% 100%

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This section addresses the hiring process in your organization.

	Strongly Disagree		Neutral		Strongly Agree
Before being hired, most of my colleagues and I followed the same type of education and training.	○	○	○	○	○
The competence of employees within my job title varies greatly.	○	○	○	○	○
The hiring process at my organization evaluates the knowledge, skills, abilities, values and motives of prospective employees.	○	○	○	○	○
There seems to be little consistency in the type of professional that gets hired for my job.	○	○	○	○	○
I interviewed with several people in my organization before being offered a position.	○	○	○	○	○
Before being hired, most of my colleagues and I acquired the same kind of job experience.	○	○	○	○	○
You have to go through many steps in order to be hired at this firm.	○	○	○	○	○
The hiring process to become employed at my firm is extensive.	○	○	○	○	○

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This section looks at your relationship with your organization and your colleagues.

	Strongly Disagree		Neutral		Strongly Agree
My organization plans team-building events for employees.	○	○	○	○	○
Since starting this job, my personal values and those of this organization have become more similar.	○	○	○	○	○
I am not friends with any of my colleagues.	○	○	○	○	○
My organization creates company sponsored teams for sporting events/fundraisers/volunteer events.	○	○	○	○	○
I socialize with my colleagues outside of work.	○	○	○	○	○
My organization communicates its core values to employees.	○	○	○	○	○
I feel a sense of "ownership" for this organization rather than just being an employee.	○	○	○	○	○
My organization regularly hosts social events for employees.	○	○	○	○	○

0% 100%

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What is your gender?
Male
Female
What is your nationality?
In what year were you born?
What is the highest level of education you have completed?
Bachelor degree or lower
Master degree
PhD or other professional doctorate degree (i.e. J.D./M.D./D.D.S.)
0%
100%
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Appendix B: Full Results Factor Analysis

Table B.01
Full Results Factor Analysis

Variable		Items	Component Loading							
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Explicit Behavior Control Tightness		In my organization, we have rules for everything.	0.742							
Cronbach's α = 0.759										
		Established processes, procedures and rules cover all of my job tasks.	0.729							
		Whatever situation arises, we have existing processes, procedures or rules to follow in dealing with it.	0.698							
		My supervisor frequently monitors the extent to which I follow established process, procedures and rules.	0.594							
	***	*The organization I work in primarily uses established processes, procedures and rules to give broad guidelines as to how activities are to be performed.*	-0.685							
Implicit Behavior Control Tightness										
Cronbach's α = 0.779		Employees in my organization are encouraged to adjust procedures to suit the situation.		0.762						
		Employees in my organization are encouraged to use procedures flexibly.		0.759						
		My job allows me to decide how to adjust rules to best perform my job tasks.		0.723						
Explicit Results Control Tightness		Employee attainment of goals/targets is checked constantly.			0.794					
Cronbach's α = 0.804										
		My supervisor frequently checks to make sure that I am meeting my performance targets.			0.773					
		My organization sets a large number of performance goals/targets that I am expected to meet.			0.662					
		In my job, there is a performance measure for everything.			0.630					
	***	*In my organization, employees are expected to meet pre-established goals/targets with no exceptions.*			0.486					
	***	*My supervisor is very considerate of my explanations of deviations from pre-established goals/targets.*			-0.347	0.286				
Implicit Results Control Tightness		In our organization, goals/targets are essentially a guideline rather than a true commitment.				0.814				
Cronbach's α = 0.428		Responding to new, unforeseen opportunities is considered more important by my supervisor than achieving pre-established goals/targets.				0.602				
Explicit Personnel Control Tightness		You have to go through many steps in order to be hired at this firm.					0.780			
Cronbach's α = 0.723		The hiring process to become employed at my firm is extensive.					0.728			
		I interviewed with several people in my organization before being offered a position.					0.678			
	***	*The hiring process at my organization evaluates the knowledge, skills, abilities, values and motives of prospective employees.*						0.353		
Implicit Personnel Control Tightness		Before being hired, most of my colleagues and I acquired the same kind of job experience.							0.810	
Cronbach's α = 0.704		Before being hired, most of my colleagues and I followed the same type of education and training.							0.685	
	***	*The competence of employees within my job title varies greatly.*							0.409	
	***	*There seems to be little consistency in the type of professional that gets hired for my job.*								0.380

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.
‡ Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factors which did not load for the items listed in the table have been eliminated from the table for the sake of readability

Table B.01† *continued*
Full Results Factor Analysis

Variable	Items	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15	Factor 16
Explicit Cultural Control Tightness	My organization plans team-building events for employees.	0.749							
Cronbach's α = 0.772									
	My organization creates company sponsored teams for sporting events/fundraisers/volunteer events.	0.698							
	My organization regularly hosts social events for employees.	0.646							
	My organization communicates its core values to employees.	0.511							
Implicit Cultural Control Tightness (Formative)									
Friends	I am not friends with any of my colleagues.		0.759						
Cronbach's α = 0.620									
	I socialize with my colleagues outside of work.		0.652						
Values	Since starting this job, my personal values and those of this organization have become more similar.			0.595					
Cronbach's α = 0.587	I feel a sense of "ownership" for this organization rather than just being an employee.			0.523					
Task Complexity (Formative)									
Predictability	I would describe my work as routine.				0.701				
Cronbach's α = 0.580									
	The situations, problems and issues that I encounter in performing my major tasks are usually the same.				0.575				
	I can easily determine whether I have performed my work correctly.				0.553				
	Most of the time, I know what to outcome of my work efforts will be.				0.545				
Analyzability	In my work, I spend a lot of time solving difficult problems with no immediate solutions.					0.775			
Cronbach's α = 0.712	I often encounter problems in my work for which there are no immediate or apparent solutions.					0.734			
Interdependence	*** *My job depends on the work of many different people for its completion.*						0,373[1]		
Customer Reliance	In order to do my work (properly), I depend a lot on the client to provide me with data, information and materials.							0.851	
Cronbach's α = 0.870	During my work, I depend a lot on client to provide required data, information, materials, etc.							0.838	
	I often need to coordinate my activities with the client during the performance of my main tasks.							0.781	
	In my organization, we must work in close collaboration with our client in order to ensure a successful service outcome.							0.774	
	I often have to wait for client input before I can move on to the next step of my work.							0.727	
	In our work, we are also able to perform our tasks successfully without the cooperation of our clients (or their employees).							0.619	
Capital Intensity	The cost of equipment necessary to do my job makes it difficult to start your own business in this field.								0.845
Cronbach's α = 0.830	Performing my job requires a lot of expensive equipment.								0.810
	I can do my job with little to no equipment.								0.761
	I could start my own business in this field with little more than the cost of my own labor.								0.707

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[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factors which did not load for the items listed in the table have been eliminated from the table for the sake of readability

Table B.01† *continued*
Full Results Factor Analysis

Variable	Items	Component Loading										
		Factor 8†	Factor 14	Factor 17	Factor 18	Factor 19	Factor 20	Factor 21	Factor 22	Factor 23	Factor 24	Factor 25
Professionalized Workforce	The professional association in my field has a lot of power in defining and setting standards in my field.			0.803								
Cronbach's α = 0.775	The professional association in my field is involved in the development and monitoring of education programs related to my field.			0.774								
	There exists a clearly defined body of knowledge or subject matter, independent of my organization, which can guide me in doing my job.			0.707								
	In order to remain active in my field, I must attend continuing education outside of my employing organization.			0.601								
Strategy Cost Leadership	Making services/processes more cost efficient				0.757							
Cronbach's α = 0.703	Improving the cost required for coordination of various services				0.716							
	Achieving lower cost of services than competitors				0.691							
	Improving the utilization of available equipment, services and facilities				0.435							
Strategy Differentiation												
Scope	Offering a broader range of services than the competitors					0.706						
Cronbach's α = 0.697	Providing services that are distinct from that of competitors					0.662						
	Introducing new services/procedures quickly					0.635						
Customers	*** *Customizing services to customers' needs*						0.724					
Cronbach's α = 0.432	*** *Improving the time it takes to provide services to customers*						0.388					
	*** *Providing after-sale service and support*		0.721									
	*** *Providing high quality services*	-0.470										
Reputation	My organization is well respected in its field.							0.786				
Cronbach's α = 0.756	My organization has a strong reputation for consistent quality and service.							0.742				
	My organization is perceived to provide good value for the price.							0.603				
	*** *My organization has strong brand name recognition in its service area.*							0.546	0.426			
Environmental Uncertainty												
Competition	Price competition.											
Cronbach's α = 0.680	Bidding for new contracts/clients.									0.788		
	*** *Competition for manpower.*									0.786		
										0.295		
Predictability	How would you describe the tastes and preferences of your clients?										0.725	
Cronbach's α = 0.517	How would you classify the market activities of other firms in the industry?										0.712	
	How many new products and/or services have been marketed during the past 5 years by your industry?										0.408	
Human Capital Intensity	Our employees are highly skilled.											0.756
Cronbach's α = 0.837	Our employees are experts in their particular jobs and functions.											0.725
	Our employees are creative and bright.											0.688
	Our employees are widely considered the best in our industry.											0.685
	Our employees develop new ideas and knowledge.											0.555

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[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
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Table B.01† *continued*
Full Results Factor Analysis

Variable	Items		Factor 8†	Factor 26	Factor 27	Factor 28	Factor 29	Factor 30	Factor 31
Individual Performance In-Role	This employee always performs all essential duties.			0.807					
Cronbach's α = 0.837									
	This employee always performs all tasks that are expected of him/her.			0.790					
	This employee always completes all duties specified in his/her job description.			0.784					
	This employee always meets all formal performance requirements of the job.			0.769					
	This employee always fulfills all responsibilities required by his/her job.			0.755					
	This employee never neglects aspects of the job that he/she is obligated to perform.			0.674					
	This employee always engages in all activities that will directly affect his/her performance evaluation.			0.636					
Individual Performance General									
Job	Quantity of work output				0.554				
Cronbach's α = 0.573									
	Accuracy of work				0.513				
	Quality of work output	***	0.410						
	Customer service provided (internal and external)	***	0.409						
Innovator	Finding improved ways to do things					0.746			
Cronbach's α = 0.831									
	Working to implement new ideas					0.730			
	Coming up with new ideas					0.716			
	Creating better processes and routines					0.710			
Career	Obtaining personal career goals						0.774		
Cronbach's α = 0.847									
	Making progress in your career						0.758		
	Seeking out career opportunities						0.743		
	Developing skills needed for your future career						0.673		
Work Unit Performance									
Growth	Is growing faster							0.758	
Cronbach's α = 0.847									
	Is more innovative							0.712	
	Is more profitable							0.688	
	Is more competitive							0.540	
Size	Is larger in size								
Cronbach's α = 0.804									
	Has greater market share								
Professional Tension	My organization hinders me from doing my work properly.								0.756
Cronbach's α = 0.829									
	I could do my job much better without the conditions imposed by my organization.								0.718
	In this organization, I can't perform my job the way that I think I should.								0.713
	Due to a lack of adequate resources and materials, I cannot execute my assignments properly.								0.699
	In my organization, there is a conflict between the work standards and procedures of the organization and my own ability to act according to my professional judgment.								0.640
	I do not have enough time to complete my work the way that I think it should be done.								0.606
	I have to alter my professional behavior in order to perform my job the way my organization wants me to.								0.544
	The type and structure of my employment gives me the opportunity to fully express myself as a professional.								0.524

*** Indicates item was deleted. Cronbach's alphas are calculated exclusive of deleted items.
[1] Factor loadings below 0.4 are suppressed unless the item failed to load at ≥ 0.4 on all factors.
† Factors may not appear in numerical order as factors which did not load for the items listed in the table have been eliminated from the table for the sake of readability

Appendix C: Full Results Hierarchal Regression Analysis

Table C.01
Full Results of Hierarchal Regression Analysis for Behavior Control Tightness

Dependent Variable Explicit Behavior Control Tightness	Hypothesis	Predicted	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Control Variables												
Org Size Small			-0.232 ***	-0.241 ***	-0.217 ***	-0.218 ***	-0.240 ***	-0.216 ***	-0.210 ***	-0.215 ***	-0.193 ***	-0.192 ***
Org Size Medium			-0.120 *	-0.104 *	-0.090	-0.080	-0.113 *	-0.097	-0.091	-0.115 *	-0.102	-0.100
Unit Size < 10			0.000	-0.016	-0.029	-0.026	0.012	0.001	-0.016	-0.001	-0.013	-0.015
Unit Size Small			0.011	0.014	0.013	0.018	0.025	0.027	0.020	0.008	0.006	0.006
Unit Size Medium			-0.045	-0.035	-0.040	-0.051	-0.032	-0.036	-0.040	-0.047	-0.052	-0.052
Firm Type (Autonomous)			0.096	0.101 *	0.105 *	0.103 *	0.072	0.072	0.068	0.089	0.094	0.095
Cost Strategy			-0.046	-0.039	-0.048	-0.049	-0.042	-0.051	-0.027	-0.047	-0.056	-0.057
Differentiation Strategy			-0.077	-0.069	-0.071	-0.075	-0.075	-0.076	-0.062	-0.062	-0.064	-0.065
Environmental Uncertainty			-0.066	-0.050	-0.040	-0.047	-0.082	-0.075	-0.073	-0.059	-0.051	-0.051
Main Effects												
Implicit Behavior Control Tightness (*IBCT*)					0.142 **	0.163 ***		0.151 ***	0.170 ***		0.136 **	0.136 **
Task Complexity	H1a	+		-0.192 ***	-0.194 ***	-0.191 ***						
Customer Reliance	H2a	-					0.096	0.113 *	0.140 **			
Capital Intensity	H3a	-								0.102 *	0.096 *	0.099 *
Professionalized Workforce	H4a	+										
Outside Ownership INC	H5a	-										
Outside Ownership Public/Non-profit	H6a	+										
	H6a	+										
Interaction Effects												
IBCT x Task Complexity	H2e	-				0.150 ***						
IBCT x Customer Reliance	H3e	-							-0.148 **			
IBCT x Capital Intensity	H4e	-										-0.018
IBCT x Professionalized Workforce	H5e	-										
IBCT x Ownership Ownership INC	H6e	-										
IBCT x Ownership Ownership Public/Non-profit	H6e	-										
R^2			0.066	0.101	0.121	0.378	0.074	0.095	0.116	0.075	0.093	0.093
Adjusted R^2			0.037	0.070	0.087	0.107	0.042	0.061	0.079	0.043	0.059	0.056
F-stat			2.270	3.267	3.609	3.990	2.305	2.772	3.141	2.363	2.700	2.475
Sig F-stat			0.018	0.001	0.000	0.000	0.013	0.002	0.000	0.011	0.003	0.004

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.01 ***continued***

Full Results of Hierarchal Regression Analysis for Behavior Control Tightness

Dependent Variable Explicit Behavior Control Tightness	Hypothesis	Predicted	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19
Control Variables											
Org Size Small			-0.221 ***	-0.197 ***	-0.195 ***	-0.235 ***	-0.214 ***	-0.217 ***	-0.223 ***	-0.203 ***	-0.202 ***
Org Size Medium			-0.111 *	-0.097	-0.094	-0.120 *	-0.103	-0.100	-0.084	-0.066	-0.051
Unit Size < 10			0.022	0.010	0.008	-0.004	-0.016	-0.016	0.017	0.005	-0.008
Unit Size Small			0.026	0.025	0.022	0.006	0.004	0.004	0.040	0.041	0.039
Unit Size Medium			-0.039	-0.045	-0.046	-0.048	-0.053	-0.056	-0.018	-0.022	-0.037
Firm Type (Autonomous)			0.061	0.065	0.067	0.076	0.071	0.077	0.036	0.029	0.022
Cost Strategy			-0.046	-0.056	-0.058	-0.038	-0.044	-0.053	-0.035	-0.041	-0.022
Differentiation Strategy			-0.063	-0.065	-0.067	-0.076	-0.077	-0.070	-0.039	-0.040	-0.028
Environmental Uncertainty			-0.049	-0.040	-0.041	-0.053	-0.045	-0.048	-0.047	-0.041	-0.045
Main Effects											
Implicit Behavior Control Tightness (*IBCT*)				0.140 **	0.142 **		0.149 **	0.061		0.154 ***	0.158 *
Task Complexity	H1a	+							-0.188 ***	-0.187 ***	-0.176 ***
Customer Reliance	H2a	-							0.112 *	0.125 **	0.143 **
Capital Intensity	H3a	-							0.115 *	0.116 *	0.110 *
Professionalized Workforce	H4a	+	0.155 **	0.155 ***	0.152 **				0.127 **	0.126 **	0.132 **
Outside Ownership INC	H5a	-				-0.046	-0.073	-0.077	-0.004	-0.029	-0.045
Outside Ownership Public/Non-profit	H6a	+				0.030	0.015	0.017	-0.001	-0.017	-0.014
	H6a	+									
Interaction Effects											
IBCT x Task Complexity	H2e	-									0.133 **
IBCT x Customer Reliance	H3e	-									-0.136 **
IBCT x Capital Intensity	H4e	-									-0.023
IBCT x Professionalized Workforce	H5e	-			-0.034						0.018
IBCT x Ownership Ownership INC	H6e	-						0.126 *			0.047
IBCT x Ownership Ownership Public/Non-profit	H6e	-						0.038			0.013
R^2			0.087	0.106	0.107	0.069	0.089	0.099	0.138	0.161	0.200
Adjusted R^2			0.055	0.072	0.070	0.033	0.052	0.054	0.093	0.113	0.137
F-stat			2.760	3.104	2.870	1.939	2.358	2.234	3.052	3.394	3.165
Sig F-stat			0.003	0.001	0.001	0.034	0.007	0.007	0.000	0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.02
Full Results of Hierarchal Regression Analysis for Results Control

Dependent Variable Explicit Results Control Tightness	Hypothesis	Predicted	Model 20	Model 21	Model 22	Model 23	Model 24	Model 25	Model 26	Model 27	Model 28	Model 29
Control Variables												
Org Size Small			-0.128 *	-0.132 *	-0.131 *	-0.132 *	-0.141 **	-0.140 **	-0.139 *	-0.120 *	-0.118	-0.122 *
Org Size Medium			-0.128 **	-0.120 *	-0.124 *	-0.125 *	-0.117 *	-0.121 *	-0.119 *	-0.126 **	-0.130 **	-0.131 **
Unit Size < 10			-0.048	-0.055	-0.059	-0.059	-0.028	-0.031	-0.029	-0.048	-0.051	-0.047
Unit Size Small			0.039	0.040	0.039	0.041	0.062	0.061	0.062	0.037	0.036	0.036
Unit Size Medium			-0.069	-0.064	-0.067	-0.067	-0.049	-0.053	-0.052	-0.071	-0.074	-0.074
Firm Type (Autonomous)			0.050	0.052	0.051	0.052	0.013	0.012	0.010	0.047	0.045	0.052
Cost Strategy			0.012	0.015	0.012	0.012	0.019	0.016	0.008	0.012	0.008	0.005
Differentiation Strategy			-0.033	-0.029	-0.033	-0.032	-0.030	-0.033	-0.030	-0.027	-0.029	-0.019
Environmental Uncertainty			0.136 **	0.142 **	0.144 **	0.143 **	0.110 *	0.112 *	0.112 *	0.139 **	0.141 **	0.137 **
Main Effects												
Implicit Results Control Tightness *(IRCT)*					-0.062	-0.063		-0.055	-0.059		-0.062	-0.053
Task Complexity	H1b	+		-0.091	-0.095	-0.096						
Customer Reliance	H2b	-					0.152 **	0.152 **	0.163 ***			
Capital Intensity	H3b	-								0.044	0.051	0.043
Professionalized Workforce	H4b	+										
Outside Ownership INC	H5b	-										
Outside Ownership Public/Non-profit	H6b	+										
	H6b	+										
Interaction Effects												
IRCT x Task Complexity	H2f	-				0.014						
IRCT x Customer Reliance	H3f	-							0.055			
IRCT x Capital Intensity	H4f	-										-0.089
IRCT x Professionalized Workforce	H5f	-										
IRCT x Ownership Ownership INC	H6f	-										
IRCT x Ownership Ownership Public/Non-profit	H6f	-										
R^2			0.057	0.064	0.068	0.068	0.077	0.079	0.082	0.058	0.062	0.070
Adjusted R^2			0.028	0.032	0.033	0.030	0.045	0.045	0.044	0.026	0.027	0.031
F-stat			1.952	2.012	1.937	1.775	2.421	2.284	2.167	1.809	1.749	1.809
Sig F-stat			0.045	0.032	0.035	0.052	0.009	0.011	0.013	0.059	0.063	0.046

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.02 *continued*

Full Results of Hierarchal Regression Analysis for Results Control Tightness

Dependent Variable Explicit Results Control Tightness	Hypothesis	Predicted	Model 30	Model 31	Model 32	Model 33	Model 34	Model 35	Model 36	Model 37	Model 38
Control Variables											
Org Size Small			-0.120 *	-0.118 *	-0.118 *	-0.134 *	-0.131 *	-0.126 *	-0.129 *	-0.124 *	-0.117
Org Size Medium			-0.120 *	-0.125 **	-0.125 *	-0.125 *	-0.130 **	-0.122 *	-0.096	-0.102	-0.087
Unit Size < 10			-0.029	-0.032	-0.031	-0.048	-0.051	-0.055	-0.014	-0.019	-0.015
Unit Size Small			0.053	0.053	0.055	0.037	0.036	0.035	0.078	0.077	0.081
Unit Size Medium			-0.065	-0.069	-0.069	-0.069	-0.073	-0.071	-0.037	-0.042	-0.036
Firm Type (Autonomous)			0.020	0.017	0.017	0.035	0.036	0.036	-0.015	-0.016	-0.009
Cost Strategy			0.013	0.008	0.008	0.018	0.014	0.016	0.021	0.014	0.007
Differentiation Strategy			-0.020	-0.024	-0.025	-0.031	-0.035	-0.031	-0.004	-0.007	0.007
Environmental Uncertainty			0.151 **	0.154 ***	0.155 ***	0.137 **	0.141 **	0.139 **	0.122 **	0.129 **	0.122 *
Main Effects											
Implicit Results Control Tightness *(IRCT)*				-0.074	-0.076		-0.054	-0.082		-0.084	-0.150 *
Task Complexity	H1b	+							-0.087	-0.094	-0.087
Customer Reliance	H2b	-							0.163 **	0.165 **	0.180 ***
Capital Intensity	H3b	-							0.077	0.084	0.080
Professionalized Workforce	H4b	+	0.135 **	0.146 **	0.148 **				0.117 *	0.127 **	0.119 *
Outside Ownership INC	H5b	-				-0.041	-0.034	-0.035	0.002	0.013	0.013
Outside Ownership Public/Non-profit	H6b	+				-0.010	-0.001	0.002	-0.040	-0.028	-0.026
	H6b	+									
Interaction Effects											
IRCT x Task Complexity	H2f	-									-0.011
IRCT x Customer Reliance	H3f	-									0.046
IRCT x Capital Intensity	H4f	-									-0.103
IRCT x Professionalized Workforce	H5f	-			0.025						0.034
IRCT x Ownership Ownership INC	H6f	-						0.060			0.098
IRCT x Ownership Ownership Public/Non-profit	H6f	-						-0.011			0.038
R^2			0.073	0.078	0.079	0.058	0.061	0.063	0.103	0.109	0.123
Adjusted R^2			0.041	0.043	0.041	0.022	0.022	0.018	0.056	0.059	0.055
F-stat			2.293	2.242	2.065	1.622	1.556	1.389	2.190	2.193	1.793
Sig F-stat			0.013	0.013	0.019	0.092	0.104	0.157	0.007	0.006	0.017

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.03
Full Results of Hierarchal Regression Analysis for Personnel Control

Dependent Variable Explicit Personnel Control Tightness	Hypothesis	Predicted	Model 39	Model 40	Model 41	Model 42	Model 43	Model 44	Model 45	Model 46	Model 47	Model 48
Control Variables												
Org Size Small			-0.173 **	-0.173 **	-0.167 **	-0.169 **	-0.181 **	-0.175 **	-0.177 **	-0.181 **	-0.178 **	-0.178 **
Org Size Medium			-0.022	-0.024	-0.021	-0.026	-0.016	-0.013	-0.014	-0.024	-0.020	-0.020
Unit Size < 10			0.021	0.022	0.031	0.034	0.032	0.037	0.040	0.021	0.028	0.028
Unit Size Small			0.084	0.083	0.088	0.084	0.097	0.100	0.104	0.086	0.091	0.091
Unit Size Medium			-0.073	-0.074	-0.082	-0.080	-0.062	-0.070	-0.067	-0.071	-0.079	-0.078
Firm Type (Autonomous)			-0.039	-0.040	-0.068	-0.068	-0.060	-0.082	-0.081	-0.036	-0.063	-0.063
Cost Strategy			-0.053	-0.054	-0.048	-0.046	-0.049	-0.044	-0.045	-0.052	-0.046	-0.046
Differentiation Strategy			0.019	0.019	0.025	0.024	0.021	0.027	0.025	0.012	0.018	0.018
Environmental Uncertainty			0.012	0.011	0.022	0.025	-0.002	0.011	0.011	0.009	0.020	0.020
Main Effects												
Implicit Personnel Control Tightness (*IPCT*)	H1c	+			0.118 *	0.125 **		0.108 *	0.109 *		0.118 *	0.118 *
Task Complexity	H2c	+		0.016	0.030	0.024						
Customer Reliance	H3c	+					0.084	0.074	0.075			
Capital Intensity	H4c	0								-0.049	-0.056	-0.056
Professionalized Workforce	H5c	-										
Outside Ownership INC	H6c	-										
Outside Ownership Public/Non-profit	H6c	-										
Interaction Effects												
IPCT x Task Complexity	H2g	-				-0.094						
IPCT x Customer Reliance	H3g	-							0.032			
IPCT x Capital Intensity	H4g	0										-0.001
IPCT x Professionalized Workforce	H5g	-										
IPCT x Ownership Ownership INC	H6g	0										
IPCT x Ownership Ownership Public/Non-profit	H6g	0										
R^2			0.039	0.039	0.052	0.060	0.045	0.056	0.057	0.041	0.054	0.054
Adjusted R^2			0.010	0.006	0.016	0.021	0.012	0.020	0.017	0.008	0.018	0.015
F-stat			1.321	1.192	1.442	1.550	1.379	1.553	1.445	1.255	1.504	1.374
Sig F-stat			0.225	0.296	0.153	0.106	0.189	0.112	0.145	0.256	0.129	0.177

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.03 *continued*
Full Results of Hierarchal Regression Analysis for Personnel Control

Dependent Variable Explicit Personnel Control Tightness	Hypothesis	Predicted	Model 49	Model 50	Model 51	Model 52	Model 53	Model 54	Model 55	Model 56	Model 57
Control Variables											
Org Size Small			-0.167 **	-0.164 **	-0.163 **	-0.172 **	-0.167 **	-0.162 **	-0.176 **	-0.173 **	-0.170 **
Org Size Medium			-0.016	-0.014	-0.014	-0.023	-0.019	-0.019	-0.015	-0.014	-0.013
Unit Size < 10			0.037	0.040	0.040	0.020	0.029	0.017	0.048	0.053	0.042
Unit Size Small			0.096	0.098	0.100	0.083	0.090	0.087	0.109	0.112	0.100
Unit Size Medium			-0.069	-0.076	-0.075	-0.074	-0.079	-0.088	-0.059	-0.067	-0.077
Firm Type (Autonomous)			-0.066	-0.083	-0.085	-0.038	-0.059	-0.089	-0.070	-0.084	-0.128 *
Cost Strategy			-0.053	-0.048	-0.047	-0.054	-0.050	-0.065	-0.054	-0.051	-0.064
Differentiation Strategy			0.031	0.035	0.035	0.019	0.026	0.028	0.025	0.028	0.029
Environmental Uncertainty			0.026	0.034	0.034	0.014	0.021	0.009	0.007	0.012	-0.006
Main Effects											
Implicit Personnel Control Tightness (*IPCT*)	H1c	+		0.092	0.095		0.118 *	0.115		0.099	0.050
Task Complexity	H2c	+							0.017	0.028	0.041
Customer Reliance	H3c	+							0.068	0.061	0.062
Capital Intensity	H4c	0							-0.044	-0.049	-0.055
Professionalized Workforce	H5c	-	0.123 **	0.103 *	0.102				0.122 **	0.104	0.124 *
Outside Ownership INC	H6c	-				0.006	0.019	-0.009	0.026	0.034	-0.016
Outside Ownership Public/Non-profit	H6c	-				0.008	-0.007	-0.068	-0.002	-0.011	-0.099
Interaction Effects											
IPCT x Task Complexity	H2g	-									-0.110 *
IPCT x Customer Reliance	H3g	-									0.012
IPCT x Capital Intensity	H4g	0									-0.027
IPCT x Professionalized Workforce	H5g	-			0.019						-0.043
IPCT x Ownership Ownership INC	H6g	0						-0.085			-0.050
IPCT x Ownership Ownership Public/Non-profit	H6g	0						0.151 **			0.216 ***
R^2			0.053	0.060	0.060	0.039	0.051	0.076	0.060	0.068	0.110
Adjusted R^2			0.020	0.024	0.021	0.003	0.012	0.031	0.010	0.016	0.040
F-stat			1.615	1.681	1.545	1.075	1.304	1.695	1.212	1.298	1.565
Sig F-stat			0.102	0.077	0.107	0.381	0.215	0.056	0.261	0.197	0.054

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.04
Full Results of Hierarchal Regression Analysis for Cultural Control

Dependent Variable Explicit Cultural Control Tightnes Hypothesis		Predicted	Model 58	Model 59	Model 60	Model 61	Model 62	Model 63	Model 64	Model 65	Model 66	Model 67
Control Variables												
Org Size Small			-0.238 ***	-0.236 ***	-0.185 ***	-0.198 ***	-0.238 ***	-0.189 ***	-0.190 ***	-0.249 ***	-0.202 ***	-0.204 ***
Org Size Medium			-0.105 *	-0.109 *	-0.102 *	-0.101 *	-0.105 *	-0.097 *	-0.095 *	-0.108 *	-0.102 *	-0.094 *
Unit Size < 10			-0.055	-0.049	0.027	0.030	-0.054	0.023	0.017	-0.056	0.021	0.024
Unit Size Small			0.053	0.052	0.034	0.037	0.054	0.037	0.047	0.055	0.038	0.032
Unit Size Medium			-0.155 **	-0.158 **	-0.058	-0.064	-0.154 **	-0.053	-0.048	-0.153 **	-0.051	-0.058
Firm Type (Autonomous)			0.045	0.045	0.042	0.038	0.044	0.040	0.036	0.049	0.048	0.048
Cost Strategy			-0.089	-0.091	-0.091 *	-0.093 *	-0.089	-0.088 *	-0.083	-0.088	-0.088 *	-0.097 *
Differentiation Strategy			0.031	0.029	0.020	0.019	0.031	0.023	0.028	0.022	0.010	0.019
Environmental Uncertainty			0.023	0.019	0.021	0.028	0.022	0.022	0.024	0.018	0.017	0.029
Main Effects												
Implicit Cultural Control Tightness (*ICCT*)	H1d	+			0.475 ***	0.464 ***		0.475 ***	0.466 ***		0.479 ***	0.476 ***
Task Complexity	H2d	+		0.055	0.055	0.045						
Customer Reliance	H3d	+					0.007	0.014	0.004			
Capital Intensity	H4d	0								-0.066	-0.088 *	-0.081
Professionalized Workforce	H5d	0										
Outside Ownership INC	H6d	-										
Outside Ownership Public/Non-profit	H6d	-										
Interaction Effects												
ICCT x Task Complexity	H2h	-				-0.120 **						
ICCT x Customer Reliance	H3h	-							0.065			
ICCT x Capital Intensity	H4h	-										0.152 ***
ICCT x Professionalized Workforce	H5h	0										
ICCT x Outside Ownership INC	H6h	-										
ICCT x Ownership Public/Non-profit	H6h	-										
R^2			0.090	0.093	0.300	0.314	0.090	0.297	0.301	0.094	0.304	0.327
Adjusted R^2			0.062	0.062	0.273	0.285	0.059	0.271	0.272	0.063	0.278	0.299
F-stat			3.213	2.986	11.294	11.018	2.884	11.147	10.374	3.027	11.533	11.702
Sig F-stat			0.001	0.001	0.000	0.000	0.002	0.000	0.000	0.001	0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01

Table C.04 *continued*
Full Results of Hierarchal Regression Analysis for Cultural Control

Dependent Variable Explicit Cultural Control Tightnes Hypothesis		Predicted	Model 68	Model 69	Model 70	Model 71	Model 72	Model 73	Model 74	Model 75	Model 76
Control Variables											
Org Size Small			-0.240 ***	-0.191 ***	-0.185 ***	-0.267 ***	-0.212 ***	-0.223 ***	-0.267 ***	-0.218 ***	-0.245 ***
Org Size Medium			-0.107 *	-0.102 *	-0.100 *	-0.079	-0.077	-0.085	-0.084	-0.085	-0.082
Unit Size < 10			-0.060	0.014	0.009	-0.035	0.037	0.036	-0.026	0.042	0.046
Unit Size Small			0.049	0.028	0.028	0.068	0.050	0.057	0.069	0.049	0.062
Unit Size Medium			-0.156 **	-0.056	-0.055	-0.131 **	-0.037	-0.034	-0.134 **	-0.039	-0.044
Firm Type (Autonomous)			0.054	0.057	0.056	0.038	0.043	0.048	0.032	0.045	0.035
Cost Strategy			-0.089	-0.089 *	-0.087 *	-0.085	-0.088 *	-0.103 **	-0.086	-0.089	-0.104 **
Differentiation Strategy			0.028	0.017	0.019	0.039	0.029	0.033	0.036	0.019	0.035
Environmental Uncertainty			0.019	0.017	0.017	-0.043	-0.035	-0.016	-0.051	-0.045	-0.010
Main Effects											
Implicit Cultural Control Tightness (*ICCT*)	H1d	+		0.478 ***	0.475 ***		0.459 ***	0.544 ***		0.463 ***	0.498 ***
Task Complexity	H2d	+							0.078	0.070	0.069
Customer Reliance	H3d	+							0.009	0.014	0.006
Capital Intensity	H4d	0							-0.006	-0.035	-0.025
Professionalized Workforce	H5d	0	-0.039	-0.065	-0.067				0.001	-0.028	-0.007
Outside Ownership INC	H6d	-				-0.075	-0.047	-0.044	-0.084	-0.050	-0.061
Outside Ownership Public/Non-profit	H6d	-				-0.270 ***	-0.233 ***	-0.215 ***	-0.276 ***	-0.227 ***	-0.216 ***
Interaction Effects											
ICCT x Task Complexity	H2h	-									-0.083 *
ICCT x Customer Reliance	H3h	-									0.071
ICCT x Capital Intensity	H4h	-									0.139 ***
ICCT x Professionalized Workforce	H5h	0			0.039						-0.038
ICCT x Outside Ownership INC	H6h	-						-0.172 ***			-0.122 *
ICCT x Ownership Public/Non-profit	H6h	-						0.035			0.040
R^2			0.091	0.301	0.302	0.149	0.341	0.363	0.154	0.348	0.398
Adjusted R^2			0.060	0.274	0.273	0.116	0.314	0.332	0.110	0.311	0.350
F-stat			2.930	11.339	10.432	4.601	12.458	11.705	3.482	9.511	8.377
Sig F-stat			0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01

Appendix D: Interaction Plots

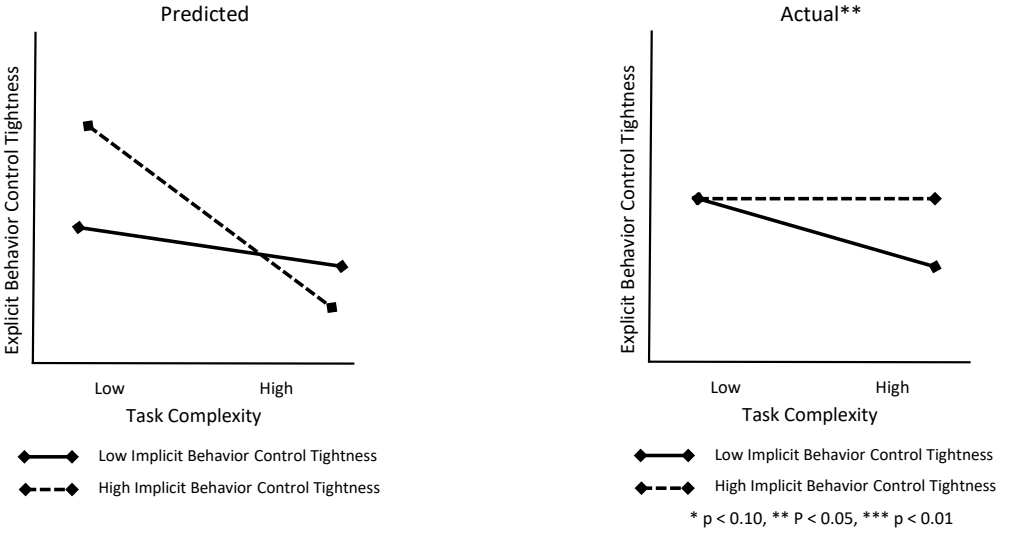


Figure D.01: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Task Complexity (H2e)

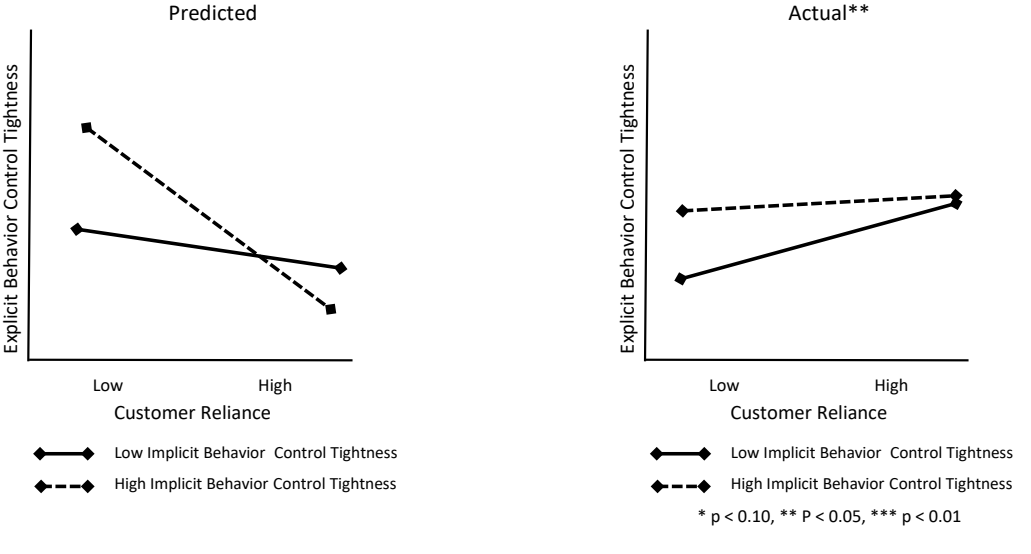


Figure D.02: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Customer Reliance (H3e)

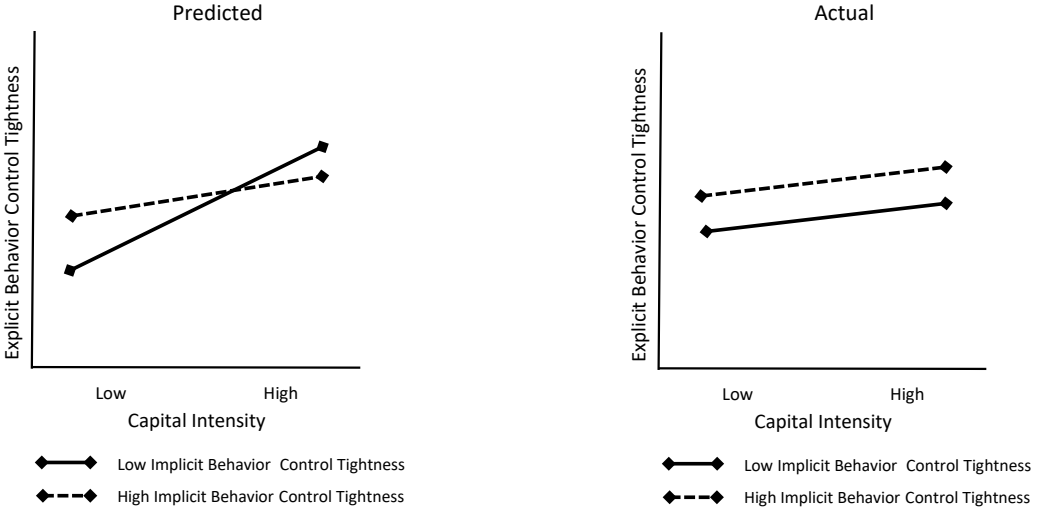


Figure D.03: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Capital Intensity (H4e)

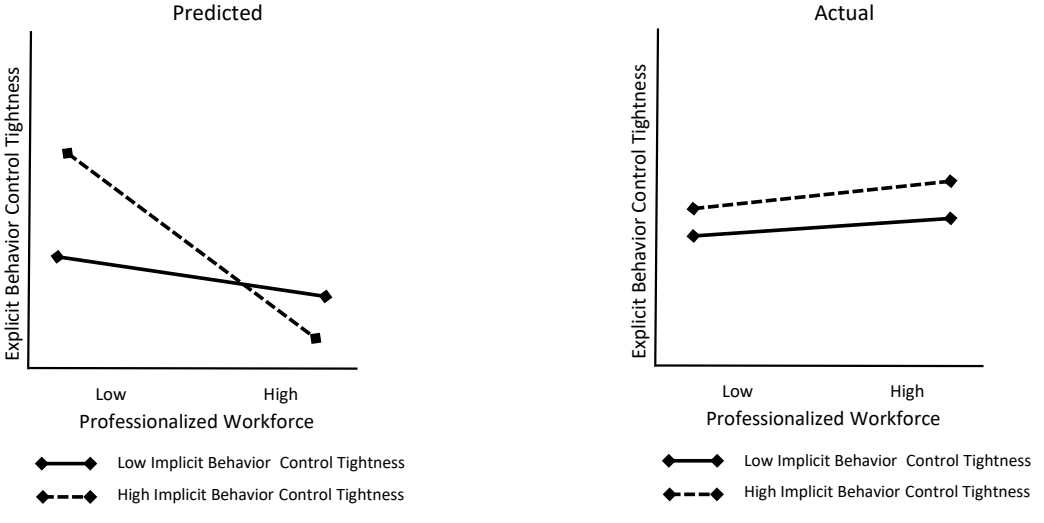


Figure D.04: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Professionalized Workforce (H5e)

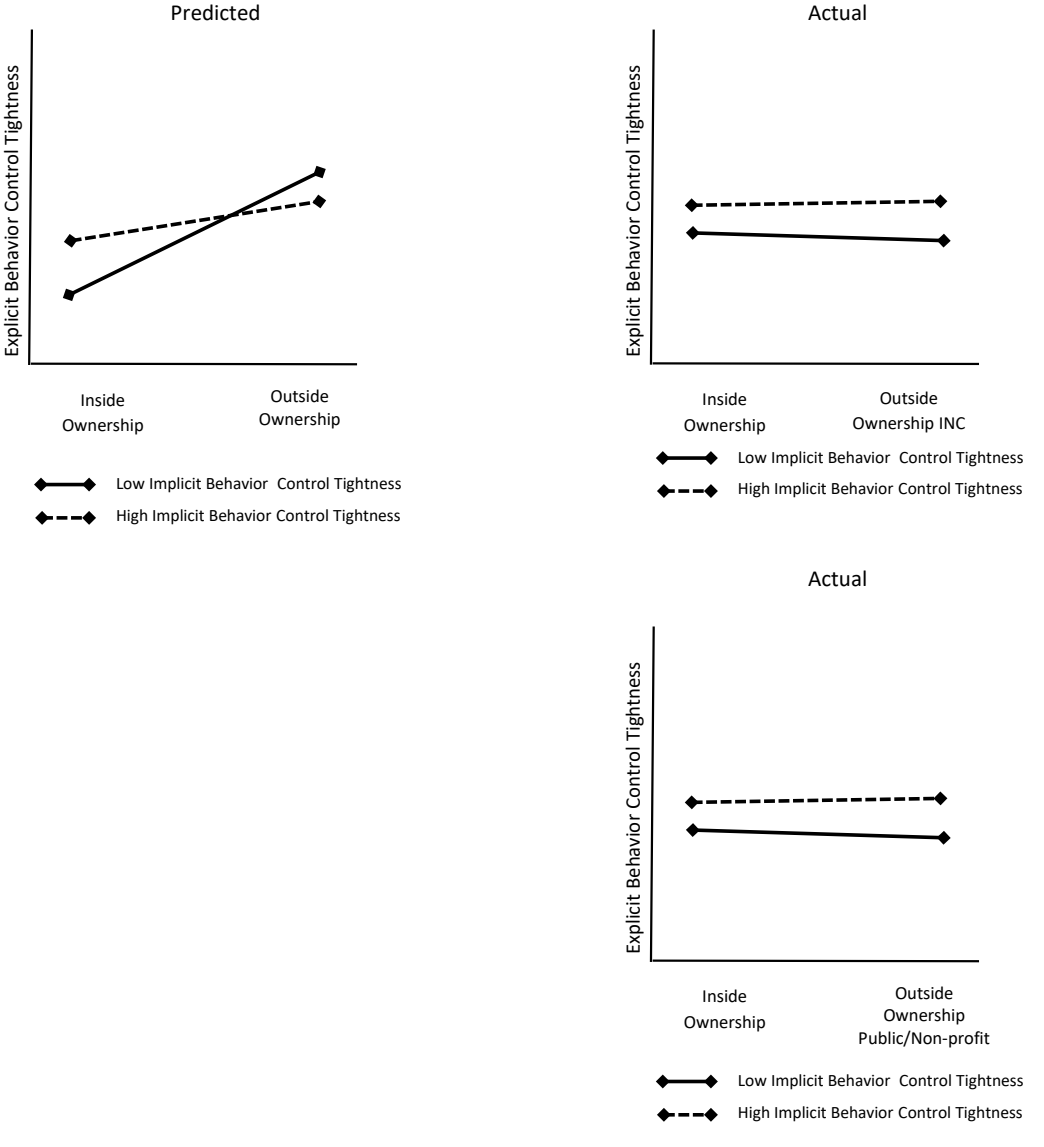


Figure D.05: Predicted and Actual Interaction Plots of Implicit and Explicit Behavior Control Tightness on Ownership Structure (H6e)

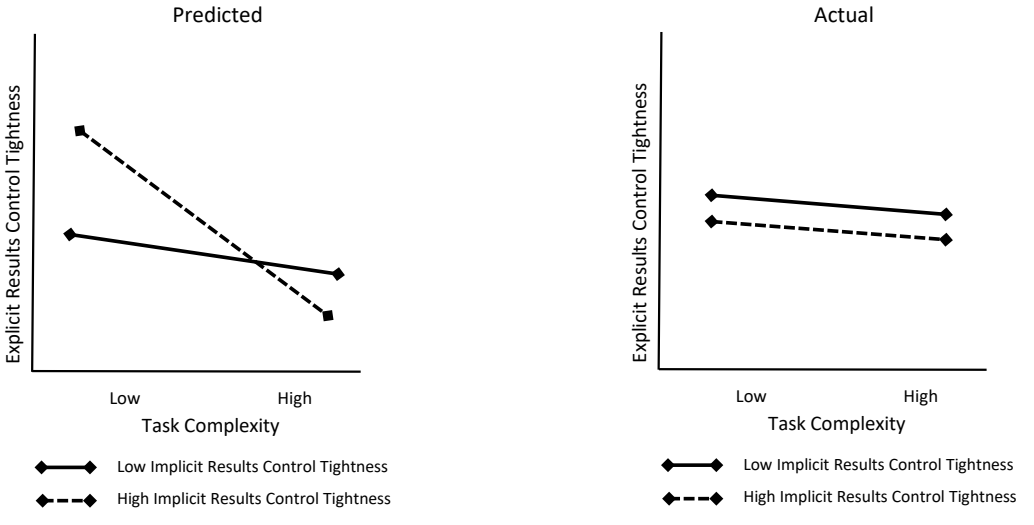


Figure D.06: Predicted and Actual Interaction Plots of Implicit and Explicit Results Control Tightness on Task Complexity (H2f)

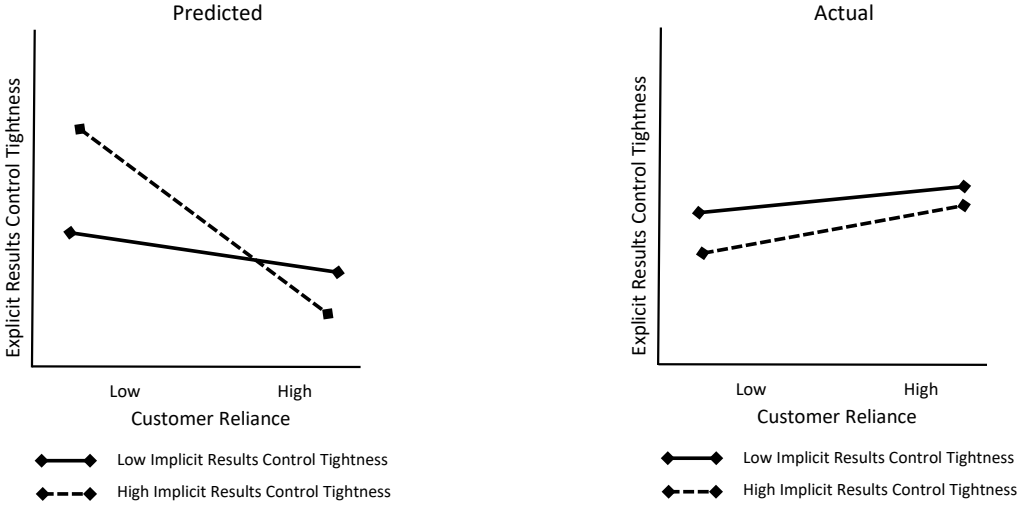


Figure D.07: Predicted and Actual Interaction Plots of Implicit and Explicit Results Control Tightness on Customer Reliance (H3f)

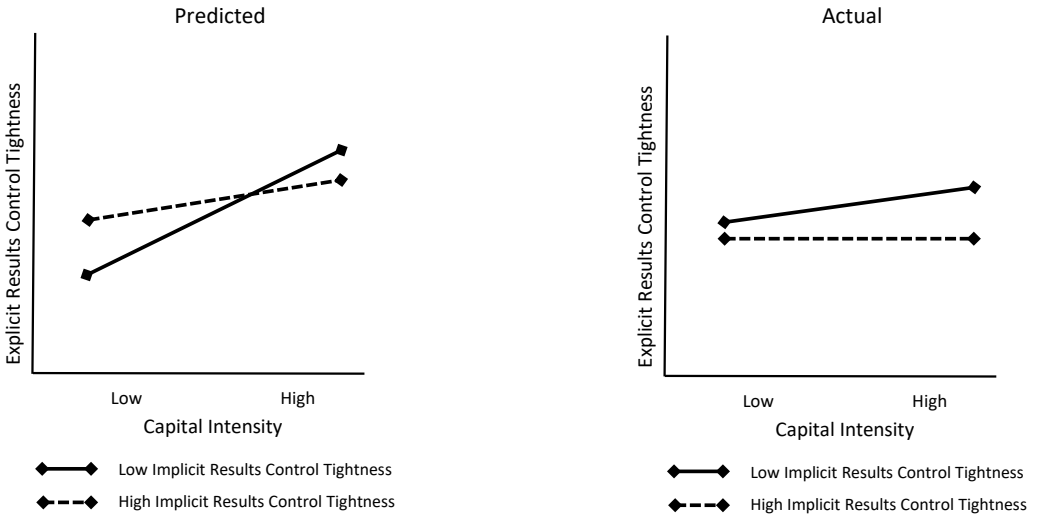


Figure D.08: Predicted and Actual Interaction Plots of Implicit and Explicit Results Control Tightness on Capital Intensity (H4f)

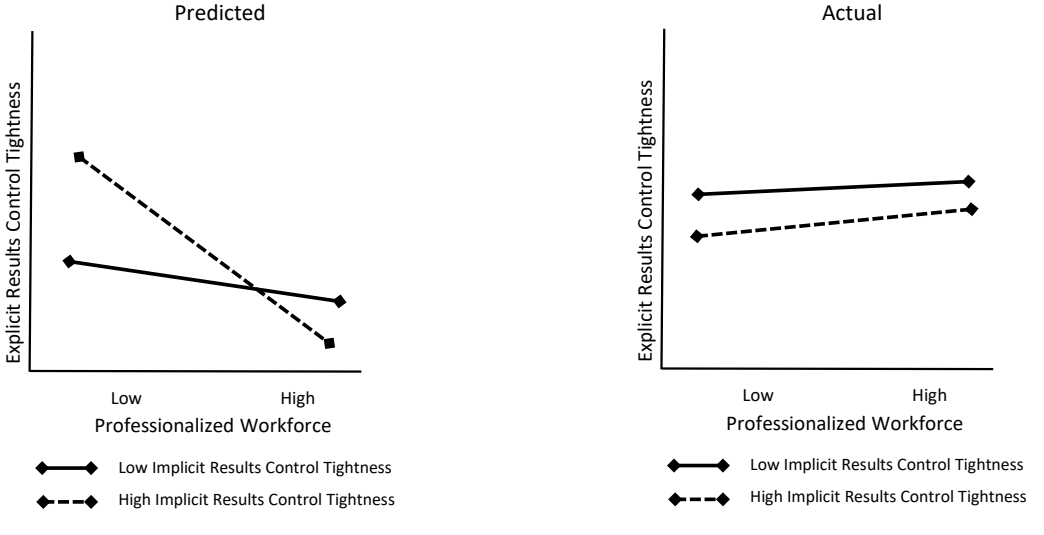


Figure D.09: Predicted and Actual Interaction Plots of Implicit and Explicit Results Control Tightness on Professionalized Workforce (H5f)

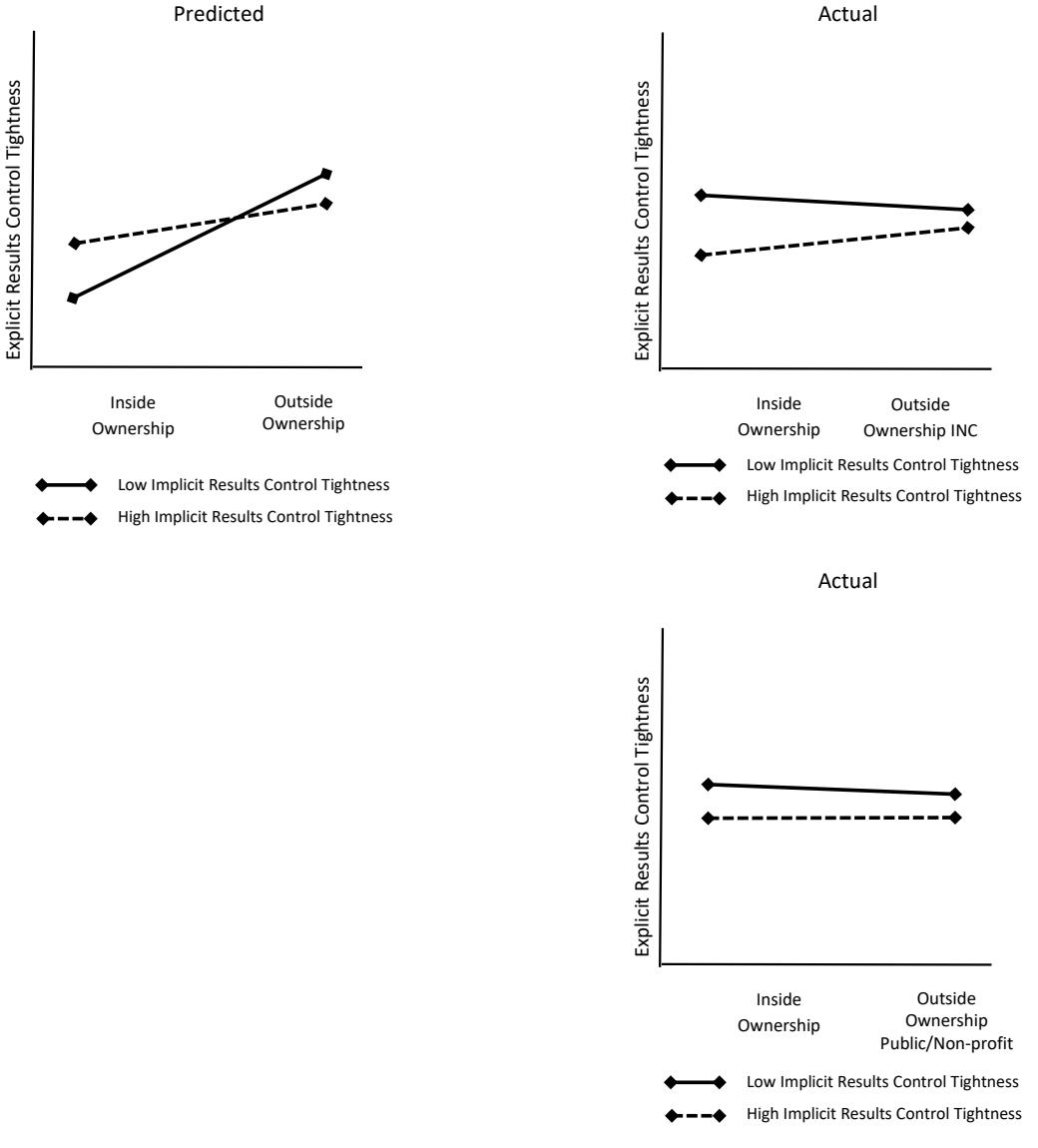


Figure D.10: Predicted and Actual Interaction Plots of Implicit and Explicit Results Control Tightness on Ownership Structure (H6f)

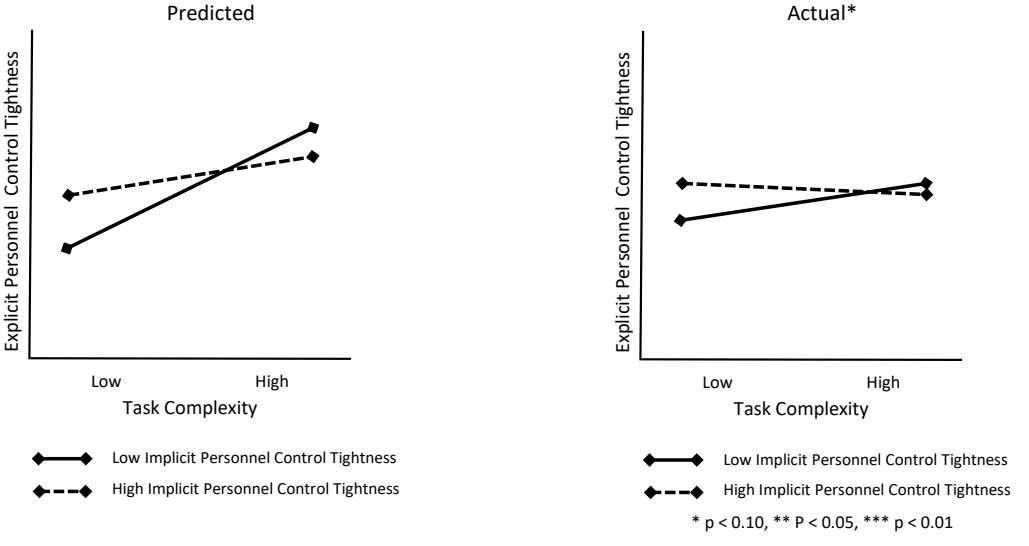


Figure D.11: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Task Complexity (H2g)

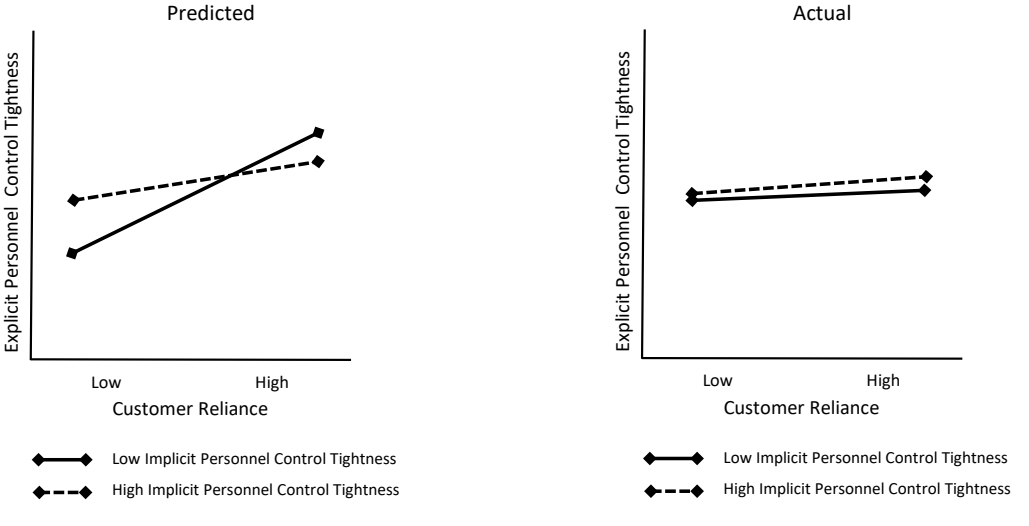


Figure D.12: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Customer Reliance (H3g)

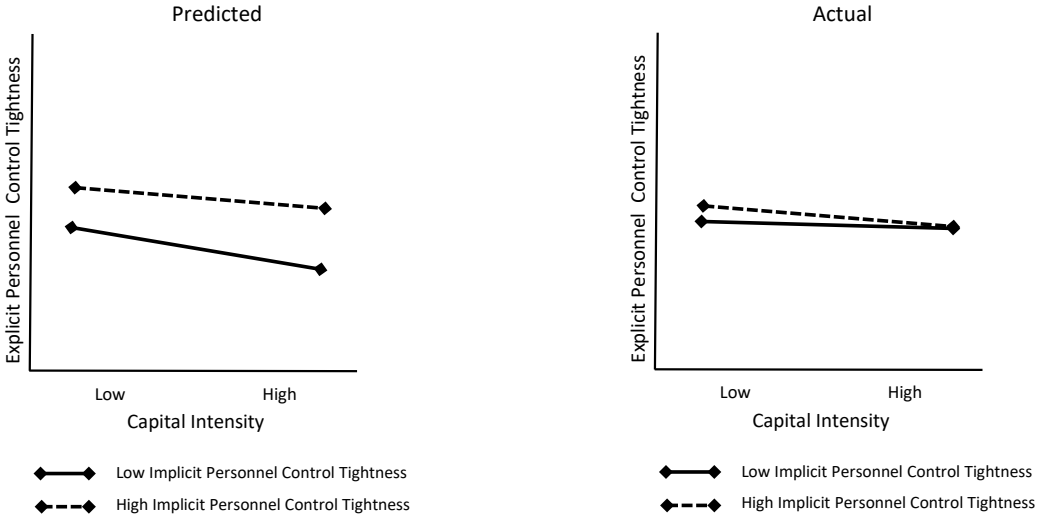


Figure D.13: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Capital Intensity (H4g)

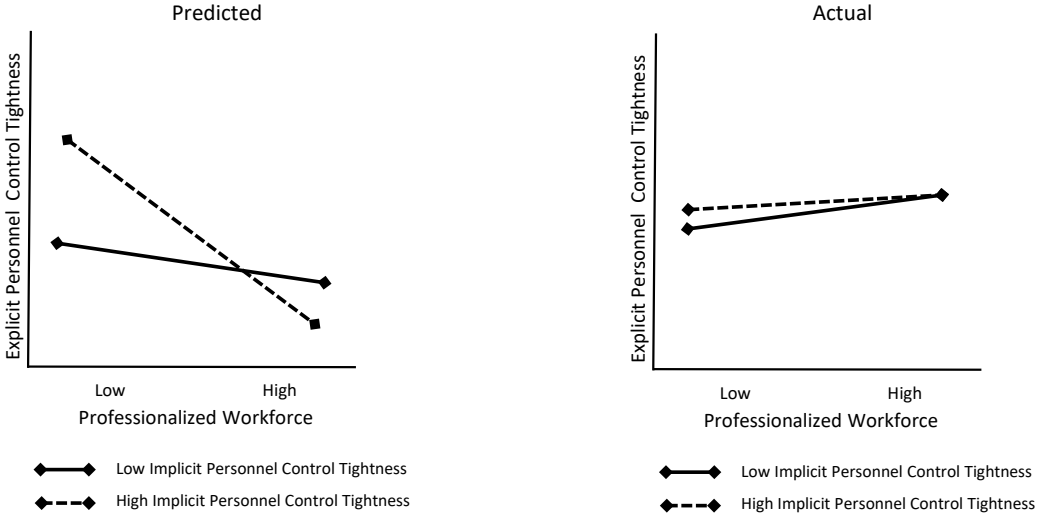


Figure D.14: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Professionalized Workforce (H5g)

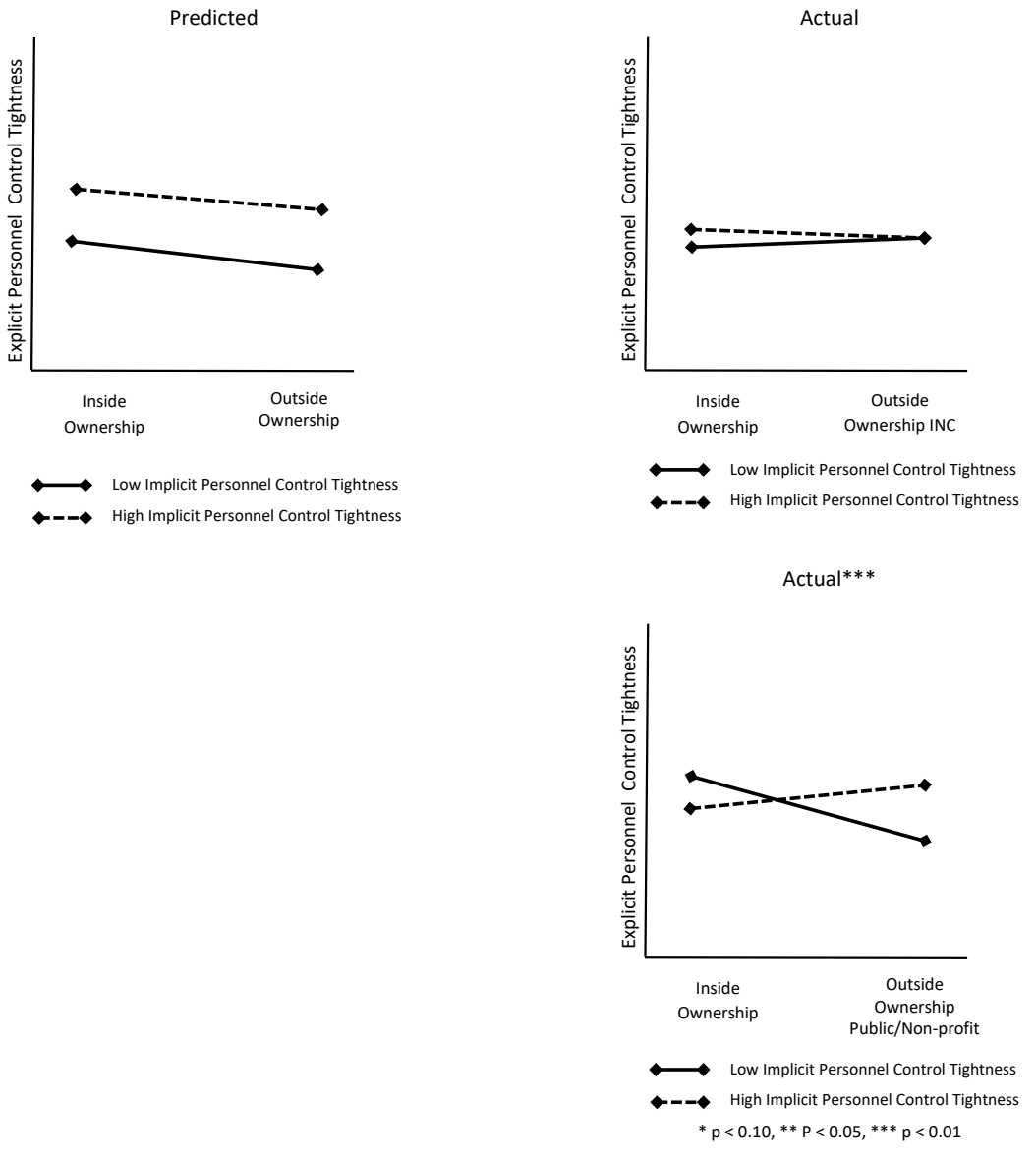


Figure D.15: Predicted and Actual Interaction Plots of Implicit and Explicit Personnel Control Tightness on Ownership Structure (H6g)

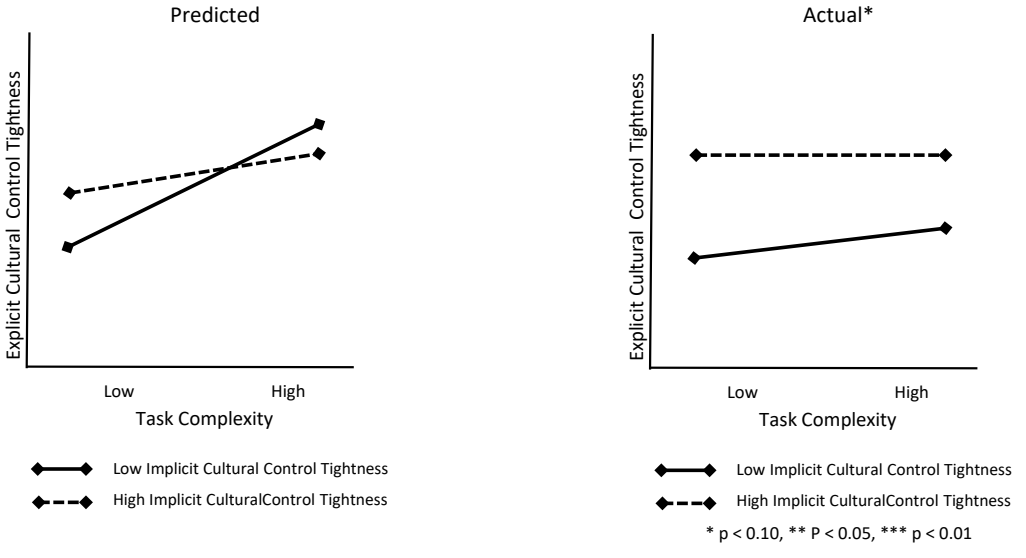


Figure D.16: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Task Complexity (H2h)

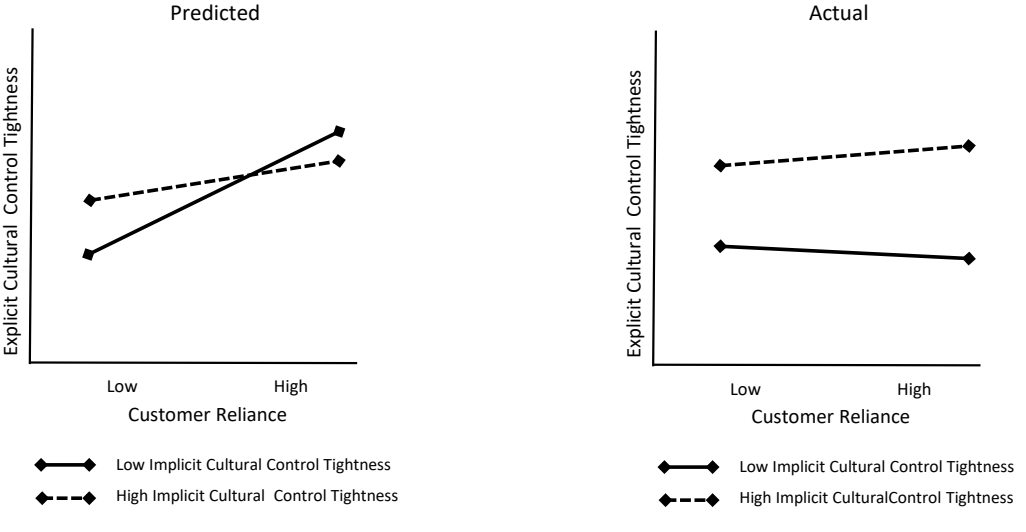


Figure D.17: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Customer Reliance (H3h)

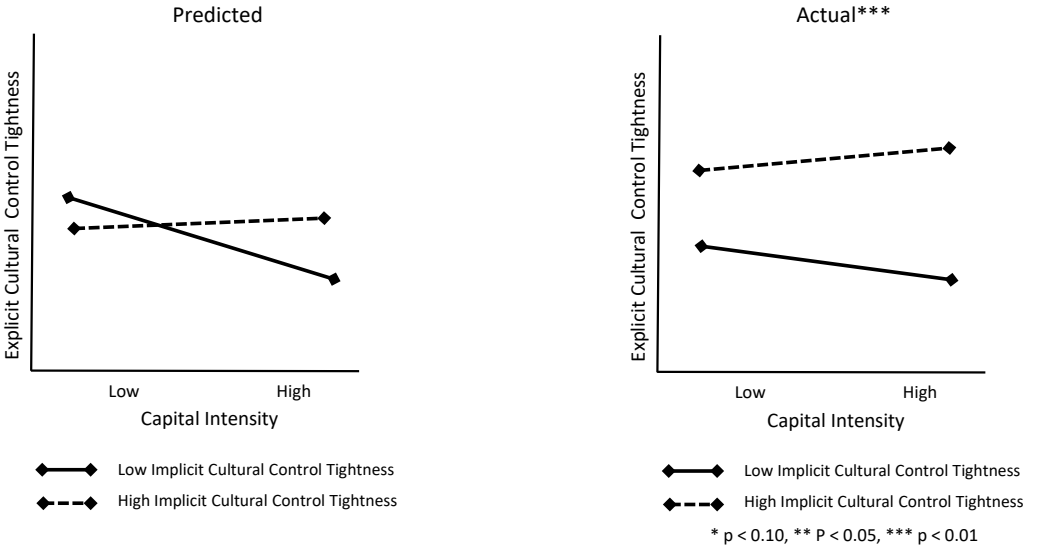


Figure D.18: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Capital Intensity (H4h)

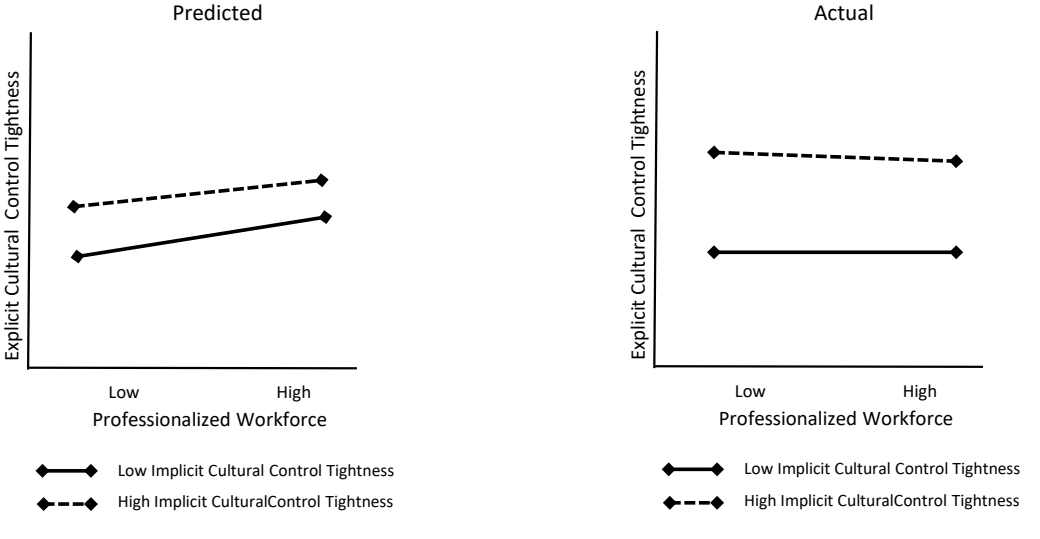


Figure D.19: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Professionalized Workforce (H5h)

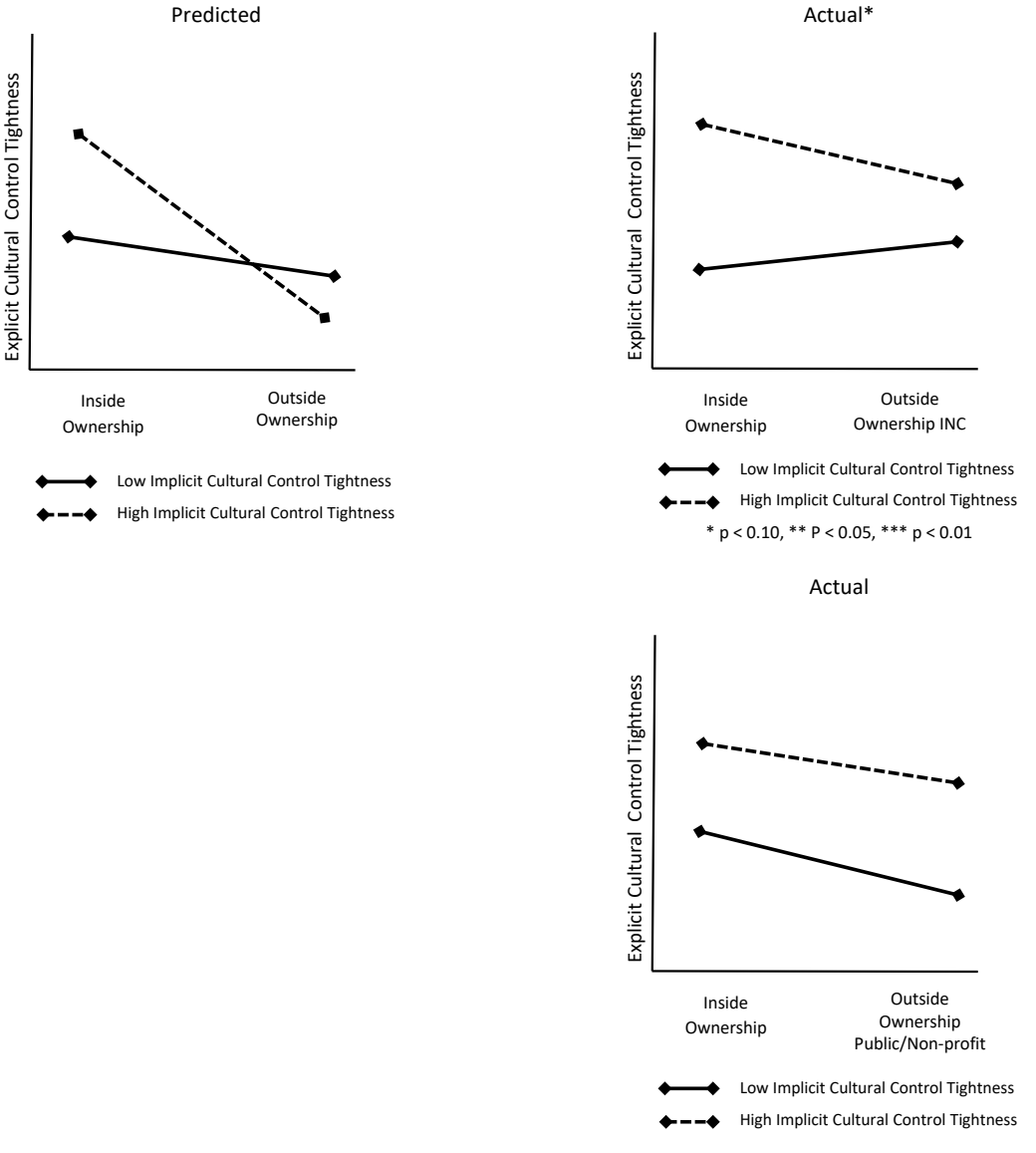


Figure D.20: Predicted and Actual Interaction Plots of Implicit and Explicit Cultural Control Tightness on Ownership Structure (H6h)

Table E.01
Regression Results Distance Scoring

PANEL A: Behavior Control

Dependent Variable	Hypothesis	Predicted	Model BCT1 Individual Performance In-Role	Hypothesis	Predicted	Model BCT2 Professional Tension	Hypothesis	Predicted	Model BCT3 Individual Performance In-Role	Model BCT4 Individual Performance In-Role
Org Size Small			0.137 *			-0.029			0.128	0.133
Org Size Medium			-0.006			-0.092			-0.025	-0.019
Unit Size < 10			0.090			-0.034			0.095	0.085
Unit Size Small			-0.012			-0.094			-0.023	-0.026
Unit Size Medium			-0.066			0.000			-0.061	-0.066
Firm Type (Autonomous)			0.134 *			0.018			0.139 **	0.137 *
Outside Ownership INC			0.123 *			0.050			0.142 **	0.131 *
Outside Ownership Public/Non-profit			0.048			0.169 **			0.081	0.072
Reputation			0.200 ***			-0.087			0.189 ***	0.187 ***
Human Capital Intensity			0.180 **			-0.247 ***			0.124 *	0.144 *
Behavior Control Flexible Guidelines (*BCFG*)			-0.032			-0.060				-0.040
Behavior Control Flexible Standardization (*BCFS*)			-0.077			0.081				-0.065
Behavior Control Rigid Guidelines (*BCRG*)			0.012			0.029				0.016
Professional Tension							H9	-	-0.149 **	-0.147 **
R^2			0.142			0.145			0.156	0.160
Adjusted R^2			0.090			0.093			0.113	0.105
F-stat			2.727			2.807			3.636	2.911
Significance F-stat			0.001			0.001			0.000	0.000
BCFG - BCRS	H1a	0	-0.032	H5a	+	-0.060				-0.040
BCFS - BCRS	H1b	+	-0.077	H5b	+	0.081				-0.065
BCRG - BCRS	H1c	+	0.012	H5c	+	0.029				0.016
BCFG - BCFS	H1d	-	0.037	H5d	-	-0.133 *				0.018
BCFG- BCRG	H1e	-	-0.046	H5e	-	-0.095				-0.060
BCFS - BCSG	H1f	0	-0.093	H5f	0	0.042				-0.087

* p < 0.10, ** P < 0.05, *** p < 0.01
n = 232

Table E.01 *continued*
Regression Results Distance Scoring

PANEL B: Results Control

Dependent Variable	Hypothesis	Predicted	Model RCT1 Individual Performance In-Role	Hypothesis	Predicted	Model RCT2 Professional Tension	Hypothesis	Predicted	Model RCT3 Individual Performance In-Role	Model RCT4 Individual Performance In-Role
Org Size Small			0.205 **			0.012			0.203 **	0.207 **
Org Size Medium			-0.005			-0.091			-0.020	-0.022
Unit Size < 10			0.006			-0.073			0.003	-0.008
Unit Size Small			-0.039			-0.116			-0.052	-0.061
Unit Size Medium			-0.061			-0.077			-0.064	-0.075
Firm Type (Autonomous)			0.058			0.037			0.067	0.065
Outside Ownership INC			0.147 *			0.030			0.166 **	0.153 **
Outside Ownership Public/Non-profit			0.100			0.104			0.121 *	0.120
Reputation			0.198 ***			-0.156 **			0.173 **	0.169 **
Human Capital Intensity			0.170 **			-0.241 ***			0.125 *	0.124 *
Results Control Flexible Guidelines (*RCFG*)			0.089			-0.083				0.073
Results Control Flexible Standardization (*RCFS*)			-0.047			-0.001				-0.048
Results Control Rigid Guidelines (RCRG)			0.008			-0.092				-0.010
Professional Tension							H9	-	-0.198 ***	-0.191 ***
R^2			0.140			0.149			0.160	0.171
Adjusted R^2			0.084			0.094			0.115	0.113
F-stat			2.524			2.723			3.534	2.957
Significance F-stat			0.003			0.001			0.000	0.000
RCFG - RCRS	H2a	0	0.089	H6a	+	-0.083				0.073
RCFS - RCRS	H2b	+	-0.047	H6b	+	-0.001				-0.048
RCRG - RCRS	H2c	+	0.008	H6c	+	-0.092				-0.010
RCFG - RCFS	H2d	-	0.138 *	H6d	-	-0.082				0.122
RCFG - RCRG	H2e	-	0.080	H6e	-	0.025				0.085
RCFS - RCRG	H2f	0	-0.056	H6f	0	0.103				-0.037

* p < 0.10, ** P < 0.05, *** p < 0.01
n = 218

Table E.01 *continued*
Regression Results Distance Scoring

PANEL C: Personnel Control

Dependent Variable	Hypothesis	Predicted	Model PCT1 Individual Performance In-Role	Hypothesis	Predicted	Model PCT2 Professional Tension	Hypothesis	Predicted	Model PCT3 Individual Performance In-Role	Model PCT4 Individual Performance In-Role
Org Size Small			0.051			0.021			0.036	0.057
Org Size Medium			-0.084			-0.101			-0.112	-0.110
Unit Size < 10			0.038			-0.068			0.036	0.021
Unit Size Small			-0.062			-0.063			-0.042	-0.078
Unit Size Medium			0.029			0.005			0.017	0.031
Firm Type (Autonomous)			0.125			0.027			0.114	0.132 *
Outside Ownership INC			0.003			0.015			0.032	0.007
Outside Ownership Public/Non-profit			0.092			0.187 **			0.130 *	0.140 *
Reputation			0.247 ***			-0.129 *			0.215 ***	0.214 ***
Human Capital Intensity			0.089			-0.263 ***			0.050	0.021
Personnel Control Flexible Guidelines (*PCFG*)			-0.090			-0.033				-0.098
Personnel Control Flexible Standardization (*PCFS*)			0.099			-0.033				0.090
Personnel Control Rigid Guidelines *(PCRG)*			-0.049			-0.084				-0.071
Professional Tension							H9	-	-0.252 ***	-0.256 ***
R^2			0.147			0.162			0.179	0.202
Adjusted R^2			0.091			0.106			0.133	0.145
F-stat			2.604			2.914			3.918	3.534
Significance F-stat			0.002			0.001			0.000	0.000
PCFG - PCRS	H3a	-	-0.090	H7a	+	-0.033				-0.098
PCFS - PCRS	H3b	+	0.099	H7b	-	-0.033				0.090
PCRG - PCRS	H3c	-	-0.049	H7c	-	-0.084				-0.071
PCFG - PCFS	H3d	-	-0.179 **	H7d	+	-0.003				-0.180 **
PCFG - PCRG	H3e	0	-0.042	H7e	+	0.049				-0.030
PCFS - PCRG	H3f	+	0.151	H7f	0	0.057				0.166 *

* p < 0.10, ** P < 0.05, *** p < 0.01
n = 228

Table E.01 *continued*
Regression Results Distance Scoring

PANEL D: Cultural Control

Dependent Variable	Hypothesis	Predicted	Model CCT1 Individual Performance In-Role	Hypothesis	Predicted	Model CCT2 Professional Tension	Hypothesis	Predicted	Model CCT3 Individual Performance In-Role	Model CCT4 Individual Performance In-Role
Org Size Small			0.083			-0.028			0.069	0.077
Org Size Medium			-0.066			-0.083			-0.086	-0.082
Unit Size < 10			0.046			-0.018			0.049	0.042
Unit Size Small			-0.055			0.019			-0.046	-0.052
Unit Size Medium			-0.067			0.018			-0.065	-0.064
Firm Type (Autonomous)			0.118 *			0.053			0.122 *	0.129 *
Outside Ownership INC			0.152 **			0.018			0.143 **	0.156 **
Outside Ownership Public/Non-profit			0.041			0.099			0.053	0.060
Reputation			0.161 **			-0.090			0.149 **	0.144 **
Human Capital Intensity			0.172 **			-0.306 ***			0.117 *	0.114 *
Cultural Control Flexible Guidelines (*CCFG*)			0.029			0.047				0.038
Cultural Control Flexible Standardization (*CCFS*)			-0.064			-0.031				-0.070
Cultural Control Rigid Guidelines (*CCRG*)			-0.047			-0.022				-0.051
Professional Tension							H9	-	-0.185 ***	-0.191 ***
CCFG - CCRS	H4a	-	0.029	H8a	-	0.047				0.038
CCFS - CCRS	H4b	0	-0.064	H8b	-	-0.031				-0.070
CCRG - CCRS	H4c	0	-0.047	H8c	-	-0.022				-0.051
CCFG - CCFS	H4d	-	0.029	H8d	-	0.076				0.103
CCFG - CCRG	H4e	-	0.084	H8e	-	0.072				0.097
CCFS - CCRG	H4f	0	-0.005	H8f	0	-0.004				-0.006
R^2			0.121			0.139			0.144	0.153
Adjusted R^2			0.074			0.092			0.105	0.104
F-stat			2.578			3.007			3.741	3.115
Significance F-stat			0.002			0.000			0.000	0.000

* p < 0.10, ** P < 0.05, *** p < 0.01
n = 256

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SUMMARY

Professional service firms (PSFs) are special. They engage in solving customized, complex problems together with an involved clientele, and they are almost solely dependent on their professional employees as their main source of competitive advantage. Professionals, in turn, are highly-trained experts who are self-motivated and goal-driven. As a result, much of the popular press on the management of professionals has focused on maximizing the work autonomy of professionals and avoiding bureaucratic forms of control as the best way of managing them. While the academic literature is less outspoken, there is little empirical evidence on the trade-offs PSFs make in this respect. Nevertheless, PSFs make use of bureaucratic control mechanisms, suggesting that there are benefits to using these types of controls.

The purpose of this thesis is to examine the design of management control mechanisms in professional service firms, both theoretically and empirically. We explore two forms of control tightness as key attributes for the design of MCSs in professional service firms: *explicit* control tightness is the degree or scope of the MCS and *implicit* control tightness reflects the level of tolerance for deviations from the control system. Tightness is achieved either by increasing the scope of the MCS or by decreasing tolerance for deviations from the MCS. In this way, tightness satisfies the firms' need for control, while autonomy is achieved by loosening the control system. We suggest that by varying explicit and implicit control tightness, professional service firms can achieve both the control necessary for optimal performance and satisfy the need for autonomy and flexibility.

Using survey data from 308 professionals from a broad range of professional service firms, we first examine the impact of the heterogeneity in the distinctive characteristics of professional service firms, such as task complexity, customer reliance, capital intensity, professionalized workforce, and ownership structure, on the use of both implicit and explicit forms of behavior, results, personnel, and cultural control. We then examine the impact of these control choices on individual performance both directly and indirectly through improved attitudinal outcomes.

We find that contrary to popular belief, professional service firms do not reduce their use of bureaucratic control measures in response to the PSF characteristics. With the exception of task complexity, which does lead to significant reductions in the use of bureaucratic control measures, the use of bureaucratic control measures in response to the other PSF characteristics is either unaffected or actually increases. Furthermore, we find little evidence of a trade-off between implicit and explicit forms of control; firms tend to either increase or decrease both types of control concurrently.

However, we also find little evidence that the use of bureaucratic control measures has a negative impact on individual performance. On the contrary, the majority of our findings suggest that management control systems which scored high on both implicit and explicit control tightness perform as well more flexible control combinations. Moreover, while professionals who experience higher levels of professional tension, defined as the degree to which they feel they cannot perform their work in the way they believe it should be done, have significantly lower levels of individual performance, this relationship does not appear to be driven by the design of the management control system. Taken together these findings suggest that the use of bureaucratic control measures in professional service firms is less problematic than once thought, and while the use of bureaucratic control measures may not lead to significant improvements in individual performance, they also do not appear to be harmful. However, more research is needed to determine the causes of professional tension, which do appear to have a significant negative impact on individual performance.

SAMENVATTING

Professionele dienstverlenende bedrijven (PDBs) zijn bijzonder. Ze werken samen met betrokken cliënten aan het oplossen van niet-standaard, complexe problemen en zijn bijna volledig afhankelijk van hun professionals als belangrijkste bron van concurrentievoordeel. Professionals zijn op hun beurt hoog opgeleide experts die zelfgemotiveerd en doelgericht zijn. Als gevolg hiervan heeft een groot deel van de pers over het management van professionals zich gericht op het maximaliseren van de werkautonomie van professionals en het vermijden van bureaucratische vormen van controle als de beste manier om ze te managen. Hoewel de academische literatuur minder uitgesproken is, is er weinig empirisch bewijs over de trade-off die PDBs in dit opzicht maken. Desalniettemin gebruiken PDBs bureaucratische controlemechanismen, hetgeen suggereert dat er voordelen verbonden zijn aan het gebruik van dit soort controles.

Het doel van dit proefschrift is om de inrichting van management controle systemen in professionele dienstverlenende bedrijven zowel theoretisch als empirisch te onderzoeken. We verkennen twee vormen van controle-dichtheid als belangrijkste kenmerken voor de inrichting van management controle systemen (MCSs) in professionele dienstverlenende bedrijven: expliciete controle-dichtheid is de mate of reikwijdte van de MCS en impliciete controle-dichtheid weerspiegelt de mate van tolerantie voor afwijkingen van het besturingssysteem. De dichtheid wordt bereikt door de reikwijdte van de MCS te vergroten of door de tolerantie voor afwijkingen van de MCS te verlagen. Op deze manier voldoet de dichtheid aan de behoefte van bedrijven aan controle, terwijl de autonomie wordt bereikt door het controlesysteem los te maken. We betogen dat door expliciete en impliciete controle-dichtheid te variëren professionele dienstverlenende bedrijven tegelijkertijd de controle kunnen uitoefenen die nodig is om de prestaties van het bedrijf te optimaliseren en de professionals de gewenste autonomie en flexibiliteit te geven.

Aan de hand van enquêtegegevens van 308 professionals uit een breed scala aan professionele dienstverlenende bedrijven onderzoeken we eerst de impact van de heterogeniteit in de onderscheidende kenmerken van professionele dienstverlenende bedrijven zoals taakcomplexiteit, klantafhankelijkheid, kapitaalintensiteit, mate van professionalisatie van de werknemers en organisatiestructuur op het gebruik van zowel impliciete als expliciete gedragsvormen, resultaten, personeel en culturele controle. Vervolgens onderzoeken we de impact van deze controlekeuzes op individuele prestaties, zowel direct als indirect, door positievere houding.

We vinden dat in tegenstelling tot de conventionele opvatting professionele dienstverlenende bedrijven het gebruik van bureaucratische controlemaatregelen niet verminderen in reactie op PDB-kenmerken. Met uitzondering van taakcomplexiteit, die wel leidt tot een aanzienlijke vermindering van het gebruik van bureaucratische controlemaatregelen, wordt het gebruik van bureaucratische controlemaatregelen in reactie op de andere PDB-kenmerken niet beïnvloed of neemt het juist toe. Bovendien vinden we weinig aanwijzingen voor een trade-off tussen impliciete en expliciete vormen van controle; bedrijven hebben de neiging om beide soorten controles gelijktijdig te verhogen of te verlagen.

We vinden echter ook weinig aanwijzingen dat het gebruik van bureaucratische controlemaatregelen een negatief effect heeft op de individuele prestaties. Integendeel, het merendeel van onze bevindingen suggereert dat management controle systemen die hoog scoorden op zowel impliciete als expliciete controle-dichtheid net zo goed presteerden als controle systemen met meer flexibele controlecombinaties. Bovendien, terwijl professionals die een hogere mate van professionele spanning ervaren, gedefinieerd als de mate waarin zij vinden dat ze hun werk niet kunnen uitvoeren zoals zij denken dat het moet worden gedaan, aanzienlijk lagere niveaus van individuele prestaties hebben, lijkt deze relatie niet te zijn gedreven door de inrichting van het management controle systeem. Al deze bevindingen samen suggereren dat het gebruik van bureaucratische controlemaatregelen bij professionele dienstverlenende bedrijven minder problematisch is dan gedacht, en hoewel het gebruik van bureaucratische controlemaatregelen mogelijk niet leidt tot aanzienlijke verbeteringen in de individuele prestaties, lijken ze ook niet schadelijk te zijn. Er is echter meer onderzoek nodig om de oorzaken van professionele spanning te bepalen, die een aanzienlijk negatief effect op de individuele prestaties lijken te hebben.