SELF-DETERMINATION THEORY OF MOTIVATION AND PERFORMANCE MANAGEMENT SYSTEMS

By

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Abstract

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According to self-determination theory (SDT, Ryan and Deci 2000) of motivation, in order to create and maintain an innovative, proactive and happy workforce, businesses ought to adopt organizational designs that cultivate employees' autonomous (vs. controlled) work motivation. This is because numerous SDT-based studies have found that autonomous (controlled) motivation is associated with higher (lower) levels of creativity, cognitive flexibility, persistence and psychological well-being.

The current research applies SDT to management control systems. Specifically, it proposes and partially tests a motivational model where one aspect of organizational design (i.e., performance management systems, PMS) is hypothesized to influence autonomous and controlled work motivation, and in turn influences their job related cognition, behaviors and affective experience. In particular, this model predicts that characteristics of PMS (e.g., whether reward systems are aligned with performance measurement systems, and the degree to which employees participate in the process of target setting and performance appraisal) will impact employees' autonomous and controlled work motivation. It further predicts that autonomous and controlled work motivation will affect various outcome variables such as employees' willingness to

acquire new knowledge and skills, their attributional tendency for their performance, and their proactivity at work.

The hypotheses derived from the proposed motivational model were tested using two studies. Study 1 consists of structural equation modeling (SEM) analyses of survey data available from a separate research project. The survey data were obtained from 135 lower-level managers and non-management employees in different organizations. Study 2 was a case-based experiment, where 74 experiment participants assumed the role of a lower-level manager. The results from the two studies in general support the above-mentioned hypotheses. Implications for both PMS and SDT literatures are discussed.

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CHAPTER ONE

INTRODUCTION

1.1 Motivation and Theoretical Framework

Agency theory (Jensen and Meckling 1976) assumes that the employee (the agent) is self-interested and effort-averse. Accordingly, agency theorists mainly rely on incentives (or reward contingencies) to induce the employee to take actions that are congruent with firm objectives. According to Self-Determination Theory (SDT, Ryan and Deci 2000) of motivation, the sheer reliance on reward contingencies and ignorance of other motivating mechanisms may lead to various negative outcomes such as employees' reluctance to innovate and learn new knowledge and skills, their passiveness at work, and poor psychological well-being.

In contrast to agency theory, SDT presumes that human beings inherently have the natural tendency to explore and fulfil their potentials and strive for meaningful goals. Such innate tendency manifests itself as "autonomous motivation", as opposed to "controlled motivation". The latter results from external forces such as imposed reward contingencies and other people's demand. Hundreds of SDT based studies suggest that autonomous (controlled) motivation is associated with higher (lower) levels of creativity, cognitive flexibility, persistence and psychological well-being. This literature further demonstrates that social-contextual factors can either unleash or restrain individuals' autonomous motivation.

According to SDT, in order to create and maintain an innovative, proactive and happy workforce, businesses ought to adopt organizational designs that cultivate employees' autonomous (vs. controlled) work motivation. The current research

applies SDT to management control systems. Specifically, it proposes and partially tests a motivational model where one aspect of organizational design (i.e., performance management systems, PMS) is hypothesized to influence employees' autonomous and controlled work motivation, and in turn influences their job related cognition, behaviors and affective experience.

In particular, this model predicts that characteristics of PMS (e.g., whether reward systems are aligned with performance measurement systems, and the degree to which employees participate in the process of target setting and performance appraisal) will impact employees' autonomous and controlled work motivation. It further predicts that autonomous and controlled work motivation will affect various outcome variables including employees' willingness to acquire new knowledge and skills, their attributional tendency for their performance, their proactivity at work, and their level of job satisfaction and organizational commitment.

1.2 Research Method

The hypotheses derived from the proposed motivational model were tested using two studies. Study 1 consists of structural equation modeling (SEM) analyses of survey data available from a separate research project. The survey data were obtained from 135 lower-level managers and non-management employees in different organizations. Study 2 was a case-based experiment, where 74 experiment participants assumed the role of a lower-level manager. This paper thus improves our understanding of the performance management practices among lower-level

employees, which is largely ignored by prior compensation literature (Ittner and Larcker 2001).

1.3 Major Findings

The results from the two studies in general suggest the following relationships:

(1) Employees are to a greater degree motivated by autonomous (vs. controlled) motivation to work when:
    a. the reward systems are well linked with performance measurement systems than when they are not;
    b. they participate in the processes of selecting performance measures, setting performance targets and evaluating their own performance than when they do not participate in such processes; and
    c. PMS clearly communicate to them the business objectives than when they do not.

(2) When they are to a greater degree motivated by autonomous (vs. controlled) motivation to work, employees:
    a. to a greater degree recognize the importance of acquiring new knowledge and skills;
    b. are less vulnerable to the self-serving attributional bias, i.e., are less likely to make stronger attribution to personal factors for success than for failure; and
    c. are more proactive in influencing the organization's strategy formation.

Additional analyses also suggest that task uncertainty moderates some of the above-mentioned relations. However, due to the small sample sizes, caution must be exercised in interpreting such moderating effects.

1.4 Significance

The paper has implications for both PMS research and SDT research. First, Indjeikian (1999) notes that "it appears that the real agency conflict has less to do with getting employees to work harder…, but more to do with getting them to choose the right combination of actions and decisions that increases shareholder value" (p. 152). In other words, motivation researchers must not only study the *level* of employees' effort, but also investigate the *direction* of such effort (Bonner and Sprinkle 2002). This paper focuses on the latter component of effort. Specifically, among other outcome variables, it examines how PMS impact employees' willingness to acquire new knowledge and skills as well as their likelihood to proactively influence strategy development. Those variables have apparent strategic significance and are crucial for firms' long-term success (Sprinkle 2003).

Second, this paper explores the "black box" of employees' motivational processes. The current performance management practices such as budgeting process have been broadly criticized for their control mindset, short-term perspectives and other attributes (Hansen, Otley and Van der Stede 2003). Solutions such as strategic performance management systems are proposed to address those issues. This paper contends that both criticisms against the old practices and recommendations for the new ones must be based on a better understanding of employees' motivational

process. Based on SDT, this paper provides some insight in why negative effects of PMS may exist and how new practices may help to change the *status quo*.

Third, this paper tests SDT in work settings and finds support for the fundamental notion of SDT that not only the quantity or amount, but also the quality or nature, of individuals' motivation matters (Gagné and Deci 2005). For example, the findings of Study 2 suggest that the relative strength of autonomous vs. controlled motivation has a significant impact on employees' proactive behavior beyond the effect of the amount of their motivation. In addition, this paper also provides some preliminary support for the proposition that autonomous motivation is important "particularly if the task requires creativity, cognitive flexibility, or deep processing of information" (Gagné and Deci 2005, p. 341). Specifically, preliminary analyses in study 1 suggest that only when the job related tasks were viewed as uncertain and novel, but not when they were viewed as structured and mundane, could autonomous (vs. controlled) work motivation predict some of the outcome variables.

Fourth and more importantly, this paper extends SDT-based research on the socio-contextual factors that enhance employees' autonomous motivation. Extant research in this area mainly focuses on two types of autonomy supporting factors, i.e., specific aspects in the job context (e.g., meaningful positive feedback) and interpersonal style of superiors (Gagné and Deci 2005). Following Sheldon, Turban, Brown, Barrick and Judge's (2003, p. 381) suggestion, this paper goes "further back" and investigates a "higher-order contextual factor," i.e., the organization's PMS. Such investigation is important because higher-order contextual factors such as the design of PMS could be longer lasting and possibly more pervasive in influencing

employees' motivation than are specific job characteristics and superiors' interpersonal style.

Last but not least, whether performance-contingent rewards forestall or foster autonomous motivation at work is a question that has drawn a significant amount of controversy. This paper sheds some light on this debate. Specifically, the results from both Study 1 and Study 2 in general suggest that when rewards are well linked with measured performance, compared with when they are not, employees are to a greater degree motivated by autonomous work motivation.

1.5 Overview

The remainder of this research is organized as follows: Chapter Two reviews four distinctive theories of work motivation, especially SDT, and the PMS literature. Based on SDT, Chapter Three presents a motivational model of PMS and develops specific research hypotheses. Chapter Four outlines the design of Study 1 and Study 2. Chapter Five reports the empirical results from both studies and Chapter Six the conclusion.

CHAPTER TWO

LITERATURE REVIEW

This literature review begins by defining performance management systems (PMS) and discussing the strategic focus for studying PMS. This section defines the scope and focus of this paper. It then reviews four distinctive work motivation theories, namely, expectancy theory, agency theory, goal setting theory, and self-determination theory (SDT). SDT is discussed in more detail because it serves as the major basis for predicting the impact of PMS on employees' work related cognition, behaviors and affect. The review further contrasts SDT with the other three theories, both at the theoretical and practical levels. It ends with a review of extant research on the motivational effect of PMS, followed by a discussion of limitations of this literature.

2.1 Performance Management Systems (PMS)

2.1.1. Definition

Taking a broader perspective of management control system, Otley (1999) argues that management accounting researchers should move beyond the traditional focus of performance *measurement* and pay more attention to performance *management* and strategy implementation. He proposed a framework for researching management control systems wherein the focus is on managing an organization's performance and implementing its strategies. This research framework consists of following five interrelated sets of issues:

1. “What are the key objectives that are central to the organization’s overall future success, and how does it go about evaluating its achievement for each of these objectives?

2. “What strategies and plans has the organization adopted and what are the processes and activities that it has decided will be required for it to successfully implement these? How does it assess and measure the performance of these activities?

3. “What level of performance does the organization need to achieve in each of the areas defined in the above two questions, and how does it go about setting appropriate performance targets for them?

4. “What rewards will managers and other employees gain by achieving these performance targets or, conversely, what penalties will they suffer by failing to achieve them?

5. “What are the information flows feedback and feed-forward loops that are necessary to enable the organization to learn from its experience, and to adapt its current behavior in the light of that experience? (pp. 365-366)”

Both management control systems in a traditional sense (e.g., budgeting systems, performance measurement systems, and management and non-management incentive systems) and systems that were once viewed as “beyond the scope” of management control systems (e.g., strategy management systems, and information systems that serve for human resource management purposes) address at least one of the above questions. According to Otley (1999), those different systems can be collectively labeled as PMS.

2.1.2 A Strategic Focus of Studying Performance Management Systems (PMS)

To study PMS, one first needs to define “performance” at the organizational level. This paper adopts Otley’s (1999) view of organizational performance, which is the level of success an organization has in attaining its strategic objectives and in

implementing an appropriate strategy. He further argues that studying PMS necessitates a good understanding of its strategic aspects. Such strategic focus in studying PMS reflects the recent development of managerial accounting practice. As stated by Ittner and Larcker (2001), by the mid-1990s, managerial accounting had moved away from a traditional focus on planning and control and evolved to its new stage, where more emphasis is put on achieving strategic objectives such as innovation and customer value. At this new stage, managerial accounting focuses on the identification, measurement, and management of the key drivers to attain strategic objectives. For example, strategic performance measurement systems, such as the balanced scorecard (Kaplan and Norton 1992), were designed to present managers with a broad set of performance measures, financial and non-financial, that together reflect how well a company meets its strategic targets (Gates, 1999).

Adopting this strategic view of PMS, one can argue that the ultimate purpose of PMS is to facilitate the achievement of the organization's strategic objectives. Accordingly, this paper assumes that desired PMS are the ones that effectively motivate employees to achieve strategic objectives and to implement appropriate strategies. Therefore, the focus of this paper is to examine how PMS characteristics impact employees' cognition and behaviors that have a direct effect on the attainment of strategic objectives. For example, this paper examines how PMS characteristics impact employees' willingness to acquire new knowledge and skills as well as their likelihood to proactively influence strategy development.

The strategic focus of this paper is in accordance with the changes in emphasis observed in managerial accounting research in general. For example,

Chenhall and Langfield-Smith (1998) examine how different management accounting practices (e.g., activity-based costing; balanced performance measures and strategic planning) enhance organizational performance under particular strategies (i.e., product differentiation strategy, low price strategy or a combination of both). More recently, Van der Stede, Chow and Lin (2006) examine the choice of performance measures (whether including financial measures, objective nonfinancial measures, and subjective nonfinancial measures) as a function of strategy being adopted, and how the "fit" between strategy and performance measures impact firm performance.

Noteworthy, this paper differs from those studies in that it views strategy-related variables (e.g., proactivity in influencing strategy formation) as endogenous and thus examines how management control aspects impact those variables. In contrast, the above-mentioned studies treat strategy as exogenous variable and investigate how adopted strategies impact the design of management control systems and the effect those design aspects have on performance.

2.2 Work Motivation Theories

To understand the mechanisms through which PMS impact employees' motivation, cognition, behaviors and affect, four distinctive motivational theories are reviewed as follows. The first three theories are briefly reviewed since they have received significant attention in accounting research as well as in organizational behavior research. The last theory, self-determination theory (SDT), is rarely seen in accounting literature and has just started receiving attention from organizational behavior researchers (for a review, see Gagné and Deci 2005). This paper uses SDT

as the main basis for predicting the impact of PMS on employees' motivation, and in turn on various outcome variables. SDT, thus, is discussed in more detail in section 2.3.

Expectancy theory (Vroom 1964), assumes that motivation is a function of the effort-outcome expectancy and the valence (or attractiveness) of the outcome. In other words, the more the individual expects to achieve certain outcome through his/her effort, and the more attractive the outcome is to the individual, the more motivated he/she is to work toward that outcome. According to this theory, three PMS aspects have a multiplicative effect on employees' motivation to work for performance: (1) expectancy, or employees' belief that their effort will lead to performance (i.e., the sensitivity of performance measures to effort level); (2) instrumentality, or employees' belief that performance will lead to reward (i.e., the alignment between performance measurement systems and reward systems); and (3) valence, or anticipated satisfaction from obtaining the reward (i.e., the perceived attractiveness of the reward). According to expectancy theory, reward can be tangible (e.g., bonus and promotion) as well as intangible (e.g., fame and praise).

Agency theory (Jensen and Meckling 1976; Eisenhardt 1989) assumes that individuals have a desire to increase personal wealth and to decrease the level of effort. It also assumes that in an organization, the employee (the agent) has different goals than does the employer (the principal), and it is expensive for the latter to verify what the former is doing. Hence, agency theory mainly relies on incentives to induce employees to take desired actions that are congruent with firm objectives. At the same time, agency theory also assumes that the employee is risk averse; thus, it can be

expensive to pass risk to the employees. Therefore, when designing the incentive system, a balance needs to be struck between maximizing the employees' incentives and minimizing the risk that they bear (Holmstrom 1989; Indjejikian 1999; Evans, Kim and Nagarajan 2006).

Consistent with expectancy theory, agency theory advocates reward systems that are sensitive to employees' effort level. For example, agency theory proposes that the more (less) the outcome is determined by employees' effort, the more rewards should be based on the outcome (behavior) (Eisenhardt 1989). As for the attractiveness of rewards, because agency theory presumes that employees have the desire to maximize their personal wealth, rewards should be always attractive to them. In other words, rewards should always have a positive utility.

Influenced by Ryan's (1970) belief that conscious goals affect human behavior, *goal-setting theory* (Locke and Latham 1990) views personal goals as the central stimuli of individuals' behavior. According to this theory, certain attributes of goals, such as their level of difficulty and specificity, are expected to impact individuals' performance. In particular, specific, and difficult but achievable goals lead to optimal level of performance. Presumably, goals affect performance by directing attention and effort toward goal-relevant activities, by enhancing the level of effort as well as persistence, and by leading to greater use of task-relevant knowledge and strategies (Locke and Latham 2002).

Goal-setting theory further identifies factors that moderate the above-mentioned goal-performance relation (Locke and Latham 1990). One of the most documented moderators is goal commitment. Specifically, when individuals are

committed to their goals, the effect of goals on performance is strongest (Locke and Latham 2002) and when goal commitment is low, a goal cannot have motivational effect (Locke and Latham 1990). Noteworthy, this theory does not differentiate different contents of goals, or different motives behind the goal pursuits (Gagné and Deci 2005).

Similar with goal setting theory, *self-determination theory* (SDT, Deci and Ryan 2000; Ryan and Deci 2000) regards goal pursuits as one of the key elements for understanding human motivation. However, different from goal setting theory, SDT focuses on different motives behind the goal pursuits. Specifically, SDT research suggests that holding goal characteristics constant, when individuals strive for certain goals out of pressure or any other external force, rather than out of personal values or simple enjoyment, negative outcomes such as low level of persistence and poor psychological well-being may occur. Therefore, according to SDT, the nature or form of motivation, not just the amount or magnitude of motivation, matters. SDT is discussed in detail in the section that follows.

2.3 Self-Determination Theory (SDT) of Motivation

According to Ryan and Deci (2002), SDT consists of four interrelated "mini-theories," each of which focus on specific phenomenon. The following review summarizes the basic propositions and findings of the four "mini-theories": cognitive evaluation theory (CET), organismic integration theory (OIT), basic needs theory, and causality orientation theory. Those theories, especially the OIT, provide the basis for the motivational model that is proposed in Chapter 3.

2.3.1 Cognitive Evaluation Theory (CET)

CET (Deci 1975; Deci and Ryan 1980) was formulated based on SDT's early work. In the early 1970's, a series of experimental studies (e.g., Deci 1971, 1972a, 1972b; Kruglanski, Friedman and Zeevi 1971; Lepper, Greene and Nisbett 1973) demonstrated that extrinsic rewards such as money and symbolic rewards leads to the decrease in individual's intrinsic motivation to engage in originally interesting activities. Based on White's (1959) conceptualization, individuals are *intrinsically* motivated if they perform a certain activity for its own sake, and the pleasure and satisfaction derived from engaging in the activity. On the other hand, they are *extrinsically* motivated if they act in order to achieve some objective that is separable from this activity. CET (Deci and Ryan 1980) was subsequently developed to explain such "undermining" effect of extrinsic rewards on intrinsic motivation.

The theory asserts that the effect of rewards on intrinsic motivation depends on how the recipients cognitively interpret the rewards. Specifically, every reward has both a controlling aspect (i.e., the reward contingency separating desired from undesired action) and an informational aspect (i.e., the feedback conveying information about the actor's competence). Its controlling aspect is believed to thwart individuals' need for autonomy, thus undermining intrinsic motivation, whereas its informational aspect (assuming the reward is obtained) is believed to increase their perceived competence, thus enhancing intrinsic motivation. Therefore, the relative salience of these two aspects will determine whether a reward undermines or enhances intrinsic motivation.

Based on those premises, CET further proposes that rewards that are given for engaging in certain tasks (i.e., engagement-contingent rewards) and rewards that are given for completing certain tasks (i.e., completion-contingent rewards) will undermine intrinsic motivation. In contrast, rewards that are given for achieving certain pre-defined standards (i.e., performance-contingent rewards) and verbal rewards (i.e., positive feedback) can either undermine or increase intrinsic motivation depending on whether the controlling or informational aspect of the reward is more salient (Deci, Koestner and Ryan 1999).

A recent meta-analysis of 128 lab-experiment studies (Deci et al. 1999) was conducted to examine the effect of various types of rewards on intrinsic motivation. Those studies measured intrinsic motivation using free-choice persistence (i.e., the time the actor spent on the task after he/she was told that the experiment was over) and/or using self-reported interest or enjoyment. Consistent with CET's prediction, the meta-analysis results suggested that engagement-contingent rewards and completion-contingent rewards negatively impacted intrinsic motivation as measured by free-choice persistence (d=-0.40 and -0.36, respectively) and self-reported interest (d=-0.15 and -0.17, respectively). Performance-contingent rewards also had a negative impact on intrinsic motivation when the latter was measured by free-choice persistence (d=-0.28), but not when it was measured by self-reported interest (d=-0.01). This meta-analysis in general supported CET's argument that tangible rewards, if not implemented properly, can undermine individuals' intrinsic motivation. In contrast, verbal rewards enhanced intrinsic motivation as measured by both free-choice persistence (d=0.33) and self-reported interest (d=0.31).

CET faced challenges when it was applied to organizational behavior research. First, in work settings, extrinsic rewards are normally expected (Kunz and Pfaff 2002). More importantly, many activities at work are not intrinsically interesting. Therefore enhancing intrinsic motivation is not always practicable (Kunz and Pfaff 2002; Gagné and Deci 2005). The next development of SDT, i.e., the proposition of OIT (Deci and Ryan 1985a, 2000; Ryan and Deci 2000; Ryan and Deci 2002), reflects SDT researchers' effort to address those challenges.

2.3.2 Organismic Integration Theory (OIT)

From the perspective of OIT, not all types of extrinsic motivation are harmful. Rather, autonomous types of extrinsic motivation are associated with various positive outcomes including effective performance, persistence and psychological well-being. In contrast, controlled types of extrinsic motivation are found to be associated with a variety of negative outcomes. Upon the formulation of OIT, the distinction between autonomous and controlled motivation, rather than the distinction between intrinsic and extrinsic motivation, became essential for understanding human motivation.

2.3.2.1 Self-Determination Continuum and Different Forms of Extrinsic Motivation

The basic premise of OIT is that as long as the social environment provides sufficient support, people have the natural tendency to integrate their life experiences. In other words, people tend to "take in" and further internalize external regulations such as social norms, cultural practices, and significant others' demand (Ryan and

Deci 2002). To the extent they successfully internalize those external regulations and even integrate them with the sense of self, individuals will act on them with a sense of autonomy or volition, and will therefore be motivated autonomously by extrinsic motivation. However, if individuals fail to internalize those regulations, they will act on them feeling controlled by some external forces.

Deci and Ryan (2000) further propose a self-determination continuum to describe different forms of extrinsic motivation that vary in their relative autonomy or "self-determination." From the least autonomous to the most autonomous, they are external regulation, introjected regulation, identified regulation, and integrated regulation (see Figure 1; Deci and Ryan 2000). The first two types of extrinsic motivation fall into the category of controlled (non-autonomous) motivation, whereas the latter two along with intrinsic motivation fall into the group of autonomous motivation.

Insert Figure 1 Here

In the case of *external regulation*, the least autonomous form of motivation, behavior is performed primarily to satisfy an external demand or to obtain an externally imposed reward contingency. In the present context, if they pursue strategic goals out of pressure from their superiors, only to obtain a bigger bonus or to avoid a pay cut, employees would be motivated by external regulation. In the case of *introjected regulation*, individuals internalize the reasons for their actions although they have not accepted the regulation as their own. The external source of regulation is simply replaced by an internal one. In the present context, employees strive for

strategic goals because they would otherwise feel guilty or anxious, or they do so in order to attain ego enhancements (an internal source), and not because their superior requires it (external source). Both external and introjected regulations are controlled types of motivation since in both cases, individuals do not "identify with the value of a behavior for their own self-selected goals" (Gagné and Deci, 2005, 334).

With *identified regulation*, behavior is performed out of choice because individuals value the behavior. For instance, employees would be motivated by identified regulation if they strive for strategic goals because they think they are important and they truly endorse them. In *integrated regulation*, individuals not only internalize the reasons for their behavior, but they also assimilate them to the "self". In the present context, employees would be motivated by integrated regulation if striving for strategic goals is not only important to them personally, but it is also congruent with "personally endorsed values, goals, and needs that are already part of the self" (Ryan and Deci 2002, p. 18). In the case of *intrinsic motivation*, employees experience pleasure and satisfaction from the mere process of working toward strategic goals.

In summary, when a person engages in a behavior because he/she finds it interesting (intrinsic motivation) or personally meaningful (identified and integrated regulation), then he/she is motivated by autonomous types of motivation. In contrast, if a person engages in a behavior because he/she feels pressured by an external force, whether it is other people's demand or threat, an imposed reward contingency (external regulation), or his/her own sense of guilt, anxiety or ego-involvement (introjected regulation), he/she is motivated by controlled types of motivation.

2.3.2.2 Different Forms of Motivation and Work Related Outcomes

The distinction between autonomous and controlled motivation is important since research in both work (for a review, see Gagné and Deci 2005) and non-work settings (for a review, see Deci and Ryan 2000) in general, provides evidence of positive outcomes associated with autonomous motivation and negative outcomes associated with controlled motivation.

For example, in educational settings, it is found that controlled motivation is associated with less conceptual understanding of material and surface processing of knowledge (Benware and Deci 1984; Elliot, McGregor and Gable 1999; Elliot and McGregor 2001). In contrast, Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) found that autonomous motivation predicts greater persistence and better performance in learning. Controlled motivation is also found to lead to lower level of creativity among both children and adults (Amabile, Hennessey and Grossman 1986; Amabile, Godfarb, and Brackfield 1990). Lab experiments (Amabile 1982; Grolnick and Ryan 1987) also show that autonomous motivation leads to a higher level of performance when the task requires a certain level of creativity, while when the task is relatively mundane, controlled motivation does not lead to inferior performance.

In work settings, autonomous (vs. controlled) work motivation is found to be beneficial both in terms of performance and in terms of employees' psychological well-being. For example, a survey conducted in a investment banking firm (Baard, Deci, and Ryan 2004) shows that employees' autonomous motivation as well as their perceived autonomy support at work are positively associated with their self-reported

performance and vitality at work (i.e., feeling alive and energetic instead of feeling "dead" and drained), and negatively associated with their level of anxiety.

As summarized by Gagné and Deci (2005), empirical evidence in general suggests that autonomous (controlled) work motivation enhances (deteriorates) effective performance "particularly if the task requires creativity, cognitive flexibility, or deep processing of information" (p. 341). Although controlled motivation may be less harmful to performance when work requires less creativity and cognitive flexibility, studies conducted among blue-collar workers with mundane jobs (Illardi, Leone, Kasser and Ryan 1993; Shirom, Westman, and Melamed 1999) demonstrate other disadvantage of controlled motivation. For example, controlled motivation is associated with employees' lower level of job satisfaction and psychological well-being. In contrast, individuals who are motivated to work by autonomous motivation are more likely to possess higher level of self-esteem and job satisfaction, experience higher degree of vitality, less likely to be depressed and stressed, and report better physical health (e.g., Kasser and Ryan 1993, 1996).

2.3.2.3 Social Context that Promotes Autonomous Motivation

A logical follow-up question is how to promote autonomous motivation. OIT maintains that social-contextual factors, including organizational designs and work climate, can either enhance or forestall autonomous motivation. In general, a social context that satisfies individuals' basic psychological needs for autonomy, competence and relatedness, will promote its members' autonomous motivation (Ryan and Deci 2000). The mechanism through which need satisfaction facilitates

internalization of external regulations and thus enhances autonomous motivation is described as follows.

Very often, external regulation is initially brought about by significant others. Just to name a few, parents demand children to behave at school, superiors reward subordinates for achieving performance standards, or executives promotes newly adopted strategies to lower-level employees. The target individuals, whether they are the children, subordinates or lower-level employees, may perform desired activities out of feeling connected with the significant others. Research has shown that satisfaction of *need for relatedness* facilitates the process of internalization of external regulation (e.g., Ryan, Stiller and Lynch 1994). Satisfying individuals' *need for competence* is also important because if they do not feel competent to perform well on the target behavior, individuals are less likely to internalize regulation of such behavior (Vallerand 1997).

According to OIT however, in order for individuals to fully internalize or integrate external regulation, satisfying their *need for autonomy* is central. Recall that internalization can take the form of introjected regulation (which is one type of controlled motivation) when internalization is only partially achieved. OIT holds that without satisfying individuals' need for autonomy, the support for relatedness and competence can only result in introjected regulation (Ryan and Deci 2000). To fully internalize external regulation, autonomy support is needed to help individuals "grasp its meaning and synthesize that meaning with respect to their other goals and values" (Ryan and Deci 2000, p.74). A number of empirical studies support the crucial role of autonomy support in facilitating the internalization and integration processes (e.g.,

Grolnick and Ryan 1989; Deci, Eghrari, Patrick and Leone 1994; Strahan 1995; Williams and Deci 1996).

In summary, OIT maintains that social-contextual conditions that satisfy individuals' needs for autonomy, competence and relatedness will facilitate their internalization of extrinsic motivation and thus enhance their autonomous motivation. In contrast, when the social context hinders the satisfaction of individuals' needs for autonomy, competence and relatedness, individuals' autonomous motivation can be undermined (Ryan 1995; Reis, Sheldon, Gable, Roscoe and Ryan 2000).

As for the specific initiatives that facilitate employees' internalization process at work, at least three empirical studies must be mentioned. Using field experiment, Deci, Connell, and Ryan (1989) demonstrate that when managers are trained to (1) better acknowledge subordinates' perspectives, (2) let subordinates take initiatives to make choices and solve problems versus pressuring them to behave in certain ways, and (3) provide positive feedback, compared to when they are not, their subordinates report higher level of job satisfaction as well as trust in the corporate management. Lynch, Plant, and Ryan (2005) conduct a survey in a psychiatric hospital when it is undergoing a strategic change, i.e., adopting a new treatment milieu program. Their study shows that when experiencing higher involvement in important decision making that affects the hospital, staffs are more likely to internalize the motivation to carry out the new strategy. Gagné, Koestner and Zuckerman (2000) conduct cross-sectional and longitudinal studies in a telecommunications company that is going through a strategic transformation. Their results show that when provided with rationales for the tasks, when given choices about how to conduct the tasks, and when the feelings

about their work is acknowledged, employees are more likely to accept changes in the organization.

At least two limitations are noticeable in the above-reviewed research on internalization-facilitating measures at work. First, although the above studies are able to demonstrate certain types of positive effect of different internalization-facilitating initiatives, none of them directly measures the forms of employees' work motivation. In contrast, using lab experiment and student participants, Deci et al. (1994) are able to show that when the following three contextual factors are in place, compared with when they are not, individuals are more likely to internalize the motivation to engage in an uninteresting computer task: (1) providing a meaningful rationale, (2) acknowledging the individual's feelings, and (3) conveying choice.

Second, the internalization-facilitating initiatives that are proposed are limited to specific aspects in the job context (e.g., meaningful positive feedback) and interpersonal style of superiors. When reviewing Deci et al.'s (1989) finding, Sheldon et al. (2003, p. 368) argue that future research could go "further back" and investigate "higher-order contextual factors" such as organizational culture and company administration. Following Sheldon et al.'s (2003) suggestion, this paper examines the impact of one "higher-order contextual factor,"(i.e., the organization's PMS) on employees' motivation. Such an investigation is important because higher-order contextual factors could be longer lasting and possibly more penetrating in influencing employees' motivation than are specific job characteristics and superiors' interpersonal style.

2.3.3 Basic needs Theory

As mentioned in the previous sections, both CET and OIT employ the concept of basic psychological needs (i.e., the needs for autonomy, competence and relatedness) to explain relevant findings. Basic needs theory (Deci and Ryan 2000; Ryan and Deci 2000) was recently formulated mainly to clarify the needs concept and describe how various forms of motivation differentially influence effective functioning and psychological well-being. The basic premise of this theory is that these three psychological needs are innate, essential and universal to human beings (Ryan and Deci 2002).

Two findings under this theory are of special interest in this paper. First, satisfaction of these psychological needs has significant impact on individuals' well-being.[1] For example, Sheldon, Reis, and Ryan (1996) find that at both the between-person level and the within-person level, satisfaction of the three needs is positively associated with positive affect and vitality, and negatively associated with negative affect and symptomatology. Baard et al. (2004) find that need satisfaction among employees is positively associated with their vitality at work and negatively associated with their level of anxiety.

Second, the attainment of personal goals does not ensure the enhancement of psychological well-being. Specifically, Sheldon and Kasser (1998), and Kasser and Ryan (2001) find that well-being is enhanced when intrinsic goals (e.g., personal growth and community contribution) are attained, but not when extrinsic goals (fame

[1] Compared with some other research that takes a hedonic view of well-being (e.g., Kahneman, Diener, and Schwarz 1999), SDT takes a eudaimonic view of well-being. The former equates well-being with subjective happiness and experience of pleasure versus displeasure, whereas the latter describes well-being as striving for perfection, living in accordance with true self, and actualization of one's true potentials (Ryan and Deci 2002; Sheldon, Ryan, Deci, and Kasser 2004).

and wealth) are attained. The reason is because the attainment of extrinsic goals does not necessarily provide satisfaction of basic psychological needs. In addition, it is found that not only the content of goals, but also the type of motivation underlying the goal pursuits, matters. Sheldon and Elliot (1998, 1999) find that when they attain goals (whether intrinsic or extrinsic) that have been well internalized, in contrast with attaining goals that were imposed on them, individuals report higher level of well-being from such goal attainment.

2.3.4 Causality Orientation Theory

The fourth mini-theory is causality orientation theory (Deci and Ryan 1985b). Whereas CET and OIT focus on the influence of social contexts on motivation, causality orientation theory focuses on the effect of stable individual differences on motivation. This paper does not review this mini-theory in detail because this paper examines the effect of situational factors (i.e., PMS characteristics), rather than that of individual difference factors, on work motivation.

This theory is based on the premise that whether a social context is autonomy supportive or controlling can be a matter of individuals' perception, which differs significantly among individuals. The general causality orientations scale (GCOS) was developed to measure the degree to which individuals are in general autonomy oriented, control oriented, and impersonally oriented. Individuals high in autonomy orientation tend to experience social contexts as autonomy supportive while those high in control orientation tend to experience the same contexts as controlling. Individuals high in impersonal orientation tend to be amotivated.

Under causality orientation theory, individual differences in causality orientation have a significant impact on individuals' behaviors, personality aspects as well as psychological well-being. For example, Neighbors and Knee (2003) find that individuals scoring high on autonomy orientation, compared with those scoring low on autonomy orientation, are less likely to experience a decrease in self-esteem and affect when being compared with better performers. This finding is consistent with the notion that a strong autonomy orientation leads to better adaptive ability to negative feedback, openness to experience, low need for defensive behavior, and stability of self-schemas (e.g., Koestner and Zuckerman 1994; Bober and Grolnick 1995; Hodgins and Knee 2002).

2.3.5 Summary

Self-determination theory (SDT) of motivation consists of a few mini-theories. Originating from cognitive evaluation theory (CET), organismic integration theory (OIT) focuses on the different forms of individuals' motivation rather than on the total amount of motivation. Specifically, it differentiates autonomous motivation from controlled motivation. Such differentiation is important because autonomous (controlled) motivation is found to be associated with higher (lower) level of effective performance and individuals' psychological well-being. Moreover, OIT maintains that social context can be molded in a way that individuals' autonomous motivation is either fostered or forestalled. Basic needs theory of SDT provides a basis for understanding the abovementioned motivational process.

This paper uses SDT, OIT in particular, as its major theoretical foundation. Such choice of theory is based on the belief that SDT can provide unique insights to work motivation that are distinct from that provided by other theories of work motivation. In the sections that follow (section 2.4 and 2.5), discussions on theoretical and practical differences between SDT and the three other motivation theories are provided.

2.4 SDT and Agency Theory: Their Differences

SDT and agency theory hold different assumptions about basic human nature. Partly due to these different assumptions, SDT and agency theory each provides distinctive solution to a very fundamental question raised by the latter: how to improve goal congruencies between the agent and the principal thereby mitigating agency problems? Those differences are discussed in sequence.

2.4.1 Basic Assumptions about Human Nature

Agency theory (Jensen and Meckling 1976) assumes that the employee (the agent) makes rational trade-offs between "effort costs" and expected utility from his/her actions. The expected utility from his/her action can be both monetary reward (e.g., bonus) and non-monetary reward (e.g., prestige). In other words, according to this assumption, the agent views effort as cost, and monetary and non-monetary rewards as benefit.

In contrast, SDT holds that human beings have the innate tendency to fulfil their potentials and strive for meaningful goals (Deci and Ryan 2000); therefore, they

desire to work hard when the task is viewed as meaningful or interesting. Using Maslow's language, "duty is pleasant, and pleasure is the fulfilment of duty."[2] Thus, individuals do not necessarily perceive effort as cost incurred; quite the contrary, the mere process of fulfilling duties can be viewed as rewarding. As for monetary reward and prestige, as reviewed in previous section, SDT holds that they themselves are not necessarily beneficial because attaining extrinsic goals (such as momentary rewards and prestige) *per se* cannot satisfy one's innate psychological needs. They contribute to individuals' well-being only if they are delivered in a way that individuals' basic needs are satisfied (Deci and Ryan 2000).

However, experimental studies show that individuals do shirk when effort level cannot be observed (e.g., Berg, Daley, Dickhaut, and O'Brien 1992). It is also shown that individuals tend to exploit their private information when they anticipate by doing so their personal wealth can be increased (e.g., Baiman and Lewis 1989). It appears that agency theory's assumption about human nature is supported by empirical evidence.

Nevertheless, SDT may argue that if individuals tend to avoid hard work and pursue extrinsic goals, it is not because they are inherently lazy (effort-averse) and greedy (self-interested); rather, it is because the social context does not provide sufficient support for their needs for autonomy, competence and relatedness. Two streams of research lend support for this argument. First, studies show that when they are deficient in sense of efficacy or sense of self-determination, people are more

[2] SDT's conceptualization of psychological needs is consistent with that of Maslow (1943) in that both theories view psychological needs as innate as opposed to learned (Deci and Ryan 2000).

likely to be amotivated, i.e., do not have the intention to act at all (Pelletier, Dion, Tuson, and Green-Demers 1999).

Second, it is found that when social context provides insufficient support for basic psychological needs, the members are more likely to pursue extrinsic (vs. intrinsic) goals. Specifically, by surveying teenagers and their mothers, Kasser, Ryan, Zax, and Sameroff (1995) find that when mothers are democratic, non-controlling and warm, compared when they are controlling and distant, the teens are less likely to value extrinsic goals. Williams, Cox, Hedberg, and Deci (2000) obtain similar findings by studying the impact of parental styles on teenagers' goal selection. As for why need satisfaction has such an impact on what people pursue, Ryan and Deci (2002) propose that when developmental conditions do not satisfy their basic psychological needs, people may pursue extrinsic goals as "substitutes" for the basic needs.

The debate on basic assumptions about human nature has its long history in business research. For example, influenced by McGregor (1960) and Maslow (1970), Argyris (1973) proposes a "self-actualizing" model of man. Contrary to the proponents of "economic model of man" and consistent with SDT researchers, Argyris (1973) assumes that individuals "have a need to grow beyond their current state and reach higher levels of achievement and that the assumptions of the economic view of man limit people from attaining their full potential" (Davis, Schoorman, and Donaldson 1997, p. 27).

2.4.2 How to Improve Goal Congruencies?

Besides the assumptions it makes about human nature, agency theory further assumes that the agent has different goals as does the principal, and it is expensive for the latter to verify what the former is doing (Eisenhardt 1989). One of the primary functions of management accounting systems is thus to align the goal of the agent and that of the principal such that the agent will take cooperative actions that the principal desires (Indjejikian 1999; Sprinkle 2003). To "induce" the agent to take actions that benefit the principal rather than devoting their time to activities they prefer, agency theory relies on designing various incentives and other contractual arrangements (Covaleski, Evans, Luft, and Shields 2003). These contractual designs, such as piece rates/commissions, profit sharing, efficiency wages, or possibility of firing and promotion, create reward/punishment contingency for the agent. Those rewards are often contingent on performance.

There are at least two limitations associated with solely relying on creating performance-contingent rewards to align the goal of the agent with that of the principal. First, performance indicators that are used in compensation contracts are sometimes noisy and inaccurate, which may result in the mismatch between the interests of the agent and those of the principal. If the agent possesses private information, discretionary behaviours (moral hazard and adverse selection) may well result. Undoubtedly agency theorists realize this problem and have designed various contractual forms with the intention to more effectively achieve the alignment of interests between the two parties (Kunz and Pfaff 2002).

Second, reward contingencies are often effective only within a limited observable window, e.g., within the employment horizon or within compensation

contract window. In other words, only within that finite window, can the goal of the agent be aligned with that of the principal or the firm objectives. In such a situation, if solely motivated by the imposed reward contingency, the agent may not invest effort to master new knowledge and skills that potentially leads to higher long-term firm performance because he/she believes that such effort may not be compensated (Dikolli 2001; Dutta and Reichelstein 2003). Moreover, the agent may not be willing to take risks that are associated with innovation and other proactive behaviors that benefit long-term firm performance, unless he/she can charge the firm for risk premium (Sprinkle 2003).

As suggested by Davis et al. (1997), agent theorists focus on the question of how to motivate agent to "strive for" goals that the principal desires, but tend to ignore the question of why effort does not necessarily lead to high performance. Agency theorists realize that low ability, lack of knowledge, poor information and risk-aversion can be reasons for agents' failing to deliver high performance for their principals despite their effort, but they view these problems as exogenous.

This paper argues that problems such as agent's lack of knowledge, poor information, low ability, and even risk-aversion may precisely rise from the "wrong" forms of motivation underlying the agent's effort. As summarized in section 2.3.2.2, controlled motivation is associated with surface processing of knowledge, lower level of persistence (Benware and Deci 1984, Elliot et al. 1999, Elliot and McGregor 2001), lower level of creativity (Amabile et al. 1986, Amabile et al. 1990), unwillingness to carry out new strategy (Lynch et al. 2005), and reluctance to accept organizational change (Illardi et al. 1993). It is also found that among employees,

love of money (one type of extrinsic goal) is related to the propensity to perform unethical behaviors (Tang and Chiu 2003). Therefore, significant negative consequences may emerge if goal congruencies between the agent and principal are achieved solely through imposing reward/punishment contingency upon the former.

SDT proposes an alternative way to achieve goal congruencies between the agent and principal, i.e., to create an organizational environment that facilitates the agent's internalization of the organizational objectives. According to SDT, when such internalization is accomplished, the agent will carry out cooperative behaviours because he/she has grasped the meaning of those objectives and consequently synthesized their meaning into his/her goal system or value structure (Ryan and Deci 2000). The benefits of achieving such internalization process are twofold: first, from the standpoint of the principal, desired cooperation, such as continuous learning and innovation, may be obtained at a lower cost. Second, the agent "moves away from heteronomy to autonomy or from external to self-regulation (Ryan 1995, p. 405)," which is also beneficial for the agent's psychological well-being.

As stated in section 2.3.2.3, to facilitate the agent (employee)'s internalization of firm objectives, organizational designs that satisfy the agent (employee)'s needs for autonomy, competence and relatedness are crucial. Applying this notion to the current context, it is necessary to design PMS that better satisfy the employees' basic psychological needs. This perspective is in accordance with the view of corporate executives. A survey conducted among financial service firm executives shows that executives do not view inducing employees to act in a desired manner as the sole important goal to implement performance evaluation systems. Other goals such as

"fostering teamwork", "enhancing communication of business objectives", "attracting and retaining employees", are viewed as at least equally, if not more, important (Ittner and Larcker 2001, pp.384-388).

2.5 SDT, Expectancy Theory and Goal-Setting Theory: Their Differences[3]

Given the significance of expectancy theory and goal-setting theory in both work motivation research in general (Gagné and Deci 2005) and management accounting research in particular (Sprinkle 2003), this paper contrasts these two goal-based theories with SDT as follows.

As mentioned in section 2.2, under expectancy theory, the motivational effect of goals is a function of the expectancy and the valence of goal attainment. Therefore, all goals are believed to have indifferent motivational effect as long as the expectancy and perceived attractiveness of goal attainment are the same. This premise has been challenged by research that shows that significant variance in goal pursuit cannot be explained by either expectancy or valence of goal attainment (Klein, Wesson, Hollenbeck, and Alge 1999; Klein, Wesson, Hollenbeck, Wright, and DeShon 2001). Goal-setting theory examines both the process of goal-setting (e.g. employee involvement and participation) and certain characteristics of specific goals (e.g. specificity and difficulty level of the goals) on performance. As argued by Merchant and Manzoni (1989), when examining profit centers and when environmental uncertainty/complexity is high, the explanatory power of goal-setting theory is limited.

[3] More detailed discussion on the difference between SDT and other goal-based motivation theories can be found in Deci and Ryan (2000), Sheldon, et al. (2003), and Gagné and Deci (2005).

Neither expectancy theory nor goal-setting theory differentiates the different contents of goals and the different motives underlying goal pursuits (Gagné and Deci 2005). For example, goal-setting theory proposes various initiatives to enhance goal commitment, including conveying to employees the superior's legitimate authority (Latham and Saari 1979), providing monetary incentives (Wright 1992), and engaging employees in the goal setting process (Latham, Erez and Locke 1988). From the perspective of SDT, those initiatives will each have differential effects on the form of employees' motivation and thereby on effective performance.

As mentioned in section 2.3, different from these two theories, SDT highlights two critical factors that may impact the outcome and affective experience of goal pursuit: the content of goals, and the motives behind the goal pursuits (Sheldon, Ryan, Deci, and Kasser 2004). First, SDT differentiates intrinsic goals from extrinsic goals. The former goals directly satisfy individuals' innate psychological needs while the latter do so less directly. Second, when individuals pursue personal goals in an autonomous (vs. controlled) way, they tend to invest effort more persistently, and as a result, are more likely to attain those goals. Moreover, when they attain goals that have been well internalized, in contrast with attaining goals that were imposed on them, individuals report higher level of need satisfaction from such goal attainment (Sheldon and Elliot 1998, 1999).

Besides the above-mentioned difference, a more fundamental difference seems to be that SDT examines the innate psychological needs as the basis for studying goal pursuits, whereas other goal-based motivation theories do not build on such analysis. According to Deci and Ryan (2000), two historical reasons contribute

to the lack of attention to need-based analysis in motivation research. First, influenced by the prevailing cognitive paradigm in psychology, motivation research shifted its primary research concept from needs to goals in 1960s. Second, influenced by Vroom's (1964) expectancy-valence framework, the valence of goal attainment is defined functionally. In other words, goal attainment is viewed as attractive as long as it bears utility, whether or not it actually satisfies individuals' innate psychological needs. As a result, the satisfaction of psychological needs associated with goal attainment was largely ignored by goal-based motivation researchers (Deci and Ryan 2000).

In summary, a few features of SDT distinguish it from other motivation theories that are popular in organizational behavior research and accounting research: (1) it is based on the assumption that human beings are inherently self-motivated, but that social contexts can forester as well as forestall such innate tendency; (2) individuals' motivation not only differ in its amount and quantity, but also in its nature and quality; and (3) its analysis of motivational process is based on thorough analyses of basic psychological needs of human beings.

2.6 Research on Motivational Effects of Performance Management Systems (PMS)[4]

This section reviews extant research on motivational effects of PMS. Limitations in this literature are then discussed to guide the design of the studies.

[4] For a review of experimental research on the motivational effect of management accounting systems in general, see Sprinkle (2003, pp. 290-301).

A significant number of studies on the motivational effect of PMS are based on agency theory (see Sprinkle 2003). Consistent with the classic agency model, great attention has been given to the design of performance-contingent monetary rewards, or incentives. Given the attention incentives have received in accounting literature, this review is limited to the literature on incentives only. Specifically, it is limited to agency theory based research on performance measurement systems and on reward systems. Nevertheless, the author acknowledges that abundant studies have been conducted to examine the motivational effects of other components of PMS such as budgeting and performance appraisal. Those studies are based on various theories besides agency theory (e.g., for budgeting research, see Covaleski, Evans III, Luft, Shields 2003) and some of them are reviewed in Chapter 3 when a motivational model of PMS is proposed.

Agency theory based research on performance measurement systems often holds that if the (combination of) performance measures are not congruent with firm objectives, they will "induce managers to do the wrong things" (Merchant, 2006, p. 909). For example, a few analytical studies (e.g., Sliwka 2002; Dutta and Reichelstein 2003) demonstrate that under certain conditions, performance measurement systems that do not include nonfinancial measures or leading indicators can lead to managers' myopic behaviors. Other than congruency, the risk-bearing effect of performance measures is also considered by this literature. An important theme of this research is thus to determine an optimal performance measurement system that maximizes agent's incentives while minimizing the risk that agent bears (Indjejikian 1999; Evans et al. 2006). More specifically, a significant body of this literature focuses on

developing optimal (combination of) performance measures that represent the best trade-offs among a few criteria of performance measures (most often, among congruency, precision and sensitivity) so that the agent's incentives to increase firm value are maximized and the risk imposed on the agent is minimized (e.g., Banker and Datar 1989; Feltham and Xie 1994; Datar, Kulp and Lambert 2001).

Agency theory based research on reward systems has focused on how incentive scheme variables, such as the type of incentive schemes (e.g., piece-rate and flat-rate schemes, budget-based schemes, and tournament schemes), the performance dimension(s) being rewarded, and the magnitude of pay, impact task performance (for a review, see Bonner and Sprinkle 2002).

For instance, whether and to what degree rewards should be given to multiple dimensions of performance has received significant amount of attention in managerial accounting literature (Bonner and Sprinkle 2002). On one hand, it is argued that incentives lead to high levels of effort and thus linking rewards with all dimensions of performance will result in employees' optimal allocation of effort (Prendergast 1999). Consistent with this notion, analytical studies based on agency theory demonstrate that rewarding leading indicators (vs. only rewarding financial performance) is crucial for solving moral hazard problems, especially when the employment horizon is short (Dikolli 2001) and when the principal does not commit to a long-term contract (Dutta and Reichelstein 2003). On the other hand however, agency theorists also argue that rewarding all dimensions of performance can be harmful. For example, not all dimensions of performance can be measured with equal precision. In other words, some of the performance measures (e.g., innovation) are contaminated

with greater noise than are other measures (e.g., sales increase). If employees are risk averse (as assumed by agency theory), rewarding all dimensions of performance can thus lead to a suboptimal allocation of effort and a decrease in overall firm performance (Holmstrom and Milgrom 1991). Some empirical studies (e.g., Jenkins, Mitra, Gupta, and Shaw 1998) indirectly and partially test Holmstrom and Milgrom's (1991) prediction. In general the results show that incentives have a positive effect on the performance of dimensions that are rewarded and have no effect on the performance of dimensions that are not rewarded (Bonner and Sprinkle 2002). But this finding's implication for reward systems is not clear.

Some other studies examine how the magnitude of pay affects task performance. Empirical studies in this area provide mixed results. Specifically, some studies suggest that increasing the level of payments have mixed effects on performance, some show that increasing the level of payments tend to decrease performance, while others show that the level of payments has no effect on performance (Bonner and Sprinkle 2002).

At least a couple of limitations are observed in the extant incentive literature. First, merely "inducing" employees to extend their effort toward firm objectives does not guarantee the achievement of those objectives. For example, employees' readiness to take risks, to innovate, and to acquire new knowledge and skills is crucial for firms' long-term success. However, those variables are by and large unexplored in this literature (Bonner and Sprinkle 2002; Sprinkle 2003). Upon reviewing agency theory based research on incentive systems, Indjeikian (1999) made the following remark: "it appears that the real agency conflict has less to do with getting employees

to work harder…, but more to do with getting them to choose the right combination of actions and decisions that increases shareholder value" (p. 152). This paper contributes to the existent PMS literature by applying SDT to this area of research to examine how PMS characteristics impact the forms of employees' work motivation, which in turn impacts not the *level* of employees' effort, but the *direction* of such effort and the effort invested in learning. Specifically, it examines how employees react to PMS features in terms of their tendency to take risks to sell critical issues to executives and their willingness to acquire new knowledge and skills.

Second, this literature lacks studies that directly examine the motivational mechanism through which incentives impact employees' effort. As Bonner and Sprinkle (2002) noted, the majority of studies on incentives only examine the effect incentives have on task performance, and not the effect on employees' effort (Bonner and Sprinkle 2002), left alone the effect on employees' motivation. Such lack of attention to motivational processes may be due to the fact that this literature is based on economic theories. Otley (1999) suggests researchers study PMS "not just from an economic perspective, but from a social, behavioral and managerial perspective" (p. 381). This paper takes a behavioral approach rather than an economic one, and thus explores a portion of the "black box" of employees' motivational processes.

2.7 Summary

Self-determination theory (SDT) of motivation has received growing attention in various domains such as education, sports management, psychotherapy, religion and organizational behavior research. This theory differentiates autonomous

motivation from controlled motivation because these two types of motivation are found to have differential effect on effective performance and individuals' psychological well-being. Specific initiatives are further proposed to foster individuals' autonomous motivation.

Upon reviewing extant literature on the motivational effect of performance management systems (PMS), incentives literature in particular, this chapter concludes that by applying SDT to PMS research, this paper makes contribution to this literature. In Chapter 3, a motivational model for studying PMS is proposed based on SDT.

CHAPTER THREE

MOTIVATIONAL MODEL AND HYPOTHESES DEVELOPMENT

This chapter presents a SDT-based motivational model for studying PMS and develops testable hypotheses based on this model.

3. 1 A Motivational Model of Performance Management Systems (PMS)

Based on SDT, this paper proposes a motivational model of PMS (see Figure 2). In this model, characteristics of an organization's PMS serve as antecedents to the nature of its employees' work motivation (i.e., autonomous vs. controlled work motivation), which in turn has a significant impact on employees' cognition, behaviors, as well as affective experience. Those antecedent and consequence variables are discussed in detail in section 3.1.1 and 3.1.2, respectively.

Insert Figure 2 Here

3.1.1 Antecedents to Employees' Autonomous and Controlled Motivation: Characteristics of PMS

The selection of antecedents is based on research from two major sources: the accounting literature on PMS and the SDT literature on social-contextual conditions that impact individuals' autonomous and controlled motivation. As shown in Figure 2, the present paper studies only three characteristics of PMS as potential antecedents to employees' autonomous and controlled motivation, but other antecedents can be certainly identified. For example, the type of measures (outcome measures vs. process measures; short-term measures vs. long-term measures) included in performance measurement

systems, and the frequency and nature of the feedback that employees receive about their performance, may have significant effect on employees' autonomous and controlled motivation.

3.1.1.1 Alignment between Reward Systems and Performance Measurement Systems: Performance-Reward Contingency

Very often, reward systems (including compensation plans and non-management incentive plans) are not completely aligned with performance measurement systems. For example, surveys and field studies (e.g., Kaplan and Norton 1996; Ittner and Larcker 2001; Ittner, Larcker, and Meyer 2003; Ittner, Larcker, and Randall 2003) show that firms do not always link their strategic performance measurement systems (SPMS) with their incentive plans. Instead, SPMS sometimes only serve as a strategy management tool[5]. When reward systems are (not) aligned with performance measurement systems, employees receive a reward that is (not) fully contingent on their measured performance. This paper argues that one facet of PMS that potentially impacts employees' autonomous and controlled motivation is the alignment between reward systems and performance measurement systems, i.e., the performance-reward contingency.

SDT's early work, specifically CET, and the research conducted by Eisenberger and his colleagues (e.g., Eisenberger and Cameron 1996, 1998; Eisenberger, Rhoades and Cameron 1999; Eisenberger and Rhoades 2001) provide opposite predictions about how performance-contingent rewards impact employees' motivation. As reviewed in section

[5] As a strategy management tool, SPMS can be used to clarify strategy, communicate strategy throughout the organization, align short-term actions at individual level with long-term strategic objectives at the organization level, and provide real-time feedback on strategy implementation in order to further revise strategy (Kaplan and Norton 1996).

2.3.1, CET (Deci 1975; Deci and Ryan 1980) argues that reward can be perceived as controlling in nature. Thus, rewards can diminish employees' sense of self-determination and undermine their intrinsic motivation. The meta-analysis conducted by Deci, et al. (1999) suggests that all task contingent rewards, including performance-contingent reward, undermine intrinsic motivation as measured by free-choice persistence.

The "undermining" argument has been controversial since its first appearance (Gagné and Deci 2005). Eisenberger and his colleagues (e.g., Eisenberger and Cameron 1996, 1998; Eisenberger, Rhoades and Cameron 1999; Eisenberger and Rhoades 2001) are among its most well-known opponents. Their research suggests that performance-contingent reward and high reward expectancy (i.e., employees' belief that they would get higher pay if they perform well) actually increase, rather than decrease, the sense of self-determination and intrinsic motivation. This line of research (e.g., Eisenberger and Rhoades 2001) also shows that performance-contingent reward actually increases creativity among employees.

The key argument provided by Eisenberger and his colleagues is that performance-contingent reward is not controlling; rather it increases the sense of self-determination. This is because the existence of performance-contingent reward conveys to the employees two pieces of important information: "(a) the organization has little control over the employee's daily job performance beyond minimally acceptable levels, and (b) the employee has the opportunity to choose whether to pursue the reward by altering performance" (Eisenberger et al. 1999 p. 1028). They further argue that performance-contingent reward increases not only the sense of autonomy, but also the sense of competence. Specifically, it is noted that performance-contingent rewards

provide employees with an indication of competence over and beyond that provided by favorable performance feedback (Eisenberger et al. 1999).

Two concerns cast some doubt on conclusions made by Eisenberger and his colleagues about how performance-contingent rewards affect work motivation. First, the positive association between performance-contingent reward and perceived self-determination among employees is observed in survey studies (Eisenberger et al. 1999; Eisenberger and Rhoades 2001). The authors attribute such positive association to the "enhancing" effect of performance-contingent rewards on self-determination. However, this association may be equally well explained by economic mechanisms. For example, for departments (e.g., sales department) where employees have great amount of private information as to how to create firm value and where employees have relatively good control over performance outcomes, agency theory would predict that in order to solve agency problems, the company will grant employees with significant flexibility at work, while adopting reward systems that are highly contingent on performance (Eisenhardt 1989). In other words, information asymmetry and outcome uncertainty/controllability may well result in both high level of perceived self-determination at work and high level of performance-reward contingency. In Eisenberger and Rhoades' (2001) study 4 and study 5, salespeople as well as their coworkers at support positions (e.g., cashiers and clerks) are sampled, but job characteristics such as private information and outcome uncertainty are not controlled for. Therefore, one may argue that the positive association between performance-contingent rewards and employees' perceived self-determination is due to correlated third variables such as information asymmetry and outcome uncertainty, rather than due to the motivational benefit of performance-contingent rewards. To reduce

the contamination of correlated third variables, Study 2 of current paper employs an experiment to examine the effect of performance-reward contingency on employees' motivation.

Second, even if employees do not always perceive performance-contingent rewards as controlling, their controlling aspect may become more salient when SPMS is adopted. More specifically, the controlling aspect may be more salient when rewards are linked with SPMS than when they are linked with traditional financial measures. SPMS are developed based on business causal models that describe how strategic drivers (e.g., investment in employee training and R&D) supposedly result in strategic outcomes (e.g., increase in sales). When rewards are linked with SPMS, reward contingencies are therefore attached not only to the strategic outcome measures but also to strategic driver measures. Under this situation, employees and middle managers may view the hypothetical business models as being imposed on them and view SPMS-based reward systems as means for top management to control the way they deliver on strategic outcomes. As a result, they may feel little volition and sense of autonomy. This speculation is consistent with Merchant (2006), who argues that compared with a reward system that includes only strategic outcome (summary) performance measures, a reward system that defines hypothesized causal links leaves less flexibility and freedom for middle managers to pursue alternative value-creating actions.

Therefore, it is likely that when reward systems are linked with SPMS, compared with when they are linked with traditional financial measures only, employees are more likely to act out of controlled (vs. autonomous) motivation. Given the growing popularity of SPMS in management accounting practice, Study 2 of current paper specifically

examines the effect SPMS-rewards linkage has on employees' autonomous and controlled motivation.

As mentioned in Chapter 2, whether and to what degree reward systems should be linked with multiple dimensions of performance has received significant amount of attention from agency based researchers. Specifically, it is argued that linking rewards with all dimensions of performance will result in employees' optimal allocation of effort (Prendergast 1999). In the context of SPMS, Malina and Selto (2001) note that if important strategic driver measures are not rewarded, employees may not be motivated to act on those drivers; instead, they may allocate effort to actions that are rewarded but bear no strategic importance. On the other hand however, Holmstrom and Milgrom (1991) argue that due to the inaccuracy of some performance measures, rewarding all dimensions of performance can lead to a suboptimal allocation of effort and a decrease in overall firm performance.

SDT suggests another potential drawback of linking reward systems to performance measurement systems. In particular, the linkage between reward systems and performance measurement systems, especially the linkage between reward systems and SPMS, may result in lower (higher) level of autonomous (controlled) work motivation among employees.

Considering the two conflicting streams of research on performance-contingent rewards on employees' motivation (i.e., SDT and the research by Eisenberger and his colleagues), this paper predicts that performance-reward contingency has a significant impact on the form of employees' motivation, but does not predict the direction of such impact.

3.1.1.2 Participative Decision Making in PMS: Providing Choices and Acknowledging Perspectives

As summarized in section 2.3.3, a social context that satisfies individuals' needs for autonomy, competence and relatedness can facilitate their internalization of extrinsic motivation, which leads to higher level of autonomous (vs. controlled) motivation. Specific initiatives that have been found to successfully facilitate individuals' internalization process fall into three categories: (1) acknowledging individual's feelings and perspectives (Deci et al. 1989; Deci et al. 1994), (2) providing choices (Deci et al. 1994), letting individuals take initiatives to make decisions and solve problems relevant to themselves (Deci et al. 1989;), or involving them in important decision making that affects the organization (Lynch et al. 2005), (3) good communication (Gagné, et al. 2000), including providing meaningful rationales (Deci et al. 1994) and positive feedback (Deci et al. 1989).

Consistent with this literature, especially the research on the above category (2), this paper argues that involving employees in PMS related decision making will increase their sense of *autonomy*. Those PMS related decision making include, but are not limited to: (1) formulating and revising strategic plans that eventually lead to the attainment of strategic goals, (2) selecting measures to gauge an organization's performance in achieving its strategic goals, (3) setting targets for each of the performance measures, and (4) evaluating individual's performance.

Noteworthy, prior studies on participative decision making suggest that participative decision making not only better satisfies employees' need for autonomy, but

also better satisfies their needs for competence and relatedness. First, at the instrumental level, participation processes such as participative budgeting serve as a conduit for information exchange between superior and subordinate (Covaleski et al. 2003; Shields and Shields 1998), thereby improving subordinates' understanding of their job. In addition, participation provides employees with opportunity to influence the outcomes of target setting and performance appraisal. These factors may lead to higher levels of perceived *competence* among employees.

Second, a meta-analysis of studies on participation in performance appraisal shows that the so-called "value-expressive participation" (i.e., participation solely for the purpose of having one's "voice" heard) has a stronger effect on employees' satisfaction than does the "instrumental participation" (i.e., participation for the purpose of influencing end results) (Cawley, Keeping and Levy 1998)[6]. Therefore, at a less instrumental level, it appears that when individual's feelings and perspectives are acknowledged, i.e., when their "voice" is heard, the need for *relatedness* is better satisfied. In accordance with this view, Hofstede (1967) contends that participation in decision making can satisfy employees' needs for affiliation, and Locke and Schweiger (1979) also argue that the participative budgeting process increases employees' trust in the organization.

In summary, this paper proposes that the more employees are involved in PMS related decision making, the more likely they will be motivated by autonomous (vs.

[6] Interestingly, Fisher, Frederickson and Peffer's (2000) experiment shows that when the negotiation between superior and subordinate fails and therefore the superior has to impose a budget on the subordinate, the latter's performance significantly drops. This finding suggests that in participation, merely "having one's voice heard" may not be sufficient if employees do not feel a real sense of choice and autonomy.

controlled) motivation to work. This is because such involvement supposedly helps to satisfy employees' needs for autonomy, competence and relatedness.

3.1.1.3 Communicating Business Objectives through PMS: Providing Meaningful Rationales

As mentioned in the previous section, SDT based research has shown that providing meaningful rationales for certain behavior also facilitates the internalization of motivation to engage in such behavior thereby increasing autonomous motivation (Deci et al. 1994; Reeve, Jang, Harde, and Omura 2002). This is because providing individuals with information about the value or importance of such behavior aids individuals to endorse this behavior and further incorporate it in their value systems (Deci and Ryan 2000).

In order to foster employees' autonomous motivation to work, organizations need to ensure that employees understand not only the organization's objectives but also how their effort can contribute to the ultimate attainment of those objectives. Unfortunately, "businesses have become much more complex in recent years, making it more difficult for individuals to comprehend organizational purpose and direction" (Simons 1995, p. 83). One important function of PMS is thus to communicate business objectives and strategies to middle managers and employees (Ferreira and Otley 2005). Ferreira and Otley (2005) further argue that such a communication process is as important as the strategic planning. This paper thus proposes that when PMS (do not) effectively communicate to employees the business objectives and how they can contribute to the

attainment of those objectives, employees are more (less) likely to be motivated by autonomous motivation to work.

For instance, when employees understand well how various performance measures relate to the final business objectives, they are more likely to be motivated by autonomous motivation to work. On the contrary, if they do not see why performance measures and targets are set the way they are, or if they view the target setting process as arbitrary, then they are less likely to be motivated by autonomous motivation.

Compared with traditional performance measurement systems, SPMS appears to be more effective in communicating business objectives to employees. As suggested by Chenhall (2005, p. 396), one key characteristics of SPMS is it "provides an understanding of cause-effect linkages between the operations and strategy and goals, and between various aspects of the value chain including suppliers and customers." The BSC literature (e.g., Kaplan and Norton 1996) also maintains that when they develop SPMS based on explicit business models, it is relatively easy for the organizations to communicate to employees the missions and strategies and how they are to be achieved.

3.1.2 Consequences of Employees' Autonomous and Controlled Motivation

This paper argues that employees' willingness to extend their effort toward prescribed behaviors does not guarantee the increase of firm value. Employees' cognition and behaviors such as the desire to acquire new knowledge and skills, tendency to take the blame for inferior performance, and inclination to proactively influence strategy formation, are at least as important. As shown in Figure 2, this paper thus includes the above-mentioned cognitive and behavioral variables as consequences of employees'

autonomous and controlled motivation. In addition, following Gagné and Deci's (2005) SDT model of work motivation, this paper also includes affective variables as consequences of employees' motivation (see Figure 2). The conceptualization of those consequence variables and how employees' autonomous (vs. controlled) motivation presumably impacts them are discussed as follows.

3.1.2.1 Role Orientation

Role orientation is one type of work orientation, which is a belief system construed by employees about their work roles and work environment (Parker, Wall, and Jackson 1997). Parker et al. (1997) identify two types of interrelated work orientations. *Strategic orientation* is employees' understanding, endorsement and internalization of the organizations' strategic objectives. Successful strategic transformation, such as the adoption of Just-in-time (JIT) management, entails successful transformation of employees' strategic orientation (Parker et al. 1997). However, the change in strategic orientation is not sufficient if the change of *role orientation* does not occur. The latter is the instantiation of strategic orientation at the operational level. It includes first, employees' view of their work responsibilities (i.e., what problems or objectives they feel that they are responsible for) and second, the degree to which they recognize the importance of acquiring and employing new knowledge and skills.

Parker et al. (1997) further tests the effect of job autonomy support on the transformation of employees' strategic orientation and role orientation. Specifically, they conducted field studies in two manufacturing companies that were going through strategic changes. In the first company (study 2), training and communication were

provided to employees, but no initiatives were taken to enhance employees' job autonomy. Subsequently, only changes in strategic orientation, but not in role orientation, were observed among the employees. In the second company (study 3), training was provided coupled with autonomy-supportive initiatives (i.e., establishment of autonomous work teams). Evidence shows that in the second company, employees not only successfully transformed their strategic orientation but also broadened their role orientation. Taking both studies together, Parker et al. (1997) conclude that work autonomy is an important predictor of employees' role orientation.

Based on Parker et al. (1997), this paper proposes that when employees are motivated by autonomous (vs. controlled) motivation, they are more likely to develop role orientation that keeps pace with the firm's strategic changes. Specifically, when motivated by autonomous (vs. controlled) motivation, they are more likely to broaden their job responsibilities and to regard acquiring new knowledge and skills as an important part of their job.

3.1.2.2 Self-Serving Attribution

Individuals can be vulnerable to the self-serving attributional bias, i.e., the tendency to make greater attribution to personal factors for success than for failure (Ross and Fletcher 1985; Pyszczynsk and Greeberg 1987). In other words, individuals tend to take too much credit for superior performance and refute responsibility for poor performance. In general, evidence supports the proposition that self-serving attribution is mainly driven by the desire to protect one's self-image (Pyszczynski, and Solomon 1982; Greenberg 1991; Greenberg, Ditto and Lopez 1992). Self-serving attribution among

employees can be harmful to organizations' performance. For example, it is found that relationship conflict among coworkers occurs more often at times of low performance (Peterson and Behfar 2003), and it is plausible that self-serving attribution is one potential source of such conflict. Self-serving attributional bias may also lead to conflict between subordinates and superiors. For instance, Wong-On-Wing, Guo, Li and Yang (2007) find that executives and divisional managers differ in their attribution for the latter's poor performance.

Interestingly, Knee and Zuckerman (1996) find that individuals who are high in autonomy causality orientation and low in control causality orientation are not vulnerable to self-serving attributional bias. This result can be explained by an earlier finding that those individuals tend to view unsolved problems as challenges to be mastered rather than threats to their competence, i.e., they are to a lesser degree ego-involved (Koestner and Zuckerman 1994). As a result, those individuals may feel a lesser need to make biased attribution in order to protect their self-images.

Knee and Zuckerman's (1996) study is limited to the effect of causality orientation (which is a personality trait) on self-serving attribution. This paper extends their study by examining the effect that autonomous (vs. controlled) work motivation (which can be a motivational state) has on self-serving attribution. Specifically, it predicts that employees' autonomous (vs. controlled) work motivation is associated with a relatively low tendency to make self-serving attribution for performance.

3.1.2.3 Proactive Work Behaviors

Grant and Ashford (in press) define proactive work behavior as anticipatory, self-starting and agentic action that employees engage in to impact themselves or their working environments. Similarly, Parker and Collins (2006) include two elements in the definition of proactive work behavior: *anticipation* and *taking control.* Other than anticipation and taking control, other elements such as *persistence when encountering obstacles* are also included in the conceptualization of proactive behaviors (Frese and Fay 2001; Parker and Collins 2006). Examples for proactive work behavior include anticipating and preventing problems before they occur, flexibly adapting to new market conditions (Parker, Wall, and Jackson 1997) and generating and implementing new ideas (Parker, Williams and Turner 2006).

Proactive work behavior has received growing attention in business research since 1990. This is due to the importance of proactivity in today's workforce when organizations have been transformed from production economies to knowledge economies, and when promoting creativity, innovation, and organizational change is essential for the survival of organizations (Grant and Ashford in press). Similarly, management accounting researchers (e.g., Sprinkle 2003) urge scholars to study how managerial accounting systems can motivate employees to take risks (both compensation risk and human capital risk) to change, to innovate and to learn. It is believed that these behaviors are crucial for a firm's long-term success.

Although SDT research has found that autonomous (vs. controlled) motivation is often associated with various positive outcomes, proactive work behavior has received little attention in this research. This paper predicts that employees' autonomous

(controlled) motivation is associated with their higher (lower) inclination to engage in proactive work behavior for the following reason.

By definition, proactive work behavior has to be "self-starting" or "agentic" and the actor is "taking control" (Parker and Collins 2006; Grant and Ashford in press). In other words, employees engage in work behaviors proactively only when they feel volition and a sense of choice, and do not feel controlled by external forces. Therefore, it is posited that autonomous (controlled) motivation or (lack of) sense of autonomy is positively (negatively) associated with employees' proactive work behaviors. Consistent with this conjecture, research on antecedents to proactive work behaviors shows that job autonomy is an important predictor of proactive work behaviors. For example, a survey conducted by Parker et al. (2006) shows that job autonomy predicts wire makers' proactive work behavior in the domains of problem-solving and idea implementation. Job autonomy is also found to be associated with other types of proactive behaviors such as pro-social rule-breaking (Morrison 2006) and role expansion (Parker et al. 1997; Axtell and Parker 2003).

A study by Parker and Collins (2006) shows that there are distinctive types of proactive work behaviors: proactive career behavior, proactive work role behavior, and proactive strategic behavior (PSB). Among them, PSB is of special interest of this paper because only PSB is initiated by employees to impact the long-term success of the organization. Specifically, PSB is a behavior that employees engage in to proactively influence the formation of strategies. Formulated strategies may be based on invalid or suboptimal business causal models as to how to create firm value (Kaplan and Norton 1996). Middle managers and non-management employees, rather than top executives,

often have the informational advantage to respond to ever changing business conditions and to challenge the hypothesized causal models and existent strategies (Kaplan and Norton 2001). Thus, their readiness to engage in proactive strategic behaviors, such as challenging the validity of current strategies and promoting alternative strategic plans, are crucial for a company's long-term success.

3.1.2.4 Job Satisfaction

Judge, Thoresen, Bono, and Patton's (2001) meta-analysis of 312 studies suggests that overall job satisfaction is moderately associated with job performance ($r = 0.30$), with the strongest moderator being task complexity. In other words, the more complex the task is, the stronger the positive relationship is between job satisfaction and job performance. Therefore, even if only the instrumentality of job satisfaction was considered, examining how PMS characteristics impact employees' job satisfaction is valuable.

As reviewed in Chapter 2, SDT based research suggests that when they attain personal goals that they pursue for autonomous reasons, in contrast with attaining goals that were imposed on them, individuals report higher levels of need satisfaction from such goal attainment (Sheldon and Elliot 1998). Sheldon and Elliot (1999) further propose a "self-concordance model" wherein goals that are self-concordant (i.e., goals that are consistent with one's values or interests), in contrast with goals that are imposed, result in not only greater likelihood of goal attainment, but also greater need satisfaction and psychological well-being upon the goal attainment.

Consistent with the above proposition, Bono and Judge's (2003) survey study conducted in nine organizations shows that the more employees pursue job-related goals for autonomous reasons, the more they are satisfied with their current job (coefficient = 0. 27). No significant relationship is found between controlled work motivation and job satisfaction. This paper therefore predicts that when employees' are to a greater (lesser) degree motivated by autonomous motivation to work, they will be more (less) satisfied with their current job.

3.1.2.5 Organizational Commitment

Organizational commitment is loyalty to the organization, and has been defined as "the relative strength of an individual's identification with and involvement in a particular organization" (Porter et al. 1974). Subsequent research (see review by Ketchand and Strawser (2001)) has distinguished between the continuance commitment and the affective commitment dimensions of organizational commitment. The continuance commitment dimension reflects individuals' desire to remain with their organization. In contrast, Ketchand and Strawser (2001, 223), note that the affective commitment dimension reflected in Porter et al.'s (1974) definition, "… is based on an individual's emotional attachment to an organization formed because that individual identifies with the goals of the organization and is willing to assist the organization in achieving these goals (emphasis added)."

Two unpublished studies, Gagné and Koestner (2002), and Gagné, Boies, Koestner, and Martens (2004), find positive correlations between affective organizational commitment and autonomous motivation. Specifically, using longitudinal design, Gagné

and Koestner (2002) demonstrate that autonomous motivation at the beginning of the study predicts organizational commitment at the end of the study. In this study, organizational commitment is operationalized as the "identification" and "internalization" dimensions of organizational commitment introduced by O'Reilly and Chatman (1986)[7]. Gagné et al. (2004) conduct three cross-sectional survey studies, all of which show that autonomous motivation positively correlates with affective organizational commitment, as defined by Allen and Meyer (1996).

In addition, Bono and Judge (2003) reviewed in the previous section show that the more employees pursue job-related goals for autonomous reasons, the more they are committed to their organization (coefficient = 0.23). Similar with Gagné et al. (2004), the organizational commitment in this study is operationalized as affective organizational commitment, as defined by Allen and Meyer (1996).

Consistent with the above-mentioned literature, this paper predicts that when employees' are to a greater (lesser) degree motivated by autonomous motivation to work, they will demonstrate greater (lower) level of affective organizational commitment.

3.2 The Hypotheses

Six testable hypotheses are developed based on the motivational model of PMS (see Figure 2). Those hypotheses are summarized in Figure 3. The sign beside each hypothesis indicates the expected direction of the relationship. Note that compared with the motivational model, the hypotheses are more specific and thus more narrow in terms of research scope. In particular, only one dimension of role motivation (i.e., recognition

[7] According to O'Reilly and Chatman (1986)'s conceptualization, the third dimension of organizational commitment is compliance. This dimension is believed to be related to controlled motivation rather than autonomous motivation, specifically, to be related to external regulation (Gagné and Deci 2005).

of the importance of acquiring new knowledge and skills), self-serving attribution, and one form of proactive work behaviors (i.e., PSB) are examined as consequence variables of employees' autonomous (vs. controlled) motivation. Affective consequences such as job satisfaction and organizational commitment are not examined empirically by this paper.

Insert Figure 3 Here

The first three hypotheses (H1, H2 and H3) predict the relationship between PMS characteristics and employees' autonomous and controlled motivation to work. Based on the conflicting predictions provided by CET on performance-contingent reward and Eisenberger and his colleagues on the same topic, this paper proposes the following two opposite hypotheses with regard to the effect of alignment between reward systems and performance measurement systems.

H1a: The more (less) reward systems are aligned with performance measurement systems, the more (less) employees will be motivated by autonomous (vs. controlled) motivation to work.

H1b: The more (less) reward systems are aligned with performance measurement systems, the less (more) employees will be motivated by autonomous (vs. controlled) motivation to work.

SDT research in both work and non-work settings suggests that when individuals are provided with the opportunity to make important decisions and when their feelings and perspectives are well acknowledged, they are more likely to act out of autonomous motivation. Applying this literature to PMS research, this paper proposes H2 as follows.

H2: The more (less) involved employees are in PMS related decision making, the more (less) they will be motivated by autonomous (vs. controlled) motivation to work.

Based on research on how providing rationales for certain actions can facilitate the internalization of extrinsic motivation, this paper proposes H3 as follows.

H3: The more (less) effective the PMS are in communicating business objectives to the employees, the more (less) they will be motivated by autonomous (vs. controlled) motivation to work.

The remaining three hypotheses (H4, H5, and H6) relate to the potential consequences of employees' autonomous and controlled motivation. Mainly based on Parker and her colleagues' research on role orientation, H4 predicts that autonomous (vs. controlled) work motivation facilitates the transformation of one dimension of employees' role orientation (i.e., the degree to which they recognize the importance of acquiring new knowledge and skills).

H4: When they are more (less) motivated by autonomous (vs. controlled) motivation to work, employees will to a greater (less) degree broaden their role orientation such that they to a greater (less) degree recognize the importance of acquiring new knowledge and skills.

Based on Knee and Zuckerman's (1996) research on causality orientation and self-serving attribution, H5 predicts that autonomous (vs. controlled) work motivation results in employees' lower vulnerability to self-serving attributional bias.

H5: When they are more (less) motivated by autonomous (vs. controlled) motivation to work, employees will be less (more) likely to make self-serving attribution for performance.

Based on SDT, H6 predicts that autonomous (vs. controlled) work motivation leads to employees' greater tendency to engage in one type of proactive work behavior, i.e., PSB. Recall that among three types of proactive work behavior only PSB is initiated by employees to impact the long-term success of the organization.

H6: When they are more (less) motivated by autonomous (vs. controlled) motivation to work, employees will be more (less) likely to engage in proactive strategic behavior.

In summary, this paper applies SDT to performance management systems (PMS) research, and argues that characteristics of PMS can either foster or forestall employees' autonomous work motivation. Those characteristics include but are not restricted to the alignment between reward systems and performance measurement systems, the employees' participation in PMS related decision making, and the effectiveness of PMS in communicating business objectives to the employees. These PMS characteristics will in turn influence important variables such as employees' role orientation, attribution tendency, proactivity, job satisfaction and organizational commitment. A motivational model of PMS (see Figure 2) is proposed to incorporate the abovementioned relations. Based on this model, six testable hypotheses are developed (see Figure 3). In Chapter 4, two studies are presented to test the hypotheses.

CHAPTER FOUR

METHODOLOGY

Chapter 4 presents two studies that were designed to test the six hypotheses developed in Chapter 3. Study 1 tested H1, H2, H3, H4 and H5 by conducting structural equation modeling (SEM) analyses of survey data available from a separate research project. Study 2 contained a case-based experiment and tested H1, H2 and H6.

4.1 Study 1: Structural Equation Modeling (SEM) Analysis of Survey Data

4.1.1 Overview

The data used in Study 1 was from a separate research project conducted by Lui, Wong-On-Wing, and Guo (2006). This research project consisted of a series of self-reported questionnaires. Students enrolled in evening business classes at a university in Hong Kong responded to those questionnaires. The variables that were of interest in the study were a segment of the variables that were measured in that study. Specifically, the current study used data on characteristics of PMS, autonomous and controlled work motivation, and various outcome variables of autonomous and controlled motivation. Other responses that were elicited but not included in the analyses of this study involved internal controls and fraud related issues.

Self-report questionnaires have been criticized for their vulnerability to contaminations such as social desirability and selective memory (Howard 1994). However, as noted by Spector (1994), self-reports provide good insight in individuals' feelings and perception about their job environment, and they are especially useful for exploratory studies. In addition, there are serious problems that are associated with

alternative strategies such as physiological measures, behavioral measures and third-party ratings (Howard 1994). For example, third-party raters, such as superiors and colleagues, are vulnerable to observational bias and halo effect (Lance, 1994; Lance, Lapointe, and Stewart 1994; Woehr, 1994). Frese, Fay, Hilburger, Leng, and Tag (1997) also argue that since proactive work behavior is often viewed negatively by superiors and colleagues, self-report may be a more accurate measure of proactive work behavior than third-party rating. Therefore, it is believed that self-report questionnaire is appropriate for the type of research questions this paper is to address.

Confirmatory factor analysis (CFA) was first conducted to confirm the factorial structure of a newly developed scale that measured characteristics of PMS. CFA or exploratory factor analysis (EFA, conducted for less established measures) were then conducted to ensure the uni-dimensionality of the other measures. A structural model was subsequently estimated to test the hypothesized relations between characteristics of PMS and autonomous (vs. controlled) motivation, and between autonomous (vs. controlled) motivation and consequence variables.

4.1.2 Survey Respondents

In management control systems research, there is a debate between drawing respondents from different organizations (e.g. Merchant and Manzoni 1989) versus from one organization (e.g., Otley and Pollanen 2000). Both methods have their strengths and weaknesses. As noted by Otley and Pollanen (2000), drawing respondents from a wide range of different organizations allows results to be generalized, whereas restricting sampling to one organization better controls for the differences in management control

practices that exist in different organizations. This paper examines how management control systems, PMS in particular, impact employees' motivation and other consequences. Therefore, the current study used data that was obtained from employees of different organizations with the intention to capture variance in management control systems rather than to control for it.

The survey responses used by the study were provided by 135 students enrolled in evening business classes at a university of Hong Kong. The companies they worked for were in different industries. Fifty two percent of the respondents were male, and the average age was 32.6 years (SD=6.58). On average, they had worked at their current positions for 4.2 years (SD=2.83), and the average length of job tenure was 6.4 years (SD=4.17). Fifty five percent of them held management positions. The respondents completed the survey as part of the class requirement and were not compensated.

4.1.3 Measurement of Variables

4.1.3.1 Characteristics of PMS (CPMS) Scale

A 10-item scale (i.e., the CPMS scale, see Table 1) developed by Lui et al. (2006) was used to measure the characteristics of PMS. This scale consisted of three subscales: (1) Participative decision making in PMS (*Participation* subscale), i.e., the degree to which employees participate in the process of performance measure selection, goal setting, and performance appraisal. (2) Communicating business objectives (*Communication* subscale), i.e., the degree to which PMS provide employees with information about how performance measures are related to business objectives and why certain measures or targets are chosen to measure their performance. (3) Performance-

reward contingency (*Contingency* subscale), i.e., the degree to which the rewards (punishment) employees receive are contingent on their measured performance. The rewards include both financial (e.g., obtaining bigger bonus and departmental budget) and non-financial (e.g., reputation and recognition) ones.

Insert Table 1 Here

Respondents indicated the extent to which they agreed with each item by responding to a 7- point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for the Participation subscale was "I am very frequently asked to participate in choosing the criteria used to evaluate my performance"; a sample item for the Communication subscale was "measures of my performance seem to be unrelated to my department goals (reverse)"; and a sample item for the Contingency subscale was "it is extremely important for me to achieve my performance targets if I want to obtain financial rewards such as salary increases or bonuses."

Based on a survey administered to a development sample, Lui et al. (2006) found that the CPMS scale had adequate internal reliability, discriminant validity, and predictive or criterion validity. Specifically, the standard Cronbach's alpha for the Participation, Communication, and Contingency subscales were 0.77, 0.84, and 0.80, respectively. The three subscales measured distinct latent constructs that were different from superiors' autonomy support. The factor scores of the Communication and Participation subscales positively predicted employees' basic psychological need satisfaction, while that of the Contingency subscale was negatively associated with the satisfaction of their need for relatedness. Since the CPMS scale has not been used by

prior research, the current study validated the scale's factorial structure before it was used for hypotheses testing.

4.1.3.2 Confirmatory Factory Analysis of the CPMS Scale

A CFA was performed on a three-factor measurement model of the CPMS scale (see Figure 4). The specification of this CFA model was based on the EFA results of this scale obtained by Lui et al. (2006). The following indices were used to evaluate the fit of this model: Chi-square significance (Bollen 1989), χ^2/degree of freedom ratio (χ^2/df; Wheaton, Muthen, Alwin, and Summers 1977), normed fit index (NFI; Bentler and Bonett 1980), comparative fit index (CFI; Bentler 1990), Tucker-Lewis index (TLI; Tucker and Lewis 1973), and root mean square error of approximation (RMSEA; Steiger and Lind 1980). An insignificant probability associated with Chi-square (Bollen 1989), NFI, CFI and TLI close to or greater than 0.95 (Hu and Bentler 1999), and RMSEA value less than 0.05 (Browne and Cudeck 1993) indicate a superior fit. However, as Hu and Bentler (1999) noted, when sample size is small, the RMSEA value may over reject true models. More liberal cutoff criteria for the RMSEA value were proposed. For example, when the RMSEA value ranges from 0.05 to 0.08, the model is believed to provide a reasonable fit (Browne and Cudeck 1993), and when it ranges from 0.08 to 0.10, the model is believed to provide a mediocre fit (MacCallum, Browne, and Sugawara 1996). AMOS program was used to conduct the CFA.

Insert Figure 4 Here

The initial model for CPMS did not provide a satisfactory fit (Chi-square [df=32] =103.96, $p<0.01$; $\chi^2/df=3.25$; NFI=0.97; CFI=0.98; TLI=0.97; RMSEA=0.13) (see Figure 5A). To improve the overall model fit, item 10 was deleted from the model. The rationale follows. The modification indices provided by AMOS program suggested that by allowing item 10 to cross-load on the Communication factor (factor loading = -0.37), and/or letting the error term associated with item 10 (i.e., e10) correlate with the error term associated with item 7 (i.e., e7) (correlation = -0.69), the model fit could be significantly improved. However, these suggested modifications appeared to be arbitrary and not substantively meaningful. Therefore, item 10 was simply dropped. After removing item 10, the revised model provided a better fit (Chi-square [df=24] =65.42; $p<0.01$; $\chi^2/df=2.73$; NFI=0.98; CFI=0.99; TLI=0.98; RMSEA=0.11) (see Figure 5B).

Insert Figure 5 Here

As shown in Figure 5B, the item loadings were all over 0.50 and significant at the 0.01 level. The Participation factor score positively correlated with both the Communication factor score (correlation=0.39, $p<0.01$) and the Contingency factor score (correlation=0.44, $p<0.01$). The correlation between Communication and Contingency factor scores was not significant (correlation=0.17, $p=0.12$). The standard Cronbach's alphas for the Participation subscale (item 1, 2, and 3), Communication subscale (item 4, 5, and 6), and Contingency subscale (item 7, 8, and 9) were 0.79, 0.72, and 0.77, respectively.

4.1.3.3 Measurement of Other Variables

Superior's Autonomy Support

To evaluate whether characteristics of the PMS had an effect on employees' autonomous and controlled motivation beyond the effect of their Superiors' Autonomy Support, the responses to the latter were included in the data analysis. The six-item short version of Work Climate Questionnaire (WCQ, Baard et al. 2004, see Table 2) measured the degree to which employees perceived their superiors' interpersonal style to be autonomy supportive. On a 7- point Likert scale, respondents indicated the extent to which they agreed with the description of their experience with their superior. A sample item was "I feel that my manager provides me choices and options." WCQ has been found to be a reliable measure and it predicts satisfaction of employees' needs for autonomy, competence and relatedness, and in turn predicts employees' performance as well as their psychological well-being (Baard et al. 2004).

Insert Table 2 Here

The standard Cronbach's alpha of this scale was 0.91. CFA conducted on a one-factor measurement model indicated that all six items loaded on one factor and item loadings were all over 0.65.

Autonomous and Controlled Motivation

Autonomous and controlled motivation were measured following the SDT literature (e.g., Grolnick and Ryan 1987; Sheldon and Kasser 1998; and Sheldon and Elliot 1999) with minor changes of wording specified as follows. Respondents indicated

on 9-point scales the extent to which they tried to achieve their departmental goal(s)[8] because of the following four reasons: "somebody else wants you to or thinks you ought to, or because you'll get something from somebody if you do" (external regulation), "because you would feel ashamed, guilty, or anxious if you didn't" (introjected regulation), "because you really believe that it's an important goal to have" (identified regulation), and "because of the fun and enjoyment which the goal provides you" (intrinsic motivation). The first two types of regulations are controlled types of motivation and the last two are autonomous types of motivation. The relative autonomy index (RAI, Grolnick and Ryan, 1987) was derived to measure the strength of autonomous motivation relative to controlled motivation. Specifically, RAI was a linear function of the four scores, i.e., RAI = (-2)*external regulation + (-1)*introjected regulation + (1)*identified regulation + (2)*intrinsic motivation.[9]

Goal Commitment

One fundamental notion of SDT is that not only the amount, but also the nature, of individuals' motivation matters (Gagné and Deci 2005). This paper thus argues that to test the unique effect of the *nature* of work motivation (i.e., autonomous vs. controlled motivation), the effect of the *amount* of motivation should be ruled out. In other words, it is important to demonstrate autonomous (vs. controlled) work motivation predicts outcome variables beyond the amount of motivation. This paper uses employees' goal

[8] Before the respondents answered the questions on autonomous and controlled motivation, they were asked to indicate the department they were working for, describe the major function(s) of their department, and to describe the most important goal(s) for their department to achieve during that year.

[9] Noteworthy, Vansteenkiste, Zhou, Lens, and Soenens (2005) recommend breaking the overall measure of RAI into autonomous and controlled motivation because the two types of motivation are predictors of distinctive behavioral outcomes. But RAI is still the most common measure of autonomous (vs. controlled) motivation in the SDT literature. Study 2 of this paper used two separate measures to test the hypotheses, i.e., the Autonomous Motivation (AM) and the Controlled Motivation (CM). For details, see section 4.2.6.

commitment as the proxy for the amount of motivation (in contrast to the type of motivation) for the following reasons.

Goal commitment is defined as an individual's determination to achieve a certain goal (Locke and Latham 1990). It has been viewed as one of the central concepts in the goal-setting literature because numerous empirical studies have found that especially when the goal is difficult, goal commitment is a strong predictor of performance (Klein et al. 1999). As discussed in Chapter 2, goal-setting theory does not differentiate among the various forms of motivation underlying goal pursuits (Gagné and Deci 2005). As a result, under goal-setting theory, the conceptualization of goal commitment denotes mainly individuals' amount of determination to achieve goals without directly tapping the motives behind such determination. According to Klein et al. (2001), this concept embraces the following three elements: "the intention to extend effort toward goal attainment," "persistence in pursuing that goal over time," and "an unwillingness to lower or abandon that goal" (p. 34).

The meaning of goal commitment is more evident when one considers its antecedents. Using an expectancy theory framework, Hollenbeck and Klein (1987) propose that the central antecedents to goal commitment are the expectancy and the attractiveness of goal attainment. The positive relations between these two antecedents and goal commitment are later confirmed by a meta-analysis of 83 studies (Klein et al. 1999). Based on the above, this paper holds that goal commitment, as defined by goal-setting theorists, mainly captures the amount of motivation to achieve a goal, and not the form of such motivation.

Although it is believed that Goal Commitment is distinct from the type of motivation, it is possible that positive association exists between the two constructs. First of all, Sheldon and Kasser (1998) find that autonomous motivation leads to greater level of persistence during goal pursuits. Second, volition in the goal setting process and supervisor supportiveness are believed to be distal predictors of goal commitment (Hollenbeck and Klein 1987). Based on SDT, volition at work and supervisor supportiveness will result in higher level of autonomous (vs. controlled) work motivation. Therefore, it is likely that volition and supervisor supportiveness increase the level of goal commitment through the enhancement of autonomous (vs. controlled) motivation. Based on the above reasoning, this study expects that autonomous (vs. controlled) motivation is positively associated with Goal Commitment.

The five-item short version of the Goal Commitment scale developed by Hollenbeck, Williams, and Klein (1989) was used. The short version was preferred over the long version because it was found to be "unidimensional and equivalent across measurement timing, goal origin, and task complexity" (Klein et al. 2001, p. 33). The word "goal" in the original instrument was replaced by "department goal(s)" to fit with the current context.

The standard Cronbach's alpha of this 5-point Likert scale was 0.92 in the current study. CFA conducted on a one-factor measurement model indicated that all five items loaded on one factor and item loadings were all over 0.70.

Role Orientation: The Importance of Knowledge and Skills

Responses to a sixteen-item Role orientation (Knowledge) scale developed by Parker et al. (1997) (see Table 3) were used to test H4. Respondents were asked to

evaluate on a 7-point Likert scale, how important certain skills and knowledge were in order for them to do their job effectively. For example, item 2 was "being able to measure and analyze problems in the production process," and item 9 "knowing the root causes of production problems that occur." Since the original scale was developed for manufacturing settings, it was reworded so that it could be used among respondents working in various industries. Specifically, the word "production" was replaced by the word "work" in item 1, 2, and 3, and the word "products" was replaced by "goods and/or services" in item 13. In addition, in Parker et al. (1997), item 4 used in their Study 1 (i.e., "being able to make decisions as part of a group") was different from item 4 used in their study 3 (e.g., "knowing how to assess the performance of the work group"). Both items were measured.

Insert Table 3 Here

The standard Cronbach's alpha of this 16-item scale was 0.98 in this study. Given that Parker et al. (1997) did not conduct factor analysis on this scale and it had not been used by prior research, EFA was conducted to ensure its uni-dimensionality. Specifically, principal component analysis with oblimin rotation was used. Two eigenvalues greater than one (12.51 and 1.17) were derived. All items but item 12 (factor loading=0.03) and item 15 (factor loading=-0.07) significantly loaded on the first factor with factor loadings greater than 0.45. Item 12 and item 15 were therefore deleted. EFA was conducted again on the remaining 14 items and only one eigenvalue greater than one (11.76) was derived suggesting that the revised scale was uni-dimensional. After removing item 12 and 15, the standard Cronbach's alpha of the scale was 0.98.

Strategic Orientation

Besides Role orientation (Knowledge), Strategic Orientation was also included in the SEM analysis. The reasons for including it in the analysis follow. First, as mentioned in Chapter 3, Parker et al. (1997) found that job autonomy was critical for broadening employees' role orientation, but not for transforming their strategic orientation. Strategic Orientation was thus included in the structural model to examine whether autonomous (vs. controlled) motivation only had an effect on Role Orientation (Knowledge), but not on Strategic Orientation. Second, Parker et al. (1997) also noted that successful transformation of employees' strategic orientation was a necessary but not sufficient condition for broadening their role orientation. Supposedly, by including Strategic Orientation as a predictor of Role Orientation, more variance of Role Orientation can be explained by the model.

The 10-item Strategic Orientation scale developed by Parker et al. (1997, study 3, see Table 4) was measured. Respondents indicated on 7-point Likert scales the degree to which they agreed with various beliefs about work in general. All the items were reverse-worded, i.e., lower responses indicated their beliefs about work that match modernized organizations. For example, item 1 was "in the long run, work is more efficient if people stick to what they already know, rather than learning new things (reverse)," and item 9 was "if I know what to do and how to do it, I am not concerned about why (reverse)." Similar with the Role Orientation (Knowledge), the original scale of Strategic Orientation was developed for manufacturing companies. It was reworded so that it could be used among respondents working in different industries. Specifically, the word "production" was replaced by the word "work" in item 1, and item 5 was changed from "it is important

to keep making products, even if they go into stock rather than directly to customers" to "it is important for the company to maintain its productivity even when business is slow."

Insert Table 4 Here

The standard Cronbach's alpha of this scale was only 0.06 compared with 0.79 reported by Parker et al. (1997)[10]. To improve the internal reliability of this scale, item 5, 6 and 7 were first deleted due to their negative or zero item-total correlations (-0.78, -0.53 and 0 for item 5, 6, and 7, respectively)[11]. After the deletion, the standard Cronbach's alpha of the scale rose to 0.72.

To ensure the uni-dimensionality of this scale, EFA was conducted using principal component analysis with oblimin rotation. Two eigenvalues greater than one (2.88 and 1.33) were derived. Specifically, item 1, 2, 9 only loaded on the first factor; item 4 and 10 only loaded on the second factor, and item 3 and 8 loaded on both factors. It appears that this scale may not be uni-dimensional. A series of CFA's were thus conducted to compare variations of one-factor models with variations of two-factor models. In all variations of two-factor models, a few item loadings were lower than the

[10] Parker et al. (1997)'s strategic orientation scale was developed for manufacturing firms that are going through modernization such as implementing Just-In-Time production. However, by definition, strategic orientation is employees' endorsement and internalization of the organization's strategic objectives. Thus, in theory, the measure of strategic orientation should vary organization by organization because different organizations have different strategic objectives. The respondents in current study were from different organizations but only one measure of strategic orientation was used. This was possibly why the psychometrics of this scale was poor in this study. Besides the poor internal reliability, the item means and variances of the scale items were far from ideal. Specifically, most items tended to have small variances (lower than 0.9) with means near the lower end (lower than 3).

[11] It seems reasonable to question the validity of item 6 ("I could do my job perfectly well without knowing the company's overall objectives.") and item 7 ("I find it reassuring if there is always a large pile of work waiting for me to work on.") because Parker et al. (1997) used different item 6 and item 7 in study one compared with in study 1 and 2.

acceptable level of 0.4. One variation of the one-factor model[12] appeared to be overall superior to other models in terms of parsimony, model fit and factor loadings. Specifically, this model provided a better fit (Chi-square [df=12] =34.65; $p<0.01$; $\chi^2/df=2.89$; NFI=0.99; CFI=0.99; TLI=0.98; RMSEA=0.12) than did other models, and factor loadings of all items, except for that of item 4 (factor loading = 0.24), were above 0.40.

Based on the above analyses, item 4 was then deleted so that the remained six-item scale could be uni-dimensional. The standard Cronbach's alpha of this 6-item scale was 0.77.

Self-Serving Attribution

H5 predicts that employees who to a great degree are motivated by autonomous (vs. controlled) motivation are less vulnerable to self-serving attributional bias, which is the tendency to attribute more to internal factors for good performance and less to internal factors for poor performance. Internal attribution was measured following Weiner's (1980, 1992) framework. Specifically, respondents first rated their recent performance on a 9-point scale (1 to 3 represented below average, 4 to 6 represented average, and 7 to 9 represented above average). Subsequently they attributed their performance to two internal factors (i.e., ability and effort) and two external factors (i.e., luck and task difficulty). Specifically, they allocated 100 points among those four factors according to their relative importance in determining their recent performance. The percentage of points assigned to ability and effort represents one's internal attribution.

[12] In this model, the following two correlations were estimated: the correlation between the error term associated with item 2 and that associated with item 9, and the correlation between the error term associated with item 1 and that associated with item 3. The estimated correlations were 0.53 and -0.22, respectively.

When regressing the internal attribution score on self-rated performance, a positive and significant (a negative or insignificant) standard coefficient for performance would suggest the presence (absence) of self-serving attribution bias.

Task Uncertainty

Task Uncertainty was included in the analysis as a potential moderator on the relation between autonomous (vs. controlled) motivation and various consequence variables. The reason for doing so follows. After surveying scores of SDT based studies, Gagné and Deci (2005) conclude that autonomous motivation enhances effective performance and individuals' well-being "particularly if the task requires creativity, cognitive flexibility, or deep processing of information" (p. 341). In current context, autonomous work motivation may be especially important for employees whose job related tasks are novel and uncertain, rather than routine and structured. The moderating effects of Task Uncertainty were therefore examined in this study.[13]

Task Uncertainty was measured using a 10-item scale developed by Withey (1983). This scale has been used in multiple accounting studies such as Brownell and Hirst (1986) and Lau, Low and Eggleton (1995). It included two subscales: exceptions and analyzability, each of which consisted of five items. Respondents indicated on 7-point Likert scales the degree to which they thought those items were descriptive of their work. All items were reverse-worded so that the lower the responses, the more respondents viewed their job related tasks as uncertain. A sample item for the exceptions subscale was "to what extent would you say your work is routine (reverse)," and a sample

[13] This research approach is consistent with prior studies that investigate how task uncertainty and/or job difficulty interact with participative budgeting and impact performance and other outcome variables (e.g., Brownell and Hirst 1986; Mia 1989; Brownell and Dunk 1991; Lau, Low and Eggleton 1995).

item for the analyzability subscale was “to what extent is there a clearly known way to do the major types of work you normally encounter (reverse)”?

The standard Cronbach’s alpha of the scale was 0.86. A two-factor CFA model was then estimated to confirm its factorial structure. The model reached a good fit and all items loadings were over 0.60. Note that the uni-dimensionality was not important for the Task Uncertainty scale because it was not included in the structure model (for the method to test the moderating effects of Task Uncertainty, see section 5.1.4).

4.1.4 Theoretical Structural Model

The theoretical model presented in Figure 6 was evaluated using SEM analysis and the results are presented in Chapter 5. In this model, Superior’s Autonomy Support was included in order to examine the effect of the characteristics of PMS on RAI over and beyond the effect of Superiors’ Autonomy Support. Similarly, Goal Commitment was included in order to test the effect of RAI on consequence variables over and beyond the effect of Goal Commitment. In addition, Strategic Orientation was included to demonstrate that RAI only impacts Role Orientation but not Strategic Orientation. Moreover, although not hypothesized, as mentioned in previous section, Strategic Orientation was expected to predict Role Orientation (Knowledge), and RAI was also anticipated to predict Goal Commitment. In Figure 6, hypothesized paths are presented in solid lines, whereas not hypothesized paths (e.g. the one from Superior’s Autonomy Support to RAI) appear in dotted lines.

Insert Figure 6 Here

4.2 Study 2: Experiment

A cross-sectional method, such as the one used in Study 1, does not allow causal inferences to be drawn (Shadish, Cook and Campbell 2002). Study 2 therefore conducted a case-based experiment to test selected hypotheses (i.e., H1, H2 and H6) among middle managers. Another difference between the two studies was that a stronger "strategy flavor" was incorporated in the design of Study 2. Specifically, three features of the experiment demonstrate its strategic focus: first, to test H1, performance measurement system was operationalized as a strategic performance measurement system (SPMS), the balanced scorecard (BSC) in particular. Second, to test H2, participative decision making was operationalized as middle managers' participation in the so-called "strategic validity control" procedure. Third, the measured dependent variable was proactive strategic behavior (PSB), which was initiated by middle managers to influence strategy formulation.

4.2.1 Overview and Procedure

A 2 (SPMS-reward linkage: not-linked condition vs. linked condition) by 2 (participative decision making: control condition vs. participation condition) between-subject design was used. Participants assumed the role of a middle manager and were randomly assigned to one of the four combinations of the two factors. Their autonomous and controlled motivation to achieve the company's strategic goal were measured to test H1 and H2, and their tendency to engage in PSB was measured to test H6.

The case described a hypothetical restaurant chain which used a BSC as its performance measurement system to manage its new strategy. Participants were asked to

assume the role of one of its store managers. They were presented first with the BSC, and then the incentive plan based on which store managers' annual cash bonuses were determined. The incentive plan was either not linked with the BSC (not-linked condition) or linked with the BSC (linked condition). Half of the participants (participation condition) were then informed about a meeting that was intended for them to participate in the strategic validity control procedure. The rest of the participants (control condition) did not receive any information about the meeting. All participants then indicated their propensity to engage in one type of PSB, i.e., issue selling behavior, in two different scenarios. Mediating variables (i.e., autonomous and controlled motivation to achieve the strategic goal, and the Goal Commitment) were then measured. A manipulation check was performed and demographic data were requested at the end of the experiment.

The experiment instrument is presented in the Appendix.

4.2.2 Experiment Participants

A total of 74 students enrolled in evening business classes at a university in Hong Kong participated in this experiment. The participants completed the experiment as part of the class requirement and therefore, were not compensated. Sixty one percent were male, and the average age was 32.4 years. The participants had an average of 8.2 years of full-time work experience, and 64% of them held management positions.

4.2.3 Case Material

The case used in the current study was adapted from multiple published cases in

the restaurant industry[14], Kaplan and Norton (2001), and the prospectus of a public company (Ruth's Chris Inc. 2005). The case was reviewed by two experts in restaurant management to ensure its realism and changes were made according to their comments. The case described one steakhouse chain, named "Shorthorn," that owned eight stores and recently adopted a new strategy that stresses improving customer retention. In order to attain this strategic goal, Shorthorn planed to focus on the following initiatives: (1) providing customers with excellent dining experiences, (2) adding new dishes to the menu faster than its competitors, and (3) serving orders in a speedy way. Along with the description of the strategy, the participants were also presented with a strategy map (see Figure 7) that presented in graphical format how Shorthorn expected to achieve its strategic goal by delivering on the strategic drivers.

Insert Figure 7 here

Following Kaplan and Norton (1996), the BSC used by Shorthorn to monitor strategy implementation included measures across four categories: financial, customer, internal process and learning & growth. These measures were described as being carefully chosen to represent important aspects of the strategic drivers and outcomes. A description of eight BSC measures was subsequently presented (see Table 5) to participants in all conditions.

Insert Table 5 here

Participants were told that the store's performance on the eight BSC measures

[14] The cases being used include Denton and White (2000) and Sullivan (2005).

would be used to evaluate how well the strategy had been implemented in their store. Participants in all conditions were also told that their annual cash bonus, which was about 25% of their base salary[15], was determined by a separate system, i.e., the "incentive plan." The incentive plan consisted of five criteria and their bonus varied depending on the degree to which their store's performance achieved the targets along these five criteria. The manipulation of both independent variables is described in the next section.

4.2.4 Manipulation of the Independent Variables

SPMS – Reward Linkage

The SPMS-reward linkage factor was manipulated by varying the criteria contained in the above-mentioned incentive plan. In the not-linked condition, none of the five criteria in the incentive plan were from the BSC, and they were either financial measure (e.g., sales per $ of assets) or non-financial summary measure (e.g., number of entrees sold per month). In contrast, in the linked condition, all five criteria (e.g., "Mystery diner" audit rating) in the incentive plan were from the BSC. The incentive plans for both conditions are presented in Table 6. To increase the effectiveness of this manipulation and to ensure that the participants understand the incentive plan, participants were subsequently asked to practice calculating the bonus for a different store manager. All 74 participants correctly calculated the bonus.

Insert Table 6 here
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[15] A 25% bonus scheme was in general consistent with prior experimental research in this area. For example, Tuttle and Harrell (2001), and Ullrich and Tuttle (2004) used 20% bonus in their experiments, and Kershaw and Harrell (1999) used a 30% bonus.

Participative Decision Making: Involvement in Strategic Validity Control

This study used so-called "strategic validity control" procedure to operationalize participative decision making. Strategic validity control is a procedure where the organization actively monitors its strategic assumptions and anticipates any need for revising strategic plans (Ferreira and Otley 2005). Actively monitoring strategic validity was first proposed by Simons' (1995) as one component of "interactive" control systems, and it was later identified by Ferreira and Otley (2005) as a distinct control procedure and included in their comprehensive framework of management control systems. This study argues that whether the organization involves middle managers in such procedure will impact their types of motivation to achieve strategic goals[16]. This is because first, the existence of such a procedure sends managers a strong message that existent strategies are to be continuously evaluated and modified, and that managers' critical thinking and innovative ideas can shape future strategies. As a result, managers' needs for autonomy and competence should be better satisfied. According to SDT, a social environment that satisfies individuals' psychological needs promotes autonomous motivation among its members. Second, this procedure provides a formal arena for higher-level managers to acknowledge lower-level mangers' perspectives. As mentioned in Chapter 2, prior research (e.g., Gagné et al. 2000) shows that acknowledging subordinates' perspectives facilitates their internalization of firm policies.

The manipulation of participative decision making follows. In the participation condition, participants were informed that Shorthorn's top management met with all store

[16] Similar with this conjecture, Westley (1990) argues that top management opening up to middle managers' perspectives can help to increase the latter's commitment to the company's strategic goals. However, Westley (1990) does not examine the nature of motivation (autonomous vs. controlled motivation) underlying middle managers' goal commitment.

managers at a bi-monthly meeting, which was to provide store managers with opportunity to participate in the strategic validity control. Specifically, the participants were told that the primary goal of the meeting was for store managers to evaluate the soundness of Shorthorn's current strategy, because the executives believed that store managers knew best about the current business conditions and how to get the job done. Participants were further informed that at this meeting, store managers critically examined and even questioned the soundness of Shorthorn's current strategy and foresaw the need for revising it.

To increase the effectiveness of this manipulation, participants were then asked to imagine that at one of the bi-monthly meetings, another store manager brought up a concern about the strategy (i.e., streamlining the food preparation process made some dishes less tasty). Participants were subsequently asked to indicate how they would consider revising Shorthorn's strategy in response to this concern. In the control condition, participants did not receive any information about the bi-monthly meeting.

4.2.5 Measurement of the Dependent Measures

Proactive Strategic Behavior (PSB): Issue Selling Behavior (ISB)

This study measured one of the most documented PSB, i.e., issue selling behavior (ISB, Parker and Collins 2006). Issue selling occurs when middle managers proactively influence the formation of strategy by making others, especially top management, aware of critical issues (Dutton and Ashford 1993).

Decisions in two scenarios were used to measure the participant's propensity to undertake ISB. The first set of decisions measured middle managers' likelihood to sell an

issue that potentially *challenged the validity of the current strategy*. Specifically, participants were asked to imagine that they observed that contrary to the strategic map, employee training did not effectively improve customers' dining experiences. They were asked to indicate, on separate 9-point scales, their likelihood of reporting to the executives their concern about the strategy at the following three different stages: (1) when they did not know why the training was not working and what could be done to better improve customers' dining experiences *(stage 1)*; (2) when they had discovered why the training program was not working but still had not come up with a solution *(stage 2)*; (3) when they had come up with an alternative plan to improve customer dining experiences *(stage 3)*.

The reason for asking participants to indicate their likelihood to sell the issue at different stages is because research in ISB suggests that middle managers sell issues at different stages. Specifically, an issue can be sold before or after a solution is developed. Although selling an issue with a solution attached is normally associated with lower human capital risk for the "seller," firms often benefit more if an issue is brought up at an earlier stage so that top management can get multiple inputs and in a timely manner (Dutton and Ashford 1993).

The second decision measured participant's propensity to sell an issue that does not directly challenge the current strategy but did *suggest an alternative strategic plan*. In particular, participants were presented with a piece of information that revealed a new trend of customers' tastes (i.e., "many customers mentioned to you that they would like to dine outside when the weather allows"). This information provided clues for a possible alternative plan that might help to achieve the strategic goal of improving customer

retention. Participants were asked to rate on a 9-point scale their likelihood of suggesting Shorthorn's top management revise its strategy in response to this information.

The responses in both scenarios were used to test H6. Supposedly, the more likely the participants were to sell the issues to the executives, and the earlier on they were to sell the first issue, the more proactive they were in influencing strategy formation.

Resource Allocation Decision

Besides their PSB, middle managers' willingness to carry out a new strategy is also of interest. Therefore, before being exposed to any information that suggested the need for revising the newly adopted strategy, the participants were asked to make a resource allocation decision. This decision was elicited to examine whether they allocated resources in a way that facilitates the implementation of the newly adopted strategy.

Specifically, after being presented with the incentive plan, participants were asked to allocate discretionary funds to four alternative projects. Two of these projects (e.g., sending the chefs to culinary workshops to stimulate their creativity in innovating new dishes) were consistent with the strategy, and two (e.g., promoting the sales of beverage and desserts) did not bear explicit strategic importance although they were expected to improve the store's short-term financial performance. Participants ranked the four projects based on their priorities for funding. Presumably, the higher (lower) priorities the participants assigned to the two strategy-consistent projects, the more (less) inclined they were to allocate limited resources in a way that strategy implementation was facilitated.

4.2.6 Measurement of the Mediating Variables

Similar with Study 1, Study 2 measured Goal Commitment in order to rule out the effect of the *amount* of motivation on outcome variables. Specifically, managers' commitment to the strategic goal (i.e., to improve customer retention) was measured upon completion of the issue selling decision tasks. As in Study 1, the five-item short version of the Goal Commitment scale developed by Hollenbeck et al. (1989) was used.

The forms of participants' motivation to achieve the strategic goal were measured subsequent to the measure of Goal Commitment. Similar with Study 1 but with minor changes, participants were asked to indicate on 9-point scales the extent to which they would try to achieve the strategic goal because of the following four reasons: "because top management wants me to, or because I'll get reward, praise, or approval for achieving this goal" (external regulation), "because I would feel ashamed, guilty, or anxious if I didn't" (introjected regulation), "because I really believe that it is an important goal to have and I endorse it freely and value it wholeheartedly" (identified regulation), and "because of the challenge and enjoyment pursuing the goal would provide me" (intrinsic motivation).

In the pilot test conducted prior to the formal experiment, a few participants commented that the intrinsic motivation question did not seem sensible to them. This was possibly because the case was hypothetical, and participants were thus less likely to feel the "enjoyment" or "challenge" while "striving for" the strategic goal.[17] The intrinsic motivation score was therefore excluded from the analysis. Because RAI is a linear function of the four motivation scores, it could not be calculated in this study.

Vansteenkiste et al.'s (2005) argue that the overall measure of RAI should be

[17] In the real business world however, middle managers could well be motivated by intrinsic motivation to strive for strategic goals.

broken into autonomous and controlled motivation because the two types of motivation are predictors of distinctive behavioral outcomes. The following two measures were thus derived to test the hypotheses: (1) autonomous motivation (AM), which was the score of identified regulation; and (2) controlled motivation (CM), which was the sum score of extrinsic regulation and introjected regulation.

4.2.7 Manipulation Check Questions

A manipulation check question on the first manipulated variable (SPMS-reward linkage) was performed at the end of the experiment. Specifically, the participants were asked to indicate on a 9-point scale to what extent they felt that the reward system (i.e., the incentive plan) used to determine store managers' cash bonuses was consistent with the performance measurement system (i.e., the BSC) (1: not at all consistent; 9: to a great extent consistent). No manipulation check was performed on the second independent variable (participative decision making) because participants in the control condition were simply not provided with any information about the bi-monthly meeting.

In addition to the manipulation check, participants were also asked to indicate on a 9-point scale to what extent they believed that they would be fairly rewarded by the incentive plan if they performed well on the BSC (1: not at all; 9: to a great extent). Subsequently, they were asked to indicate on separate nine-point scales the perceived realism (1: extremely unrealistic; 9: extremely realistic), the level of difficulty (1: extremely easy; 9: extremely difficult) of the decision making task, and their familiarity with the BSC prior to the experiment (1: not familiar at all; 9: very familiar).

4.2.8 Summary of Study 2

The specific predictions that were tested by Study 2, including the hypothesized and not hypothesized ones, are summarized in Figure 8. As shown in this figure, the nature of work motivation was measured by two separate measures, i.e., Autonomous Motivation (AM) and Controlled Motivation (CM), rather than by relative autonomy index (RAI). In addition, performance-reward contingency was operationalized as the linkage between SPMS and rewards, participative decision making was operationalized as participation in strategic validity control, and proactive strategic behavior (PSB) was measured as issue selling behavior (ISB).

Insert Figure 8 Here

Similar to Study 1, Goal Commitment was measured in order to test the effect of the nature of motivation on ISB over and beyond the effect of Goal Commitment. Resource allocation decision was measured to test the effect of SPMS-reward linkage on middle managers' willingness to carry out strategies. In Figure 8, the hypothesized paths are presented in solid lines, whereas not hypothesized paths (e.g. the one from Goal Commitment to ISB) appear in dotted lines.

4.3 Summary

This chapter presents two studies that tested the hypotheses developed in Chapter 3. Study 1 consisted of SEM analyses on data available from a survey that was administered to 135 employees from different organizations. It tested the majority of the hypotheses by estimating a structural model (see Figure 6). Study 2 tested H1, H2 and

H6 (see Figure 8) using a case-based experiment, where participants assumed the role of a lower-level manager. Compared with Study 1, Study 2 by design had a stronger strategic "flavor". The results of both studies are presented in Chapter 4.

CHAPTER FIVE

RESULTS

5.1 Study 1

Study 1 tested H1, H2, H3, H4, and H5. Descriptive statistics are presented first in section 5.1.1 followed by the tests of the hypotheses. Before formally testing the hypotheses, a series of structural equation models were evaluated and the "optimal" model was identified in section 5.1.2. H1, H2, H3, and H4 were then tested based on the path coefficient estimates from the "optimal" structural model, and the results are presented in section 5.1.3. Section 5.1.4 reports a preliminary test for the moderating effects of task uncertainty. Specifically, tests were performed to examine whether the optimal model fit the data equally well with the high task uncertainty sample and the low task uncertainty sample. H5 could not be tested using SEM analysis; thus, the tests of H5 are presented separately in section 5.1.5.

5.1.1 Descriptive Statistics

Descriptive statistics of measured variables are presented in Table 7[18]. For each variable, a theoretical range and an actual range are presented, along with the mean, median and standard deviation. Table 7 also presents the Standardized Cronbach's alpha of the scale that measures each variable.

Insert Table 7 about here
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[18] To facilitate the interpretation of descriptive statistics, in Table 7, the ranges, mean, median and standard deviation of each variable are based on the average score of the scale if a scale measure is used. However, in section 4.1.2 and 4.1.3, the specification of error variances in the SEM models, the evaluation of those models, and the estimation of path coefficients are based on the sum scores of the scales. Results are not expected to differ if average scores are used.

As shown in Table 7, on 7-point scales, the means of the Contingency, Participation, and Communication subscales of the CPMS scale were 4.92 (sd=1.03), 3.79 (sd=0.77), and 4.24 (sd=1.11), respectively. The statistics on Superior's Autonomy Support showed that on average, the respondents did not view their superiors as either autonomy supportive or not autonomy supportive (mean=4.27, sd=0.98).

Table 7 also suggests that the respondents were in general moderately committed to their departmental goal(s) (mean=3.45, sd=0.89). As for the type of motivation underlying their goal pursuits, they were on average to a greater degree motivated by autonomous motivation (mean=6.04, sd=1.59) than by controlled motivation (mean=4.76, sd=1.51) ($t=7.05$, $p<0.01$). As a result, on average, the relative autonomy index (RAI) (mean=3.77, sd=7.77) was significantly greater than zero ($t=5.64$, $p<0.01$).

The mean of Strategic Orientation (mean=5.13, sd=0.69) was significantly greater than the middle point of 4 ($t=19.16$, $p<0.01$), suggesting that in general the respondents had developed strategic orientation appropriate to modern organizations. In contrast, the mean of Role Orientation (Knowledge) (mean=4.00, sd=1.28) was not different from the middle point of 4 ($t=0.02$, $p=0.98$), indicating that the respondents to a lesser degree recognized the importance of acquiring new knowledge and skills. This is consistent with Parker et al.'s (1997) finding that employees' strategic orientation was more easily transformed than their role orientation. In terms of attribution tendency, overall the respondents attributed their performance more to internal factors (i.e., to their own ability and/or effort) than to external factors (i.e., to luck and/or task difficulty). Specifically, on average, they allocated 57.17% of the points to internal factors versus 42.83% to external factors.

The statistics on Task Uncertainty showed that on average, the respondents view their job-related tasks as moderately mundane and structured (mean=3.26, sd=0.80).

Consistent with prior studies that measured various types of motivation (e.g., Williams and Deci 1996; Vallerand and Fortier 1998; Williams, Deci, Ryan 1998), the measures of external regulation, introjected regulation, identified regulation and intrinsic motivation in current study were correlated in a quasi-simplex pattern (See Table 8). In other words, each type of regulation/motivation correlated positively with the regulation/motivation that was closest to it on the self-determination continuum (see Figure 1), and correlated negatively with the regulation/motivation that was farther from it. For example, the simple correlation between identified regulation and intrinsic motivation was 0.81 ($p<0.01$), whereas that between identified regulation and external regulation was -0.23 ($p=0.01$).

Insert Table 8 about here

As shown in Table 9 (Panel A), controlled motivation appeared to decline with age ($\rho=-0.41$, $p<0.01$), with increasing job tenure ($\rho=-0.39$, $p<0.01$), and with increasing time working at the current position ($\rho=-0.34$, $p<0.01$). The only observable temporal trend with autonomous motivation was that the longer the individual had worked at the current position, the less he/she was motivated by autonomous motivation ($\rho=-0.16$, $p=0.08$). Mainly due to the decline of controlled motivation, RAI increased with age ($\rho=0.25$, $p<0.01$). This development trend is consistent with the basic premise of SDT that human beings have the inherent tendency to internalize extrinsic motivation.

Insert Table 9 about here

Table 9 (Panel B) presents the difference in motivation between managers and non-management employees. One-way ANOVA showed that on average, respondents who held management positions were less motivated by controlled motivation than those who did not hold management positions ($F(1,126)=6.38$, $p=0.01$). The cause of such a difference deserves further study. However, whether respondents did or did not hold management positions, they were equally motivated by autonomous motivation ($F(1,126)=0.01$, $p=0.92$), and there was no significant difference in RAI between managers and non-managers ($F(1,126=1.81$, $p=0.18$). No significant gender difference was observed with any of the following motivational variables: autonomous motivation ($F(1,131)=0.25$), controlled motivation ($F(1,131)=0.25$) and RAI ($F(1,131)=0.26$).

5.1.2 Evaluation of Structural Models

SEM was used to test the theoretical model (see Figure 6) developed in Chapter 4. Given the large number of parameters being estimated relative to the sample size in this study, the aggregation form of SEM was employed following Kenny (1979), Williams and Hazer (1986), Settoon, Bennett, and Liden (1996), and De Ruyter and Wetzels (1999). According to this approach, scale scores rather than individual items were used as indicators of latent variables. Specifically, the indicator for each latent variable was first computed by adding the item scores, except for RAI (which is a linear function of four motivation scores). Subsequently, each scale's reliability and variance were used to incorporate measurement error into the SEM analysis. Specifically, the path from each

latent construct to its indicator was fixed as the square root of the Cronbach's alpha, and the error variance for each indicator was fixed as the following amount: (1- Cronbach's alpha) * variance of the indicator. The specific configurations are presented in Figure 9.

Insert Figure 9 about here

The theoretical model (model A) provided a poor fit (Chi-square [df=10] =129.75, $p<0.01$; $\chi^2/df=12.98$; GFI=0.86; AGFI=0.48; NFI=0.71; CFI=0.71; TLI=0.19; RMSEA=0.30). Although post hoc model fitting strategies have been criticized for being data driven and may "capitalize on chance" (e.g., MacCallum, Roznowski and Necowitz 1992), researchers such as Joreskog (1993) argue that when a model is rejected by the data, instead of abandoning the model outright, it is desirable to explore the nature of the problem and to modify the model. Byrne, Shavelson and Muthén (1989) further argue that as long as the researchers acknowledge the exploratory nature of the analyses, post hoc model fitting is beneficial. Given the exploratory nature of this study (i.e., it was to test a new model for studying PMS, rather than confirming a well-established theory) the study continued with conducting a series of post hoc model modifications rather than discarding the initial model (model A).

As for the strategy for modifying the model, MacCallum et al. (1992) note that a desirable result in a SEM analysis is to identify a model that "cannot be simplified substantially without significant loss of overall fit", and of which the "fit cannot be improved to any great extent by making the model more complex" (p. 490). Therefore, the study used two strategies sequentially to improve the fit of the model with a reasonable level of parsimony: (1) constraining those non-significant parameters to zero

without significantly impairing overall model fit, and (2) based on the modification indices provided by the AMOS program, freeing those previously fixed parameters such that model fit can be improved significantly. Both the Chi-square difference tests (Benter and Bonett 1980; Anderson and Gerbing 1988) and comparisons of goodness-of-fit indices (Williams and Hazer 1986) were used to determine whether those modifications were sensible in terms of statistical characteristics. Moreover, in order to avoid adding meaningless parameters to the model, only parameters that could be justified at the theoretical level were freed (MacCallum 1986; Joreskog and Sorbom 1988).

The five path coefficients that were constrained to zero were the ones with the lowest critical ratios (c.r.), i.e., Communication→ Goal Commitment (standardized coefficient=-0.01, c.r.=-0.07); Participation → Goal Commitment (standardized coefficient=0.09, c.r.=0.90); Superior's Autonomy Support →RAI (standardized coefficient=0.05, c.r.=0.44); Goal Commitment→ Role Orientation (Knowledge) (standardized coefficient=0.10, c.r.=1.01); and RAI→Strategic Orientation (standardized coefficient=0.14, c.r.=1.40). Note that all five paths were not hypothesized, and the reason they were estimated in model A was because their effects needed to be controlled for in order to test the relations that were of interest. After those five path coefficients were constrained to zero, the new model (model B, see Figure 10) reached a better though still inadequate fit (Chi-square [df=15] =133.70, $p<0.01$; $\chi^2/df=8.91$; GFI=0.85; AGFI=0.65; NFI=0.70; CFI=0.71; TLI=0.46; RMSEA=0.24). The comparison of model B with model A yielded a Chi-square difference of only 3.95, which was not significant ($\Delta\chi^2(df=5)=3.95$, $p=0.56$), suggesting that the constraints improved the model parsimony without significantly impairing the overall fit.

Insert Figure 10 about here

The modification indices (m.i.) suggested that the overall fit of model B could be improved if the flowing three parameters were freed: (1) Superior's Autonomy Support →Strategic Orientation (m.i.=41.48); (2) Communication→ Strategic Orientation (m.i.=6.67); and (3) e3←→ e4 (m.i.=10.86). The theoretical rationale for freeing the abovementioned three parameters follows. First, strategic orientation by definition is employees' endorsement and internalization of the organization's strategic objective (Parker et al. 1997). SDT-based research such as Williams and Deci (1996) find that when instructors are autonomy supportive, medical students show greater internalization of the values presented in class. This suggests that a direct relation may exist between Superior's Autonomy Support and Strategic Orientation. Second, Study 2 in Parker et al. (1997) finds that when initiatives such as training and communication are in place, employees successfully change their strategic orientation, but not their role orientation. Thus, a direct link can be expected between Communication and Strategic Orientation. Last, both Strategic Orientation and Role Orientation (Knowledge) are facets of work orientation, and both constructs capture the cognitive component (vs. affective component) of work attitude (Parker et al. 1997). Therefore, one may reasonably suspect that the error terms associated with the indicators of these two constructs are associated.

Since the modification indices provided by AMOS were derived univariately rather than multivariately (Byrne 2001)[19], each time one of the above three parameters was freed, a Chi-square difference test was conducted to determine whether the model fit

[19] Lagrange multiplier test statistics provided by EQS program are derived multivariately.

was indeed improved. The results suggest that by freeing each of the three parameters, the Chi-square was significantly reduced ($\Delta\chi^2$(df=1)=76.50, p<0.01 for freeing the above parameter (1); $\Delta\chi^2$(df=1)=11.40, p<0.01 for freeing the above parameter (2); $\Delta\chi^2$(df=1)=22.90, p<0.01 for freeing the above parameter (3)). After freeing all three parameters, a new model (model C, see Figure 11) was derived and it reached an adequate fit (Chi-square [df=12] =22.90, p<0.03; χ^2/df=1.91; GFI=0.96; AGFI=0.88; NFI=0.95; CFI=0.97; TLI=0.94; RMSEA=0.08). It appeared that model C was "optimal" in terms of parsimony, model fitting and substantive meaningfulness. H1, H2, H3 and H4 were thus tested based on the path coefficient estimates derived from model C.

Insert Figure 11 about here

5.1.3 Tests of H1, H2, H3, and H4

The testing of H1, H2, H3 and H4 was based on the path coefficient estimates derived from model C. As shown in Figure 12, all three PMS characteristics, namely, Contingency (standardized coefficient=0.34, p<0.01), Participation (standardized coefficient=0.26, p<0.01) and Communication (standardized coefficient=0.36, p<0.01), positively predicted RAI. Superior's Autonomy Support was not an important predictor of RAI. Based on the above findings, H1a, H2 and H3 were supported. In other words, employees were to a greater degree motivated by autonomous (vs. controlled) motivation to work when the reward systems were linked with measured performance (H1a), when they were engaged in PMS related decision making (H2), and when the PMS were effective in communicating business objectives to the employees (H3).

Insert Figure 12 about here

H4 proposed that autonomous (vs. controlled) work motivation positively predicted one dimension of role orientation, i.e., the degree to which employees recognized the importance of new knowledge and skills. As shown in Figure 12, RAI significantly predicted Role Orientation-Knowledge (standardized coefficient=0.30, $p<0.01$). H4 was therefore supported. In other words, the more they were motivated by autonomous (vs. controlled) motivation to work, the more employees regarded acquiring new knowledge and skills as an important part of their job.

As expected, the path coefficient between RAI and Strategic Orientation was insignificant, suggesting that autonomous (vs. controlled) motivation only facilitated the transformation of role orientation, but not that of strategic orientation. Interestingly, Superior's Autonomy Support (standardized coefficients=0.81, $p<0.01$) was the strongest predictor of Strategic Orientation. It appeared that superior's autonomy support facilitated the transformation of employees' strategic orientation, but it did so directly and not through the enhancement of autonomous motivation. Again as expected, Strategic Orientation positively predicted Role Orientation (Knowledge) (standardized coefficients=0.36, $p<0.01$), which is consistent with Parker et al.'s (1997) notion that the broadening of employees' role orientation occurs after the successful transformation of their strategic orientation.

Although the predictors of Goal Commitment were not the foci of this paper, the path estimates presented in Figure 12 revealed some interesting patterns. Specifically, RAI (standardized coefficient=0.43, $p<0.01$) positively predicted Goal Commitment after

the effects of performance-reward contingency and Superior's autonomy support were controlled. In other words, employees were more committed to their departmental goal(s) when they were to a greater degree motivated by autonomous (vs. controlled) motivation to work. This finding provides evidence of another benefit of enhancing employees' autonomous (vs. controlled) work motivation, i.e., increasing the level of goal commitment.

5.1.4. Tests of H5: Autonomous (vs. Controlled) Motivation and Self-Serving Attribution

Multiple regression analyses were used to test H5. The regression models and results are presented in Table 10. As mentioned in Chapter 4, when Internal-Attribution score (measured as a percentage of weight assigned to ability and/or effort) was regressed on performance, a positive coefficient for performance would be expected if self-serving attribution was present. Model 1 was first estimated with the whole sample (ns=123[20]). The positive coefficient for Performance (standardized coefficient=0.33, $p<0.01$) suggests that overall, the better the performance, the more the respondents attributed their recent performance to internal factors.

Insert Table 10 here

To test H5, model 2 was estimated with the whole sample. In model 2, the criterion variable was Internal-Attribution and predictors included Performance, RAI-Median, and the interaction between Performance and RAI-Median. As predicted by H5,

[20] In total, 12 respondents did not rate their recent performance. Their responses were thus excluded from the tests of H5.

the coefficient for the interaction term was significant and negative (standard coefficient = -1.27, $p<0.01$), suggesting RAI moderated the relation between Performance and Internal-Attribution.

To further examine the nature of the moderating effect, a median split on RAI was then conducted and the sample was divided to two sub-samples: the high RAI sample and the low RAI sample. As shown in Table 10, when Model 1 was estimated with the low RAI sample, Performance positively predicted Internal-Attribution (standardized coefficient=0.51, $p<0.01$). But when Model 1 was estimated with the high RAI sample, the coefficient for Performance was not significant (standardized coefficient=0.01, $p=0.92$). This finding supports that for respondents scoring high on RAI, the attribution to internal (vs. external) factors was not influenced by their performance level. H5 is therefore supported.

5.1.5 Supplemental Analyses: Moderating Effects of Task Uncertainty

As noted in Chapter 4, autonomous (vs. controlled) work motivation may be especially important when job related tasks are novel and uncertain, versus routine and structured. To examine the moderating effect of Task Uncertainty (TU) on the proposed relations, a median split was first conducted to divide the whole sample into two sub-samples: high TU sample (ns=66) and low TU sample (ns=68). Subsequently, the "optimal" model derived for the whole sample (model C) was estimated on the two samples separately to see whether it fit both samples equally well. Subsequently, an invariance test of causal structure was conducted following Byrne (2001). This test was to formally test whether the causal structure was equivalent across the high TU and the

low TU samples. It is important to note that given the small sample sizes after the median split, the analyses presented in this section were preliminary in nature.

When estimated using the high TU sample, model C reached a very good fit (Chi-square [df=12] =9.94, p=0.62; χ^2/df=0.83; GFI=0.96; AGFI=0.89; NFI=0.97; CFI=1.00; TLI=1.02; RMSEA=0.00). A couple of observations could be made from the path coefficient estimates derived from the high TU sample (see Figure 13): (1) similar to the results for the whole sample, RAI was important in predicting both Goal Commitment (standardized coefficient=0.57, p<0.01) and Role Orientation (Knowledge) (standardized coefficient=0.21, p=0.01). (2) As predicted by H1, H2 and H3, all three PMS characteristics, namely, Contingency (standardized coefficient=0.32, p=0.02), Participation (standardized coefficient=0.32, p=0.02) and Communication (standardized coefficient=0.42, p<0.01) positively predicted RAI, whereas Superior's Autonomy Support did not.

Insert Figure 13 about here

In contrast, when estimated using the low TU sample, the fit of model C was not satisfactory (Chi-square [df=12] =36.04, p<0.01; χ^2/df=3.00; GFI=0.89; AGFI=0.89; NFI=0.83; CFI=0.87; TLI=0.69; RMSEA=0.17). In addition, there are many insignificant paths (see Figure 14). For example, RAI were not significantly associated with Goal Commitment or Role Orientation (Knowledge), and Strategy Orientation did not predict Role Orientation (Knowledge). Based the above findings, significant inequivalence in causal structure existed between the high and low TU samples.

Insert Figure 14 about here

Invariance test of causal structure was conducted following Byrne (2001) to provide additional evidence for the above-mentioned inequivalence. First, model C was estimated on the two samples simultaneously but with no equality constraints imposed. This unconstrained model served as a baseline for the invariance test (Chi-square [df=24] =45.97, $p<0.01$; $\chi^2/df=1.92$; GFI=0.92; AGFI=0.77; NFI=0.91; CFI=0.95; TLI=0.88; RMSEA=0.08). Second, Model C was then estimated on the two groups with equality constraints imposed on all structural paths. In other words, all the path regression weights were specified as being equivalent across the two groups[21]. This fully constrained model significantly increased the Chi-square value ($\Delta\chi^2(df=11)=32.63$, $p<0.01$) and achieved a poorer model fit (Chi-square [df=35] =78.61, $p<0.01$; $\chi^2/df=2.25$; GFI=0.87; AGFI=0.73; NFI=0.84; CFI=0.90; TLI=0.84; RMSEA=0.10) compared with the based line model. This finding suggests that the causal structure (Model C) was not invariant across the two groups.

Since model C did not fit well the low TU sample data, the same *post hoc* modification strategies that were used to derive the "optimal" model for the whole sample were used to identify the "optimal" model for the low TU sample. Specifically, the following modifications were made in sequence. Starting from model C, the non-significant parameters with the lowest critical ratios (i.e., RAI → Goal Commitment, c.r.=0.02; Communication ←→Superior's Autonomy Support, c.r.=0.66; and

[21] Note that all error variances and paths from latent variable to indicators were automatically equivalent because they were fixed at the same values across the two groups (see Figure 11). But correlations among exogenous variables (e.g., correlation between Participation and Contingency) and the correlation between e3 and e4 were not specified as being equivalent. Constraining those parameters to be equivalent was not necessary since only the invariance of the causal structure was of interest.

Participation → RAI, c.r.=0.824) were first constrained to zero. The change in Chi-square as a result of such constraints was not significant ($\Delta\chi^2$(df=3)=0.96, p=0.81). Based on the modification indices, the following previously constrained parameters were freed sequentially: (1)Superior's Autonomy Support → RAI (m.i.=6.09), (2)δ2 (error term associated with Participation) ←→ δ3 (error term associated with Communication) (m.i.=5.65) , and (3)Communication → Role Orientation (Knowledge) (m.i.=5.09). After freeing each of those parameters, the Chi-square value significantly dropped ($\Delta\chi^2$(df=1)=10.40, p<0.01 for freeing the above parameter (1), $\Delta\chi^2$(df=1)=6.23, p<0.01 for freeing the above parameter (2), and $\Delta\chi^2$(df=1)=6.96, p<0.01 for freeing the above parameter (3)). Finally, the path coefficient between Participation and RAI was constrained to zero due to its low critical ratio (c.r.=0.02, standardized coefficient=0.00), and such deletion led to an insignificant change in Chi-square ($\Delta\chi^2$(df=1)=0.00, p=1.00). The new model (model D) achieved a good fit on the low TU sample (Chi-square [df=13] =13.40, p=0.42; χ^2/df=1.03; GFI=0.95; AGFI=0.87; NFI=0.94; CFI=1.00; TLI=1.00; RMSEA=0.02). The configurations of model D are presented in Figure 15 and the path coefficient estimates are presented in Figure 16.

Insert Figure 15 about here

Insert Figure 16 about here

Comparing the path coefficient estimates from model D (for the low TU sample) (see Figure 16) and those from model C (for the high TU sample) (see Figure 13), a few

important differences emerge. First, RAI positively predicted Goal Commitment and Role-Orientation-Knowledge only in the high TU group, but not in the low TU group. This is consistent with the notion that autonomous motivation is especially important when the task requires creativity, flexibility, and deep processing of information (Gagné and Deci 2005). Considering the difficulty in broadening role orientation (Parker et al. 1996), enhancing autonomous motivation among employees is critical especially when task uncertainty is high.

Second, as for the antecedents to RAI, Superior's Autonomy Support appeared to be the strongest predictor of RAI for the low TU sample (standardized coefficient=0.60, $p<0.01$); whereas for the high TU sample, the characteristics of PMS had a stronger effect on RAI than did Superior's Autonomy Support. It seems that when task uncertainty is high (low), the design of an organization's PMS is more (less) important than manager's interpersonal style in enhancing employees' autonomous (vs. controlled) work motivation.

Third, different factors tend to predict Role Orientation (Knowledge) when task uncertainty level was low versus high. Specifically, when task uncertainty level was low, Communication seemed to be the most important factor in determining Role Orientation (Knowledge) (standardized coefficient=0.39, $p=0.01$), whereas when task uncertainty level was high, both Strategic Orientation (standardized coefficient=0.65, $p<0.01$) and RAI (standardized coefficient=0.21, $p=0.01$) were very important predictors. The results with the high TU sample appeared to be consistent with Parker et al. (1997), who found that the change of strategic orientation was the first necessary step for broadening role orientation, and job autonomy had to be in place in order to successfully transform

employees' role orientation.

5.1.6 Summary

In summary, the SEM results supported H1a, H2, H3 and H4. In other words, employees were to a greater degree motivated by autonomous (vs. controlled) motivation to work, (1)when rewards were aligned with measured performance (H1a), (2)when they were involved in PMS related decision making (H2), and (3)when the PMS were effective in communicating business objectives to the employees (H3). Employees' autonomous (vs. controlled) work motivation was found to positively relate to the degree to which they recognized the importance of acquiring new knowledge and skills (H4). Multiple regression results also provided support for H5. Employees who were motivated by autonomous (vs. controlled) motivation to work were less vulnerable to self-serving attributional bias.

Preliminary analyses on the moderating effects of task uncertainty were also conducted. Among other findings, The results suggest that only when job related tasks were uncertain and novel, but not when they were structured and mundane, could autonomous (vs. controlled) work motivation predict goal commitment and the degree to which the importance of learning was recognized. However, given the small sample sizes for testing the moderating effects, caution has to be exercised when interpreting those findings.

5.2 Study 2

Study 2 tested H1, H2, and H6. Responses to manipulation check questions are first presented in section 5.2.1, followed by descriptive statistics. Section 5.2.3 presents the results for H1, H2, and H6. Although the effects of SPMS-reward linkage on middle managers' PSB and on their tendency to implement the formulated strategy are not included in the motivational model, those effects are of practical interest. Thus they are examined and presented in section 5.2.4 and section 5.2.5, respectively.

5.2.1 Responses to Manipulation Check Question

The SPMS-reward linkage manipulation was overall effective. Only four out of 36 participants who were assigned to the "not-linked" condition indicated that the SPMS was moderately consistent with the incentive plan (they selected 6 or 7 on a 9-point scale). All 38 participants who were assigned to the "linked" condition responded that the SPMS was at least moderately consistent with the incentive plan (they indicated no less than 5 on a 9-point scale). The results thus exclude the four participants who failed the manipulation check question.

In general, participants thought that the case was reasonably realistic (mean=6.63, sd=1.44), and moderately difficult (mean=6.14, sd=1.33). In addition, they were reasonably familiar with BSC technique prior to the experiment (mean=6.69, sd=1.04).

5.2.2 Descriptive Statistics

Descriptive statistics of the mediating variables and dependent variables are presented in Table 11. For each variable, a theoretical range and an actual range are presented, along with the mean, median and standard deviation.

Insert Table 11 about here

As shown in Table 11, the participants were in general moderately committed to the strategic goal (i.e., to improve customer retention) (mean=6.27, sd=1.32). As for the type of motivation underlying their goal pursuits, they were on average to a greater degree motivated by autonomous motivation (AM, mean=6.73, sd=1.21) than by controlled motivation (CM, mean=5.89, sd=0.97) ($t=4.50$, $p<0.01$) [22]. As a result, on average, RAI (mean=1.89, sd=2.81) was significantly greater than zero ($t=5.61$, $p<0.01$). This was similar with what was found in Study 1.

In the current study, external regulation, introjected regulation, identified regulation and intrinsic motivation were not correlated in a quasi-simplex pattern (see Table 12). Specifically, regardless of its position on the self-determination continuum (see Figure 1), each type of regulation/motivation correlated positively with the other three types of regulation/motivation. For example, the simple correlation between identified regulation and introjected regulation was 0.49 ($p<0.01$), while that between identified regulation and external regulation was 0.59 ($p<0.01$). As a result, in Study 2, AM (i.e., identified regulation) was positively, rather than negatively, correlated with CM ($\rho=0.65$, $p<0.00$).

Insert Table 12 about here

Although these findings are inconsistent with those in Study 1, they are consistent

[22] As mentioned in Chapter 4, in study 2, Autonomous Motivation (AM) included only identified motivation but not intrinsic motivation. In addition, study 2 did not use RAI to test the hypotheses.

with those of other studies (e.g., Ryan & Connell, 1989; Pelletier, Fortier, Vallerand, and Brière 2001; Levesque and Pelletier, 2003). For example, Ryan and Connell (1989) found positive associations between intrinsic motivation and the introjected and identified regulation. More recently, research by Levesque and Pelletier (2003) found that a significant percentage of their study participants could not clearly be classified as motivated by autonomous or "heteronomous" (non-self-determined) motivation because they were both. Together, the findings of SDT-based studies suggest that individuals can be motivated by both autonomous and controlled motivation simultaneously.

Recall that four measures of issue selling behavior (ISB) were used to measure managers' tendency to engage in PSB. Those four measures were: the indicated likelihood to "sell" to the executives an issue that challenged the validity of the current strategy at stage 1 (ISB1), at stage 2 (ISB2) and at stage 3 (ISB3), and the likelihood to suggest to the executives an alternative strategic plan (ISB4). The means of all four ISB measures (means=6.90, 7.23, 8.17, and 7.50 for ISB1, ISB2, ISB3 and ISB4, respectively) were significantly greater than the middle point of 5 ($p<0.01$ for all four measures), suggesting that, in general, managers were more likely than not to bring those critical issues to the awareness of the top management.

More importantly, the means of ISB measures suggest that on average participants were more likely to sell an issue at a later stage (i.e., at stage 3) than at earlier stages (i.e., at stage 1 and stage 2). Repeated measures Analyses of Variance (ANOVA) were then conducted to test such pattern. Planned comparison results suggested that in general, participants were indeed more likely to sell the issue at stage 2 than at stage 1 ($t=2.20$, $p=0.02$), and were more likely to sell the issue at stage 3 than at stage 2 ($t=8.52$, $p<0.01$).

This pattern provides support for what has been argued by Dutton and Ashford (1993). Specifically, to avoid human capital risk, the issue "seller" tends to sell issues at a later stage when solutions can be attached, rather than selling them at an earlier stage when top management can get multiple inputs. Hence, initiatives that enhance employees' proactivity in issue selling are necessary.

5.2.3 Tests of H1, H2 and H6

H1a predicted that when performance measurement systems are linked with reward systems, compared with when they are not, employees are to a greater degree motivated by autonomous (vs. controlled) motivation. H1b predicts the same relationship but in the opposite direction. To test H1a and H1b, a 2 X 2 Multivariate Analysis of Variance (MANOVA) was first conducted with the two manipulated factors as independent variables, and the following as dependent variables: Goal Commitment, AM and CM. The results suggested that when SPMS was linked with the reward system, middle managers were more committed to the strategic goal ($F(1,66)=43.10$, $p<0.01$) and were to a greater degree motivated by CM ($F(1,66)=2.66$, $p=0.05$, one-tailed). Meanwhile, when SPMS was linked with reward systems, middle managers were also to a greater degree motivated by AM ($F(1,66)=5.25$, $p=0.03$). In other words, linking SPMS with incentives enhanced not only managers' controlled but also their autonomous motivation. Therefore, the results provided mixed support for both H1a and H1b.[23]

[23] As a sensitivity test, RAI was used as a measure of autonomous (vs. controlled) motivation and included as dependent variable in the MANOVA. In other words, Goal Commitment and RAI were regressed on the two manipulated variables. The results of this analysis showed that the effect of SPMS-reward linkage on RAI was not significant ($F(1,66)=0.53$, $p=0.47$). However, as noted before, RAI was not a good measure of autonomous (vs. controlled) motivation in study 2 because the intrinsic motivation question did not make much sense to the participants.

Supplementary analysis (see section 5.2.4.1) was performed to explore why the linkage between rewards and performance measures led to higher level of autonomous motivation.

H2 predicted that the more employees are involved in PMS related decision making processes, the more they are motivated by autonomous (vs. controlled) motivation. The results from the above-mentioned MANOVA showed that the main effect of participative decision making (or more specifically, the main effect of participation in the strategic validity control) on all three dependent variables were insignificant (for Goal Commitment, $F(1, 66)=0.1$, $p=0.82$; for AM, $F(1, 66)=1.3$, $p=0.27$; and for CM, $F(1,66)=0.1$, $p=0.73$). Therefore, H2 was not supported. ISB measures were further included in the MANOVA to examine whether the manipulation of participative decision making had any impact on ISB. Results showed that for all four measures of ISB, the main effect of strategic validity control procedure was insignificant ($F(1,66)<0.50$, $p > 0.50$). The interaction effect between participative decision making and SPMS-reward linkage was also insignificant. It appears that the manipulation of participative decision making did not have an effect on any of the dependent variables.

H6 predicted that the more employees were motivated by autonomous (vs. controlled) motivation, the more likely they were to engage in PSB. To test H6, path analysis was conducted. Specifically, Goal Commitment, AM and CM were used to predict four inter-correlated measures of ISB, i.e., IS1, IS2, IS3 and IS4. As mentioned in Chapter 4, Goal Commitment was included in the model in order to examine the impact of the *type* of motivation on ISB over and beyond the effect of Goal Commitment. A saturated structure model (see Figure 17) was first estimated. In this saturated model, all

the residual terms associated with the four ISB measures were allowed to correlate among each other and the correlation among the three predictors were also estimated. These configurations provide a just identified model, i.e., the degree of freedom equals zero.

Insert Figure 17 about here

To increase the degrees of freedom so that the model could be rejected and the model fit could be evaluated (Byrne 2001), the only insignificant correlation between the residual terms (i.e. r2 and r3) was first constrained to zero. The following insignificant path coefficients were then constrained to zero in sequence to further improve the parsimony of the model: (1)CM →ISB4 (c.r.=0.38), (2)AM→ISB2 (c.r.=0.10), (3)Goal Commitment→ISB1 (c.r.=1.18). The Chi-square difference tests showed that the above constraints did not lead to inferior model fits ($\Delta\chi^2$=1.27, p=0.26 for constraining the correlation between r2 and r3; $\Delta\chi^2$=0.15, p=0.70 for constraining the above path (1); $\Delta\chi^2$=0.01, p=0.92 for constraining the above path (2); $\Delta\chi^2$=1.39, p=0.24 for constraining the above path (3)). The constrained model (see Figure 18) provided an adequate fit (Chi-square [df=4] =2.82, p=0.59; χ^2/df=0.71; NFI=1.00; CFI=1.00; TLI=1.00; RMSEA=0.08). The path coefficient estimates from the constrained model (see Figure 19) were used to test H6.

Insert Figure 18 about here

Insert Figure 19 about here

Based on the path coefficient estimates from the constrained model, H6 was in general supported. As predicted, AM was positively associated with all measures of ISB except for ISB2. Specifically, AM positively predicted ISB1 (standardized coefficient=0.86, $p<0.01$), ISB3 (standardized coefficient=0.62, $p<0.01$) and ISB4 (standardized coefficient=0.31, $p=0.01$). This suggests that the more middle managers were motivated by autonomous motivation to achieve the strategic goal, the more likely they were to challenge the validity of the current strategy and in a timely manner, and the more likely they were to suggest alternative strategic plans. In contrast, CM was negatively associated with ISB1 (standardized coefficient=-0.22, $p=0.02$) and ISB 2 (standardized coefficient=-0.24, $p=0.08$), positively associated with ISB3 (standardized coefficient =0.23, $p<0.01$), and was not associated with ISB 4. It appeared that the more middle managers were motivated by controlled motivation to achieve the strategic goal, the more likely they were to withhold their knowledge about potential problems from top management untill they figured out solutions to solve them.

In addition, Goal Commitment was positively associated with all measures of ISB except for ISB1. Specifically, Goal Commitment positively predicted ISB2 (standardized coefficient=0.44, $p<0.01$), ISB3 (standardized coefficient=0.21, $p<0.01$) and ISB4 (standardized coefficient=0.43, $p<0.01$). Therefore, goal commitment was important in predicting the tendency to challenge the validity of strategy at later stages (i.e., stage 2 and stage 3), but not important in predicting it at the earliest stage (i.e., stage 1). Goal Commitment was also important in predicting middle managers' tendency to suggest alternative plans to top management.

5.2.4 Supplemental Analyses

5.2.4.1 Effect of SPMS-Reward Linkage on Autonomous Motivation

Following Baron and Kenny (1986), a mediation test was conducted and suggested that the positive effect of SPMS-reward linkage on participants' autonomous motivation was fully mediated by their perceived fairness in the reward system[24]. Specifically, the SPMS-reward linkage significantly increased the perceived fairness (standardized coefficient=0.69, $p<0.01$), and it significantly increased autonomous motivation in the absence of the perceived fairness (standardized coefficient=0.27, $p=0.02$). Moreover, the perceived fairness had a significant effect on autonomous motivation (standardized coefficient=0.50, $t=4.71$, $p<0.01$). When regressing autonomous motivation on both SPMS-reward linkage and the perceived fairness, the coefficient for SPMS-reward linkage was no longer significant (standardized coefficient=-0.14, $t=-0.97$, $p=0.33$). An alternative strategy for testing the mediating effect was the Sobel test (Sobel 1982), of which the result also indicated that perceived fairness significantly mediated the relation between SPMS-reward linkage and autonomous motivation ($t=4.04$, $p<0.01$). Therefore, linking SPMS with rewards increased middle manager's perceived fairness in the reward system, which in turn improved their autonomous motivation to achieve strategic goals.

5.2.4.2 Effect of SPMS-Reward Linkage on Middle Managers' Issue Selling Behavior

[24] The perceived fairness in the reward system was measured subsequent to the manipulation check question (see Chapter 4). Specifically, participants were asked to indicate on a 9-point scale the extent to which they believed that they would be fairly rewarded by the Incentive Plan if they performed well on the BSC measures.

Recall that in this experiment, the SPMS-reward linkage increased not only autonomous motivation but also controlled motivation among middle managers. Since autonomous motivation was found to enhance middle managers' proactivity in selling critical issues whereas controlled motivation appeared to weaken such a tendency, the effect of SPMS-reward linkage on middle managers' ISB was indeterminate. Given that how the linkage between SPMS and rewards may impact middle managers' PSB has significant practical implication, additional analysis was conducted to explicitly examine such an effect.

A two-way MANOVA was conducted with the two manipulated factors as independent variables and the four measures of ISB as dependent variables. Results show that when the SPMS was linked with the reward (versus when it was not), middle managers were more likely to challenge the current strategy at stage 2 ($F(1,68)=4.4$, $p=0.04$) and stage 3 ($F(1,68)=6.3$, $p=0.01$), but not more so at stage 1 ($F(1,68)=1.1$, $p=0.29$). Moreover, SPMS-reward linkage did increase the likelihood for middle managers to suggest alternative plans to the executives ($F(1,68)=7.3$, $p<0.01$). Therefore, similar with goal commitment, linking rewards with SPMS was important in increasing middle managers' tendency to challenge strategies at later stages (i.e., stage 2 and stage 3), but not important in increasing such a tendency at the earliest stage (i.e., stage 1). Such linkage was also important in enhancing middle managers' tendency to suggest alternative plans to top management.

5.2.4.3 Effect of SPMS-Reward Linkage on Strategy Implementation

This experiment also tested the impact of SPMS-reward linkage on middle

managers' intention to implement the strategy. Recall that before being exposed to any information that suggested the need for revising the strategy, the participants were asked to rank the priority for funding among four projects. Supposedly, the higher (lower) priorities the participants assigned to the two strategy-consistent projects, the more (less) inclined they were to allocate limited resources in a way that strategy implementation was facilitated.

A weight measure was created to proxy for the resources allocated to the two strategy-consistent projects (i.e., project #1 and #4) relative to the two strategy-inconsistent projects (i.e., project #2 and #3). The weight was calculated as follows. If a project was ranked as first in terms of priority for funding, the weight assigned to this project was 0.4; if ranked as second, the weight was 0.3; if ranked as third, the weight was 0.2; and if ranked as fourth, the weight was 0.1. Therefore, the higher (lower) the strategy-consistent projects were ranked, the more (less) resources or "weight" was allocated to implement them, which indicated that the more (less) willing the manager was to implement the formulated strategy.

As shown in Table 7, in general participants divided the discretionary funds equally between the strategy-consistent projects (on average 51.9% of the weight) and the strategy-inconsistent projects (on average 48.1% of the weight). A one-way ANOVA[25] was conducted with SPMS-reward linkage as the independent variable and the weight assigned to the two strategy-consistent projects as dependent variable. The results showed that participants in the linked condition (mean=65%, sd=0.09) allocated significantly more weight to the strategy-consistent projects than did those in the not-linked condition

[25] Note that resource allocation decision was made *prior to* the strategic validity control manipulation; thus, the strategic validity control factor should not have an impact on resource allocation decision. Therefore, a one-way, rather than two-way ANOVA, was conducted.

(mean=36%, sd=0.10) ($F(1,68) = 165.5$, $p<0.00$). This suggests that when reward systems were linked with SPMS, middle managers allocated resources in a way that facilitated the implementation of the strategy. In contrast, when the two systems were not aligned, they might allocate significant amount of resources to activities that did not carry strategic importance.

5.2.5 Summary

In summary, results from Study 2 provide mixed support for both H1a and H1b. Specifically, the link between SPMS and reward systems enhanced not only middle managers' autonomous but also their controlled motivation to strive for strategic objectives. Such a linkage also increased the level of middle managers' commitment to strategic goals. The results also provide support for H6. In particular, middle managers' autonomous motivation was positively associated with their tendency to carry out one type of proactive strategic behavior, i.e., issue selling behavior. In contrast, controlled motivation in general was negatively associated with such a tendency. H2 was not supported by the results possibly due to the ineffective manipulation of participative decision making. Chapter 6 provides detailed *post hoc* explanation for the failure to support H2.

CHAPTER SIX

DISCUSSION AND CONCLUSION

6.1. Summary of Results

6.1.1 Results of Hypotheses Tests

Six hypotheses were tested in two studies. Study 1 consisted of structural equation modeling (SEM) analyses of survey data that was collected among non-management employees and lower-level managers. It tested H1, H2, H3, H4 and H5 based on the path coefficients estimates derived from the SEM analyses (see Figure 12). Study 2 consisted of a case-based experiment with participants assuming the role of lower-level managers. It tested H1, H2 and H6. This section summarizes the results of the hypotheses tests and discusses their implications.

H1 predicted that when reward systems were aligned with performance measurement systems, compared with when they were not, employees would be more (H1a) or less (H1b) motivated by autonomous (vs. controlled) motivation to work. The results were mixed. Study 1 supported H1a, whereas Study 2 partially supported H1a and H1b. Specifically, Study 1 showed that the linkage between rewards and measured performance was positively associated with employees' autonomous (vs. controlled) work motivation. Study 2 suggested that the linkage between rewards and strategic performance measurement systems (SPMS) led to both a higher level of autonomous motivation and a higher level of controlled motivation (at the 0.10 level for the latter relation).

In general, the findings appeared to be inconsistent with cognitive evaluation theory (CET)'s argument that performance-contingent reward is often perceived as

controlling in nature and therefore undermines individual's self motivation. Additional analysis was therefore performed to explore why the linkage between rewards and performance measures led to higher level of autonomous motivation. The mediation test conducted on Study 2 data suggested that the positive effect of SPMS-reward linkage on participants' autonomous motivation was fully mediated by their perceived fairness in the reward system. Therefore, the *post hoc* evidence suggested that when rewards were linked with measured performance, compared with when they were not, employees would view the reward systems as more fair, which in turn might result in a higher level of autonomous motivation.

An alternative explanation for the mixed results on H1a and H1b is provided by CET. Recall that CET argues that every reward has both a controlling aspect and an informational aspect and the relative salience of these two aspects will determine whether a reward undermines or enhances intrinsic motivation (Deci 1975; Deci and Ryan 1980). It is likely that, in Study 1 and Study 2, the survey respondents and experiment participants viewed the informational aspect of the performance-contingent rewards as salient as or even more salient than their controlling aspect. Yet, further research is needed before any conclusion can be drawn.

H2 predicted that the more they participated in performance management systems (PMS) related decision making, the more employees were motivated by autonomous (vs. controlled) motivation to work. The results again were mixed. Study 1 supported H2, whereas Study 2 did not support it. Specifically, Study 1 showed that employees were to a greater (lesser) degree motivated by autonomous (vs. controlled) work motivation when they were to a greater (lesser) degree involved in the following decision making

processes: the performance measure selection, goal setting, and performance appraisal. In other words, participative decision making in the PMS domain enhanced employees' autonomous motivation. This finding is in contrast to the argument that the primary benefit of participative decision making is cognitive rather than motivational (e.g., Locke, Alavi, and Wagner 1997).

Study 2 did not support the prediction that middle managers' autonomous (vs. controlled) motivation would be enhanced by their involvement in a specific decision making process, i.e., the strategic validity control. Specifically, when middle managers were engaged in the process of monitoring the validity of strategies and suggesting ways to revise them if necessary, compared to when they were not involved in this process, they were *not* more motivated by autonomous (vs. controlled) motivation to strive for strategic goals. One possible cause for failure to support H2 was the ineffectiveness of the manipulation. Recall that the manipulation involved *informing* the participants about the bi-monthly strategic validity control procedure and asking them to consider revising the strategy in response to *another* manager's concern. This manipulation was possibly not engaging enough to satisfy participants' needs for autonomy and competence as predicted. An alternative manipulation is to encourage the participants to critique the strategy freely, and then provide them with feedback from the "executives" showing how their opinions have significantly influenced strategy formulation.

H3 predicted that the more effective PMS were in communicating business objectives to employees, the more employees were motivated by autonomous (vs. controlled) motivation to work. This hypothesis was supported by Study 1. In particular, employees were to a greater degree motivated by autonomous (vs. controlled) motivation

if PMS communicated to them clearly how performance measures were related to business objectives and why the performance targets were set the way there were.

As noted in Chapter 3, when implemented properly, SPMS presents employees with business causal linkages that clearly explain how various operations and performance measures relate to the ultimate strategic objectives (Kaplan and Norton 1996). Based on the results of H3, one may argue that by providing employees with business causal linkages, SPMS not only have informational benefit as demonstrated by Chenhall (2005), but also have motivational benefits in that *ceteris paribus,* the adoption of SPMS may enhance employees' autonomous (vs. controlled) work motivation.

H4 predicted that autonomous (vs. controlled) work motivation positively predicted one dimension of role orientation, i.e., the degree to which employees view learning as an important part of their job. H4 was supported by Study 1. In particular, the more they were motivated by autonomous (vs. controlled) motivation to work, the more employees recognized the importance of acquiring new knowledge and skills. Therefore, given the difficulty for transforming employees' role orientation (Parker et al. 1997), measures that enhance employees' autonomous work motivation are critical.

H5 predicted that when they were to a greater degree motivated by autonomous (vs. controlled) motivation, employees were less vulnerable to self-serving attribution bias, i.e., a tendency to take credit for good performance and deny responsibility for poor performance. The results from Study 1 provided support for H5. In particular, employees whose relative autonomy score was higher than the median did not demonstrate self-serving attributional bias. In other words, among those employees, the level of internal attribution they made was not influenced by their performance level.

As argued in Chapter 3, self-serving attribution bias can be harmful in that it may result in conflicts among coworkers and conflicts between subordinates and superiors. In addition, the inclination to deny responsibility at times of failure may also hinder effective learning from mistakes. The results of H5 thus suggest a potential way to overcome such bias, i.e., enhancing employees' autonomous (vs. controlled) work motivation.

H6 predicted a positive effect of autonomous (vs. controlled) work motivation on employees' proactive strategic behavior (PSB). This hypothesis was in general supported by Study 2. This study tested the effect of autonomous (vs. controlled) motivation on middle managers' tendency to engage in a specific type of PSB, i.e., issue selling behavior (ISB). The results showed that the more middle managers were motivated by autonomous motivation, the more likely they were to sell critical issues to top management and in a timely manner. In contrast, the more middle managers were motivated by controlled motivation, the more likely they were to withhold their knowledge about potential problems until they figured out solutions to solve them.

Importantly, the effect of autonomous and controlled motivation on middle managers' ISB was significant after the effect of goal commitment was controlled for. Indeed, a higher level of goal commitment did not lead to middle managers' greater tendency to sell critical issues at the earliest stage, although it did lead to their greater tendency to do so at later stages. Therefore, compared with the level of commitment to strategic goals, the type of motivation underlying such commitment is a stronger predictor of employees' proactivity in influencing strategy formation. This finding is consistent with SDT's fundamental notion that not only the amount, but also the nature,

of motivation matters.

6.1.2 Moderating Effects of Task Uncertainty

Gagné and Deci (2005) argue that autonomous motivation enhances effective performance and individuals' well-being "particularly if the task requires creativity, cognitive flexibility, or deep processing of information" (p. 341). Thus, in working settings, autonomous motivation may be especially important for employees whose job related tasks are novel and uncertain, instead of routine and structured. Study 1 conducted additional analyses to examine the moderating effects of task uncertainty (TU).

To test such moderating effects, a median split was conducted on the score of TU, and the SEM model was estimated separately on the high TU sample and the low TU sample. Results showed that the "optimal" model for the whole sample (model C) fit the high TU sample well, which suggested that the above-mentioned results on H1, H2, H3, and H4 held among employees whose job related tasks were relatively novel and uncertain. However, this model did not fit the low TU sample well. A series of model modifications were then performed and an optimal model for the low TU sample (model D) was derived. A comparison between the path coefficient estimates from model D for the low TU sample and those from model C for the high TU sample suggested the moderating effects of TU on some of the proposed relations. However, given the small sample sizes in testing the moderating effects, the findings should be interpreted with care.

6.1.3 Effects of Linking SPMS with Reward Systems

As mentioned in Chapter 3, whether or not reward systems should be linked with multiple dimensions of performance is controversial in the accounting literature. Both advantages and disadvantages of making such linkages have been demonstrated. Additional analyses were conducted in Study 2 to examine the effects the SPMS-reward linkage has on variables other than autonomous and controlled motivation.

The results showed that linking the bonus plan with the SPMS increased middle managers' propensity to challenge current strategies at later stages although not at the earliest stage. Such linkage also increased their tendency to suggest alternative strategic plans to the top management. Moreover, when the bonus plan was linked with the SPMS, compared with when it was not, middle managers prioritized the funding of projects that bear strategic importance over projects that did not. Recall that the SPMS-reward linkage enhanced middle managers' autonomous as well as their controlled motivation to achieve strategic goals, and also increased their commitment to those goals. Taking all the above-mentioned findings together, it appeared that aligning reward systems with SPMS was overall beneficial.

6.2 Conclusions

This research applies self-determination theory (SDT) of motivation to performance management systems (PMS) and proposes a motivational model for studying PMS. In this model, the design characteristics of PMS influence the nature of employees' motivation, which in turn affects their job related cognition, behaviors and affective experience. Data from both a survey (Study 1) and an experiment (Study 2) were used to test hypotheses derived from the proposed motivation-based model.

The results from the two studies in general suggest that employees were to a greater degree motivated by autonomous (vs. controlled) motivation to work, (a) when reward systems were aligned with performance measurement systems including strategic performance measurement systems (SPMS); (b) when employees participated in PMS related decision making such as selecting performance measures and setting performance targets; and (c) when the PMS clearly communicated business objectives to the employees. The results also demonstrate a few important benefits of employees' autonomous (vs. controlled) work motivation. Specifically, autonomous (vs. controlled) work motivation was positively associated with the degree to which employees recognized the importance of new knowledge and skills, was positively related with their proactivity in influencing strategy formation, and was negatively associated with their self-serving attribution bias.

6.3 Contributions

The paper contributes to both the PMS literature and the SDT literature. First, Bonner and Sprinkle (2002) urge researchers to examine the effect that motivators (incentives) have on multiple components of employees' effort. Specifically, following prior studies' (Kahneman 1973; Bettman, Johnson, and Payne 1990; Kanfer 1990; and Locke and Latham 1990) conceptualization of effort, Bonner and Sprinkle (2002) urge researchers to examine how incentives impact not only the effort *duration* and *intensity*, but also the effort *direction* and the *effort directed toward learning*. This paper extends the management control literature by studying how PMS designs may impact the direction of employees' effort as well as their effort directed toward learning. In particular, this paper examines how employees react to PMS characteristics in terms of

their tendency to proactively influence strategy formation and to acquire new knowledge and skills.

Second, this paper contributes to the PMS literature by exploring the "black box" of employees' motivational processes. As argued in Chapter 2, the current agency theory based incentives literature lacks studies that directly examine the motivational mechanism through which incentives impact employees' effort and performance. In addition, current performance management practices such as budgeting processes have been broadly criticized for their control mindset and other attributes (Hansen et al. 2003), and solutions such as SPMS are proposed to address those issues. Therefore, at the practical level, by adopting a behavioral approach this paper provides some insight in why negative effects of PMS may exist and how proposed initiatives may help to improve the situation.

Third, this paper contributes to the SDT literature in a few ways. First, it finds support for a couple of important notions of SDT at work settings: (1) not only the quantity or amount, but also the quality or nature, of individuals' motivation matters; (2) autonomous motivation is important especially when the task requires creativity, flexibility and deep processing of information. (Gagné and Deci 2005)

More importantly, it extends SDT-based research on the contextual factors that foster/forestall employees' autonomous motivation. Extant research in this area focuses on two types of contextual factors: specific job characteristics and superior's interpersonal style (Gagné and Deci 2005). Following Sheldon, et al.'s (2003) suggestion, this paper goes "further back" and investigates "higher-order contextual factor," i.e., the organization's PMS design. Such an endeavor is important because higher-order

contextual factors such as the design of PMS could be longer lasting and possibly more pervasive in influencing employees' motivation than are specific job characteristics and superiors' interpersonal style.

Last but not least, this paper sheds some light on the debate on whether performance-contingent rewards forestall or foster autonomous motivation at work. Results from both studies tend to support Eisenberger and his colleagues' view that performance-contingent reward enhances rather than undermines employees' self-determination.

6.4 Limitations

The findings of this paper should be interpreted in conjunction with its limitations. First, since cross-sectional data was used by Study 1 to test the majority of the hypotheses, one may feel less confident in drawing causal inferences from the results (Spector 1994). The causality problem was partially addressed by Study 2, which employed an experiment to test some but not all the hypotheses.

Second, in terms of measurement, variables measured by self-reports may be subject to self-perception biases. For example, if participants indicated that they would engage in issue selling behavior, they might not actually do so in a real situation. In addition, Kunz and Pfaff (2002) argue that individuals may not have direct knowledge of their motives; thus using self-reports to determine the type of work motivation can be problematic. Moreover, the scales used to measure role orientation and strategic orientation (Parker et al. 1997) were developed for manufacturing companies, and may not be suitable for employees in other industries.

Third, *post hoc* modifications of structural models were used to derive the "optimal" models in Study 1. According to MacCallum et al. (1992), "optimal" models derived through *post hoc* modifications may not be replicable in a different sample especially when sample size is small. Therefore, the results from Study 1 need to be validated using other samples.

Finally, in Study 2, the participative decision making (i.e., participation in strategic validity control) manipulation did not impact middle managers' motivation and their issue selling behavior. It is possible that in this experimental setting, the manipulation was not effective in enhancing participants' autonomous (vs. controlled) motivation. Future research is needed to examine other procedures that potentially enhance middle managers' autonomous motivation.

6.5 Future Research

The present paper inspects only three characteristics of PMS as potential antecedents to employees' autonomous and controlled motivation. Other characteristics of PMS can be examined by future research. One example is the use of relative performance evaluation and competitively contingent reward, i.e., evaluating employees by ranking them with their peers. Economics-based research (e.g., Frederickson 1992; Matsumura and Shin 2006) argues that if common uncertainties are high, relative performance information helps the principal filter out noise in measuring the agent's effort level. As a result, the performance evaluation will be more accurate, and the agent will be to a lesser degree exposed to common risks. However, SDT based research suggests that competitively contingent reward may forestall autonomous work motivation.

Specifically, it is hold that both competition and contingent evaluation can forestall autonomous motivation (Ryan and Deci 2000). Vansteenkiste and Deci's (2003) empirical study suggests that the use of competitively contingent rewards hurts individuals' intrinsic motivation.

According to SDT based research, other characteristics of PMS, such as the type of measures (outcome measures vs. process measures; and short-term measures vs. long-term measures) that are included in the performance measurement systems and the nature of the feedback that employees receive about their performance, may also have significant effect on autonomous and controlled work motivation.

In addition, preliminary evidence presented in Study 1 suggests that task uncertainty may moderate the relation between characteristics of PMS and autonomous (vs. controlled) work motivation. Further research on such moderating effect has implications for both theory and practice.

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FIGURES

The Self-Determination Continuum and Various Types of Motivation

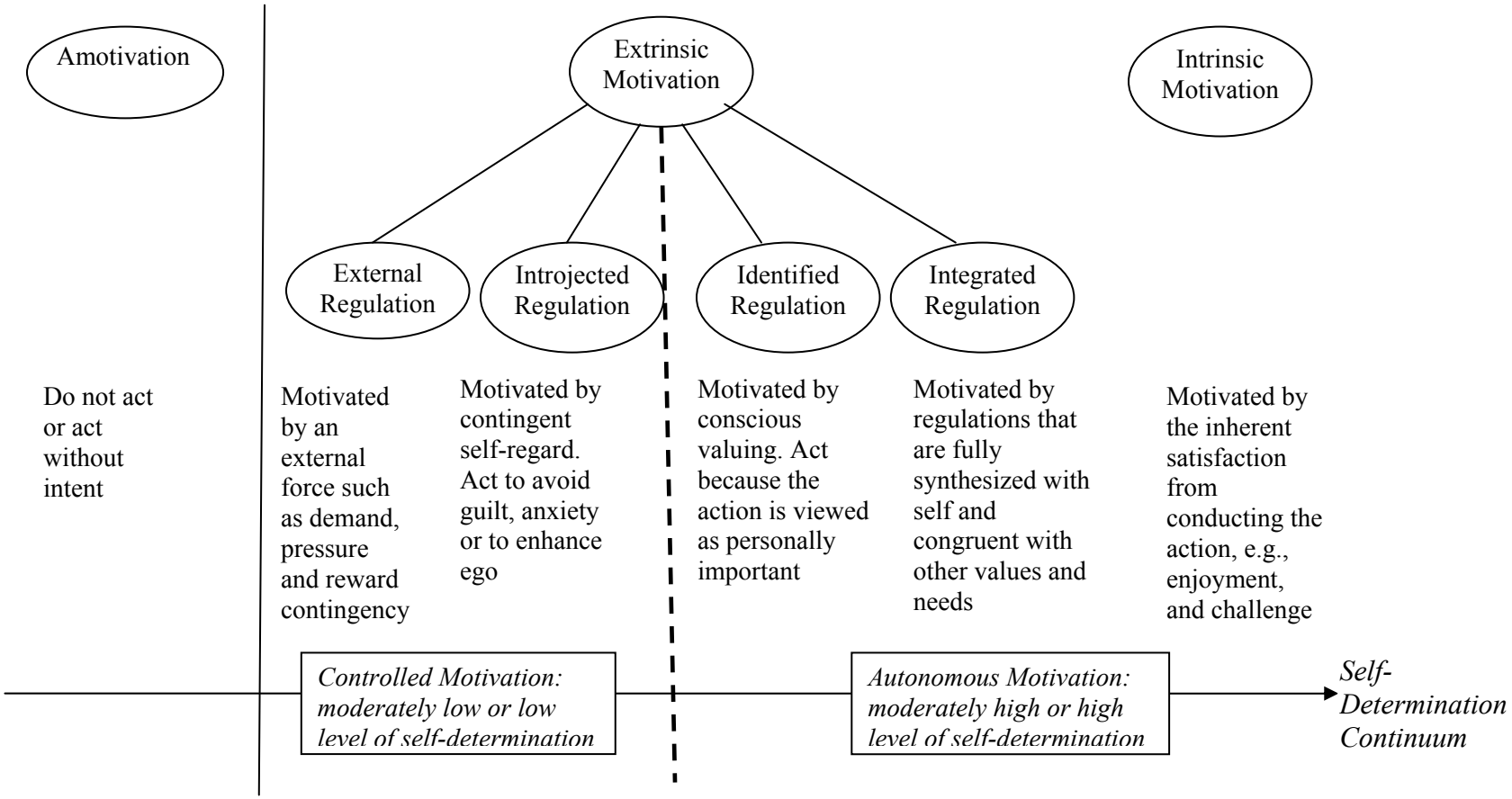

Figure 1: The Self-Determination Continuum and Various Types of Motivation. This diagram demonstrates the various types of motivation and their regulatory processes. The different forms of motivation vary in their relative autonomy or "self-determination." Amotivation is the state of completely lacking intention to act. For the other types of motivation, from the least autonomous to the most autonomous, they are external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic motivation (Adapted from Figure 1 in Ryan and Deci 2000 and Figure 1 in Gagné and Deci 2005).

A Motivational Model of Performance Management Systems (PMS)

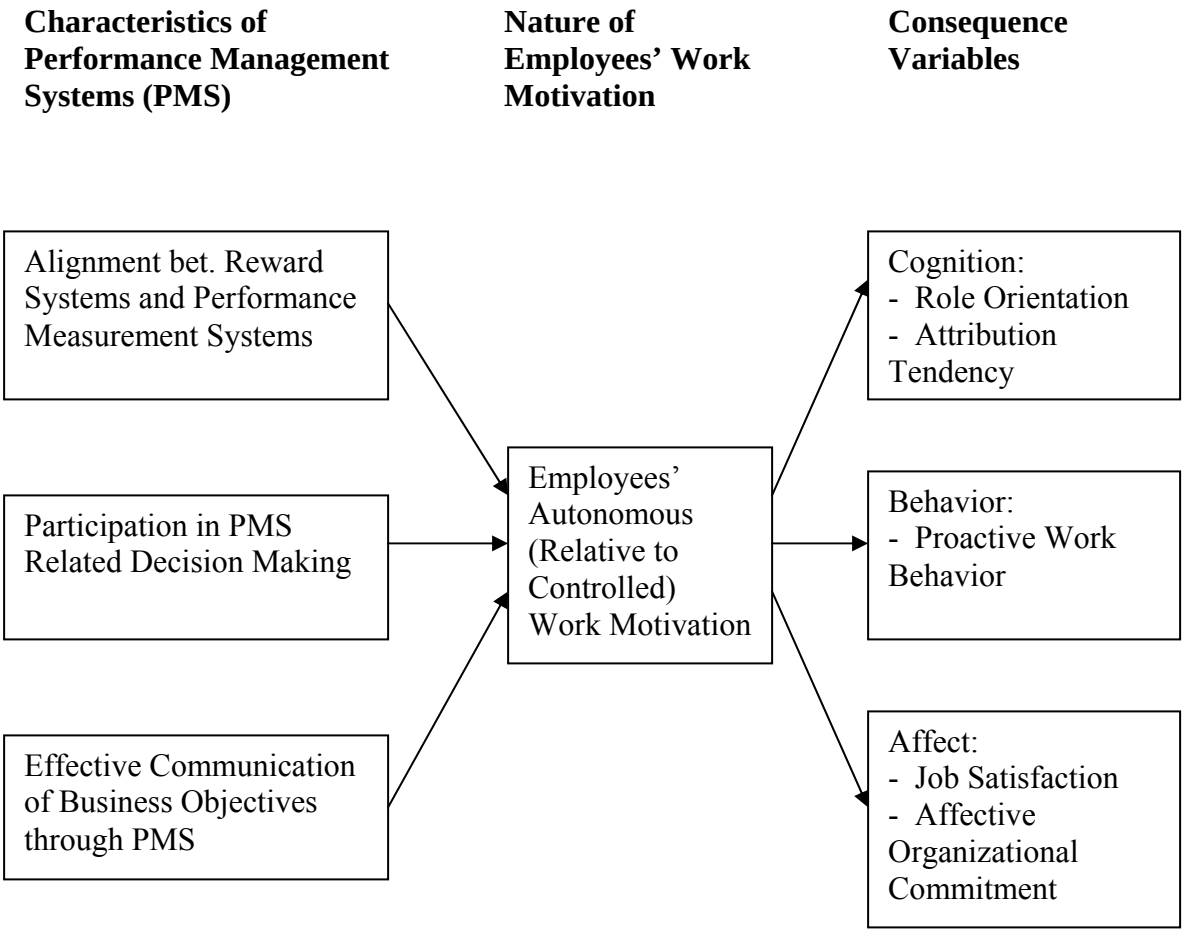

Figure 2: A Motivational Model of Performance Management Systems (PMS). In this model, the characteristics of an organization's PMS serve as antecedents to the nature of its employees' work motivation (i.e., autonomous relative to controlled work motivation), which in turn impact employees' cognition, behaviors, as well as affective experience.

All Tested Hypotheses

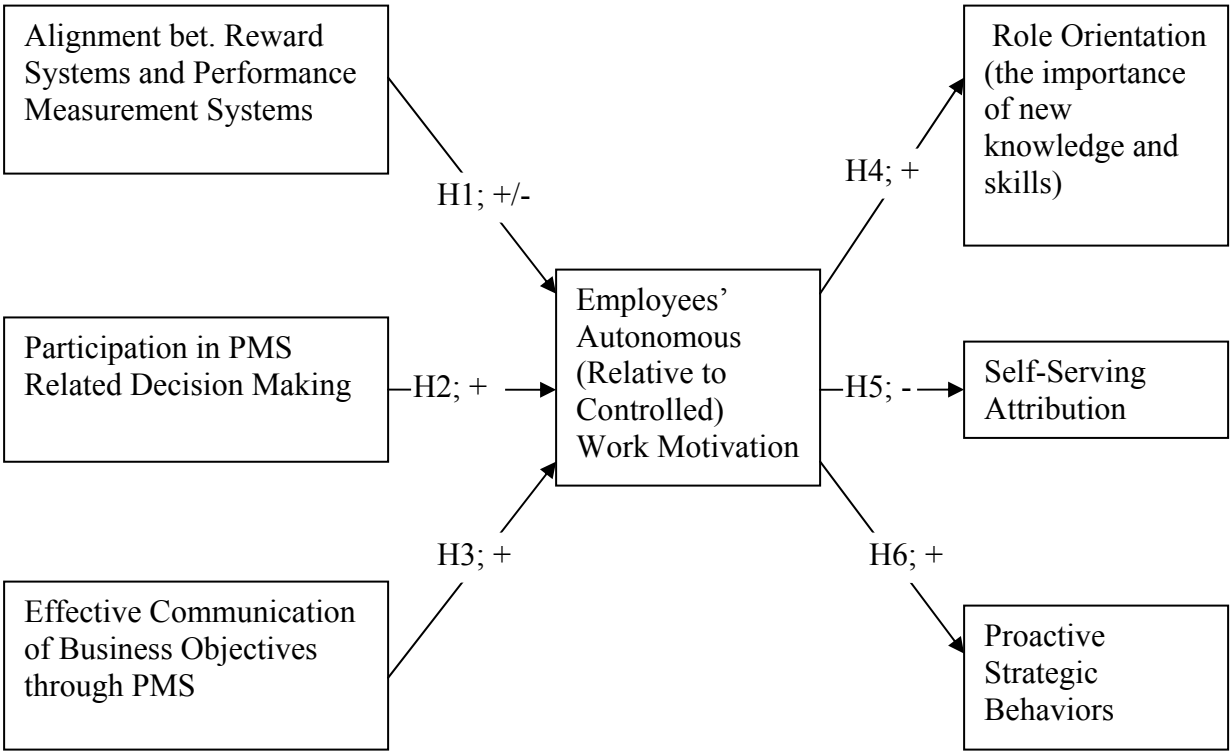

Figure 3: All Tested Hypotheses. In total six hypotheses are developed. They are tested by Study 1 and 2. Specifically, Study 1 (SEM analysis of survey data) tests H1, H2, H3, H4 and H5, and Study 2 (experiment) tests H1, H2 and H6. The sign beside each hypothesis indicates the expected direction of the relationship. Note that compared with the motivational model presented in Figure 2, the hypotheses are more specific and thus more narrow in terms of research scope.

Three-Factor CFA Model of Characteristics of Performance Management Systems (CPMS) Scale (10-item)

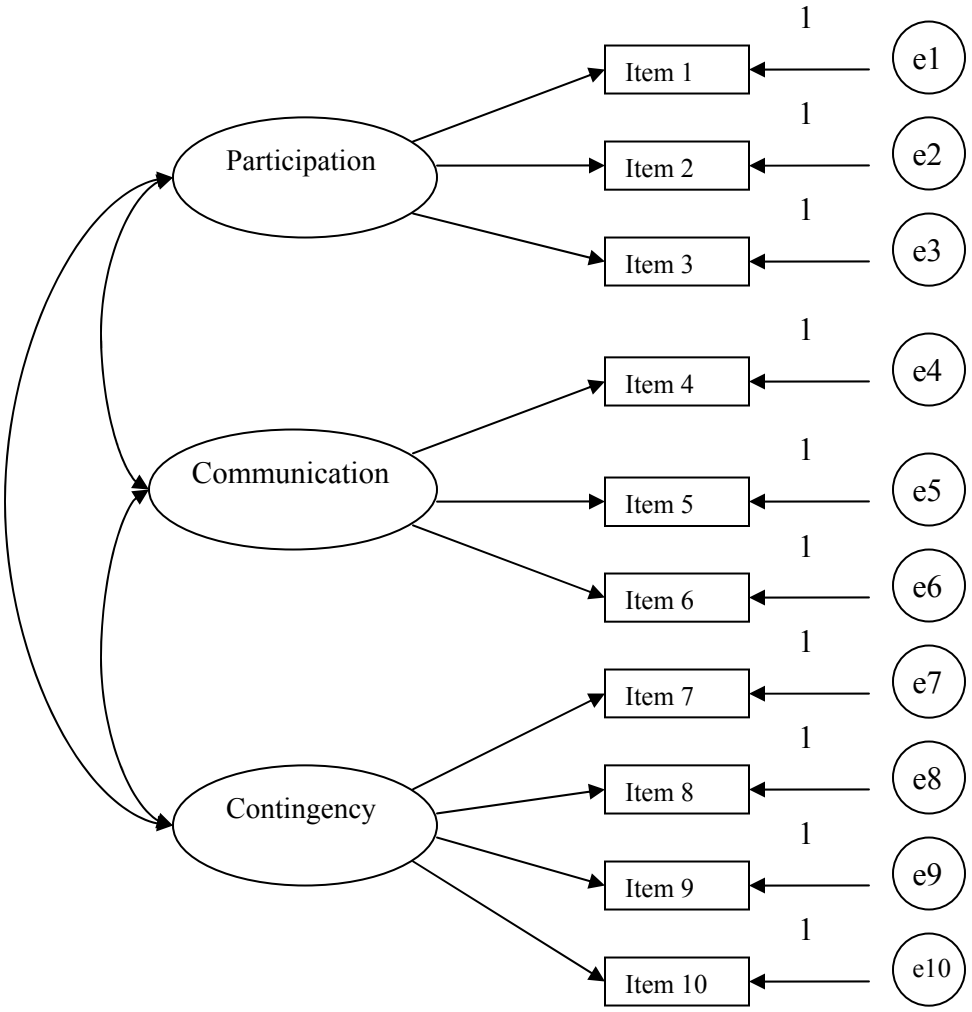

Figure 4: Three-Factor CFA Model of Characteristics of Performance Management Systems (CPMS) Scale (10-item). All 10 original scale items were included in the CFA model. The specification of this model was based on the exploratory factor analysis (EFA) results of this scale obtained by Lui et al. (2006).

Factor Loadings for Characteristics of Performance Management Systems (CPMS) Scale (10-item)

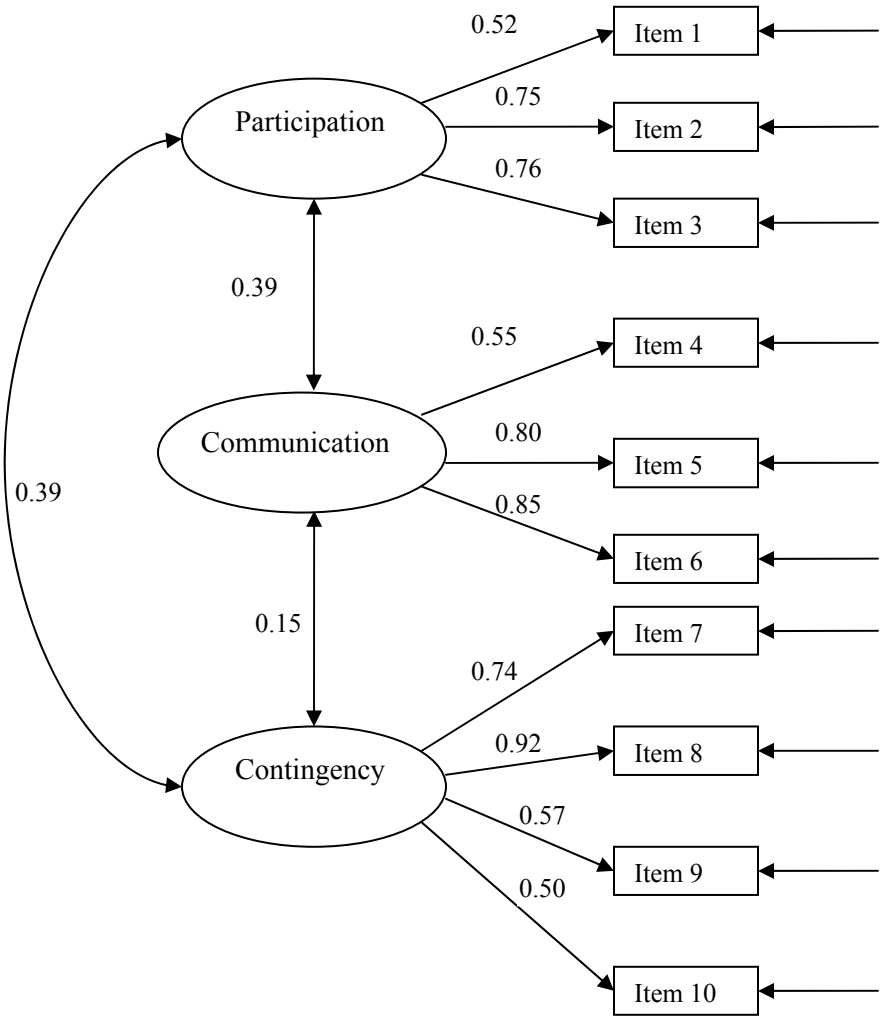

Figure 5A: Factor Loadings for Characteristics of Performance Management Systems (CPMS) Scale (10-Item). All 10 original scale items were included in the model. The CFA model did not provide a satisfactory fit:
Chi-square = 103.96 (df = 32), $p<0.01$; $\chi^2/df = 3.25$;
NFI = 0.97; CFI = 0.98; TLI = 0.97; RMSEA = 0.13.

Factor Loadings for Characteristics of Performance Management Systems (CPMS) Scale (9-item)

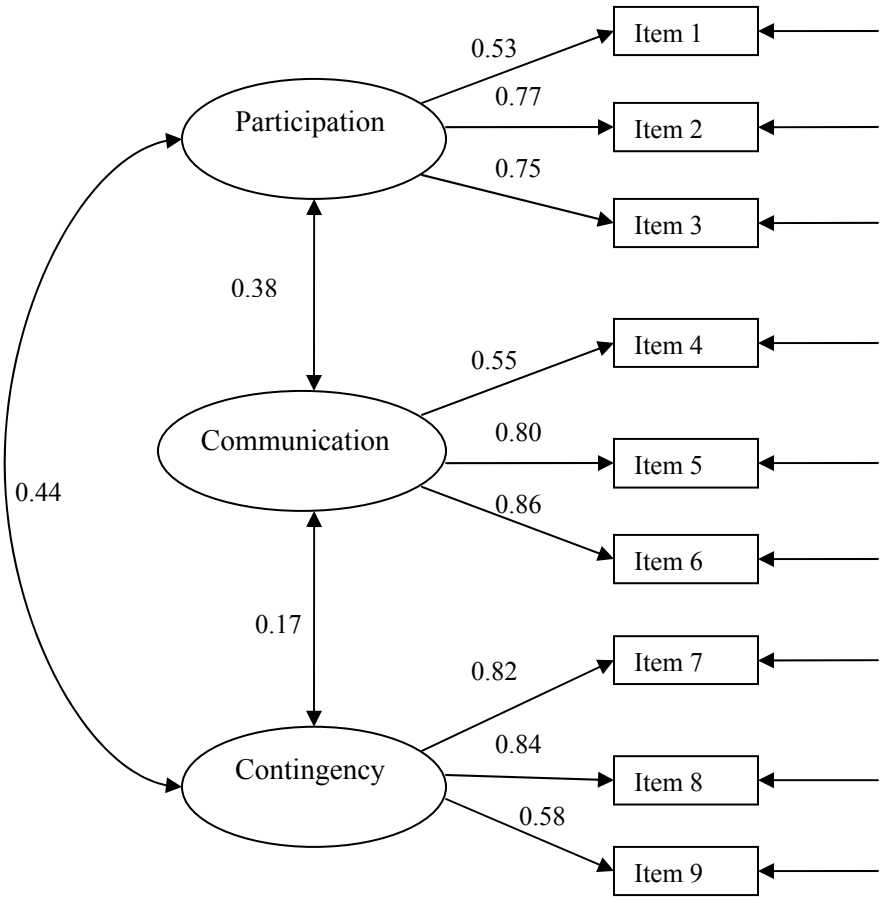

Figure 5B: Factor Loadings for Characteristics of Performance Management Systems (CPMS) Scale (9-item). Compared with the original CFA model presented in Figure 5A, item 10 was removed from the model because first, it cross-loaded on the Communication factor and second, its error term (i.e., e10) was negatively correlated with e7. This modified CFA model achieved an acceptable fit and all the factor loadings were over 0.50.
Chi-square = 65.42 (df = 24), $p<0.01$; $\chi^2/df = 2.73$;
NFI = 0.98; CFI = 0.99; TLI = 0.98; RMSEA = 0.11.

Theoretical Structural Model (for Study 1)

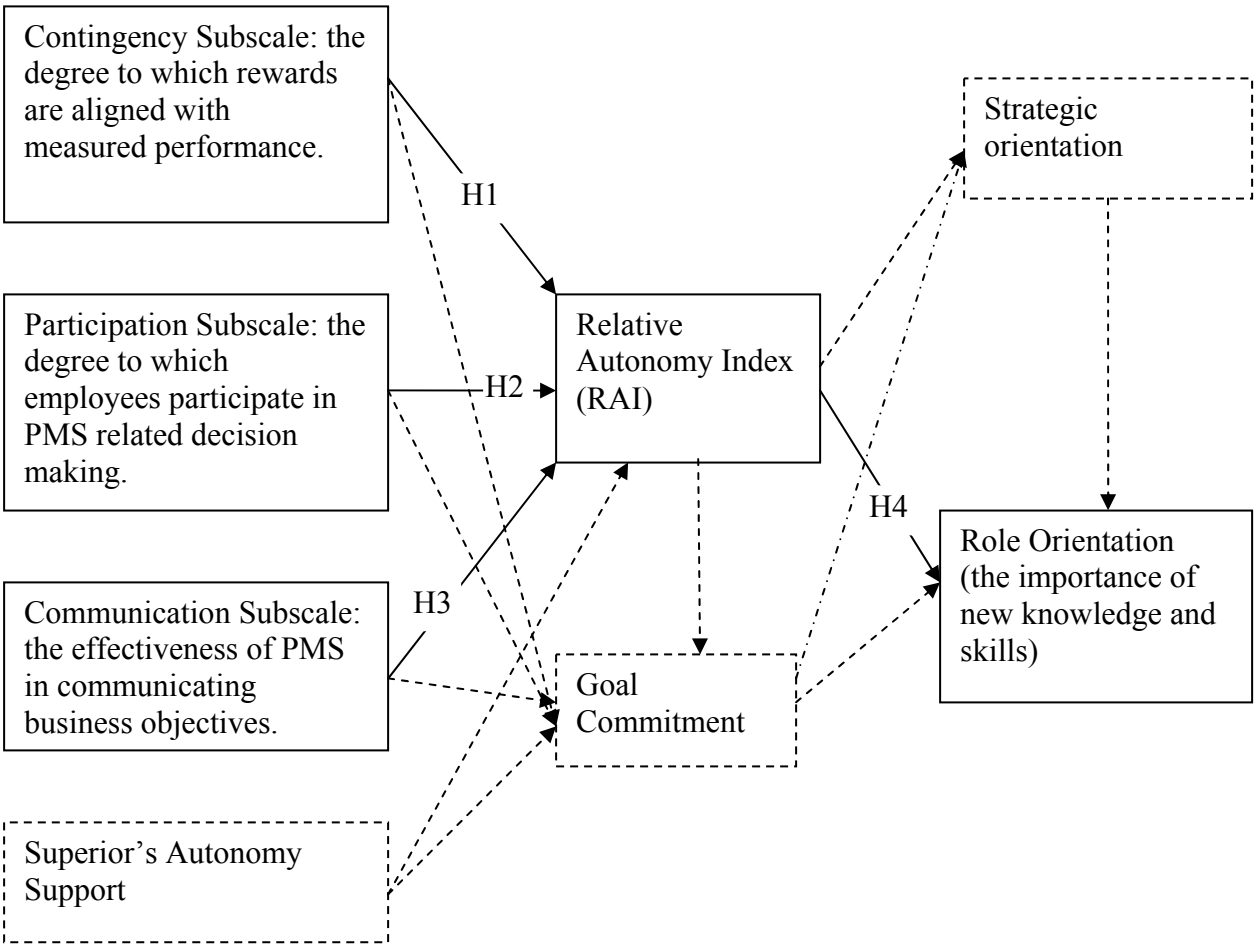

Figure 6: Theoretical Structural Model (for Study 1). Structural equation modeling (SEM) was used to test this model. Superior's Autonomy Support was included in order to examine the effect of the characteristics of PMS on relative autonomy index (RAI) over and beyond the effect of Superiors' Autonomy Support. Similarly, Goal Commitment was included in order to test the effect of RAI on consequence variables over and beyond the effect of Goal Commitment. While Strategic Orientation was included to demonstrate that RAI only impacts Role Orientation but not Strategic Orientation. In addition, although not hypothesized, RAI was expected to predict Goal Commitment, and Strategic Orientation was expected to predict Role Orientation (Knowledge). Hypothesized paths are presented in solid lines, whereas not hypothesized paths (e.g. the one from Superior's Autonomy Support to RAI) appear in dotted lines.

Strategy Map of Shorthorn Corp.

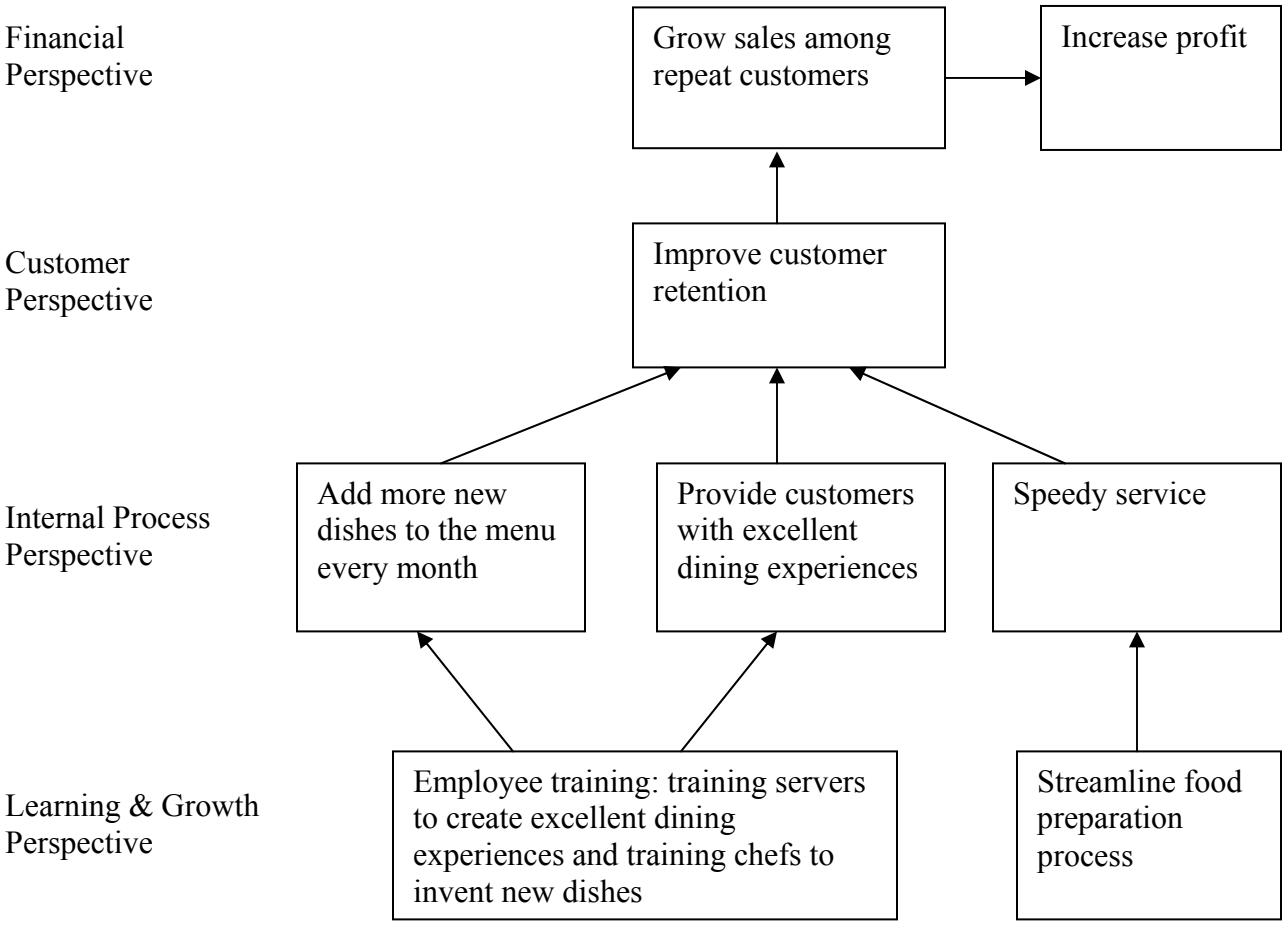

Figure 7: Strategy Map of Shorthorn Corp. This map shows in graphical format how Shorthorn expected to achieve its strategic goal (i.e., improve customer retention) by delivering on the strategic drivers (e.g., streamlining food preparation process and employee training). The map was presented to the participants in all conditions subsequent to the description of the strategy.

Predictions Tested by Study 2

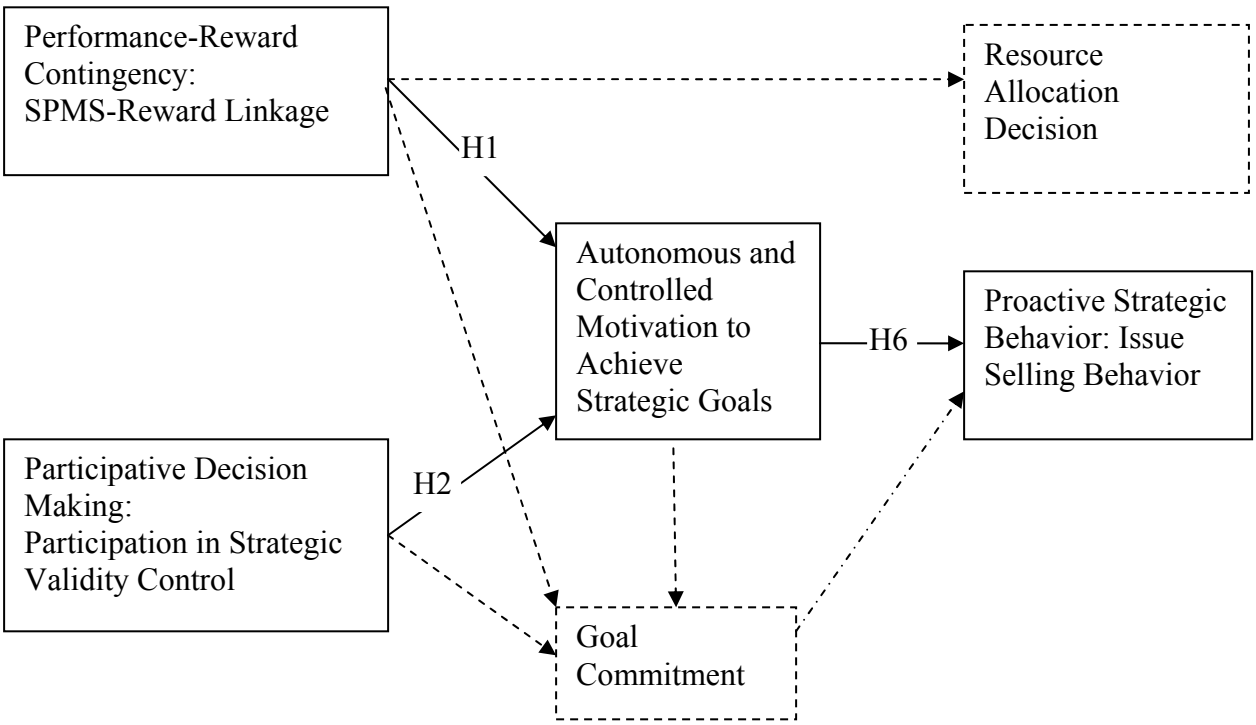

Figure 8: Predictions Tested by Study 2. The paths, both the hypothesized and not hypothesized ones, were tested using different statistical techniques including one-way ANOVA, two-way MANOVA and path analysis. In this figure, Goal Commitment was included in order to test the effect of autonomous and controlled motivation on Issue Selling Behavior (ISB) over and beyond the effect of Goal Commitment. Resource allocation decision was measured to test the effect of SPMS-reward contingency on middle managers' willingness to carry out strategies. Hypothesized paths are presented in solid lines, whereas those not hypothesized (e.g. the one from Goal Commitment to ISB) appear in dotted lines.

Configurations of the Theoretical Model (Model A)

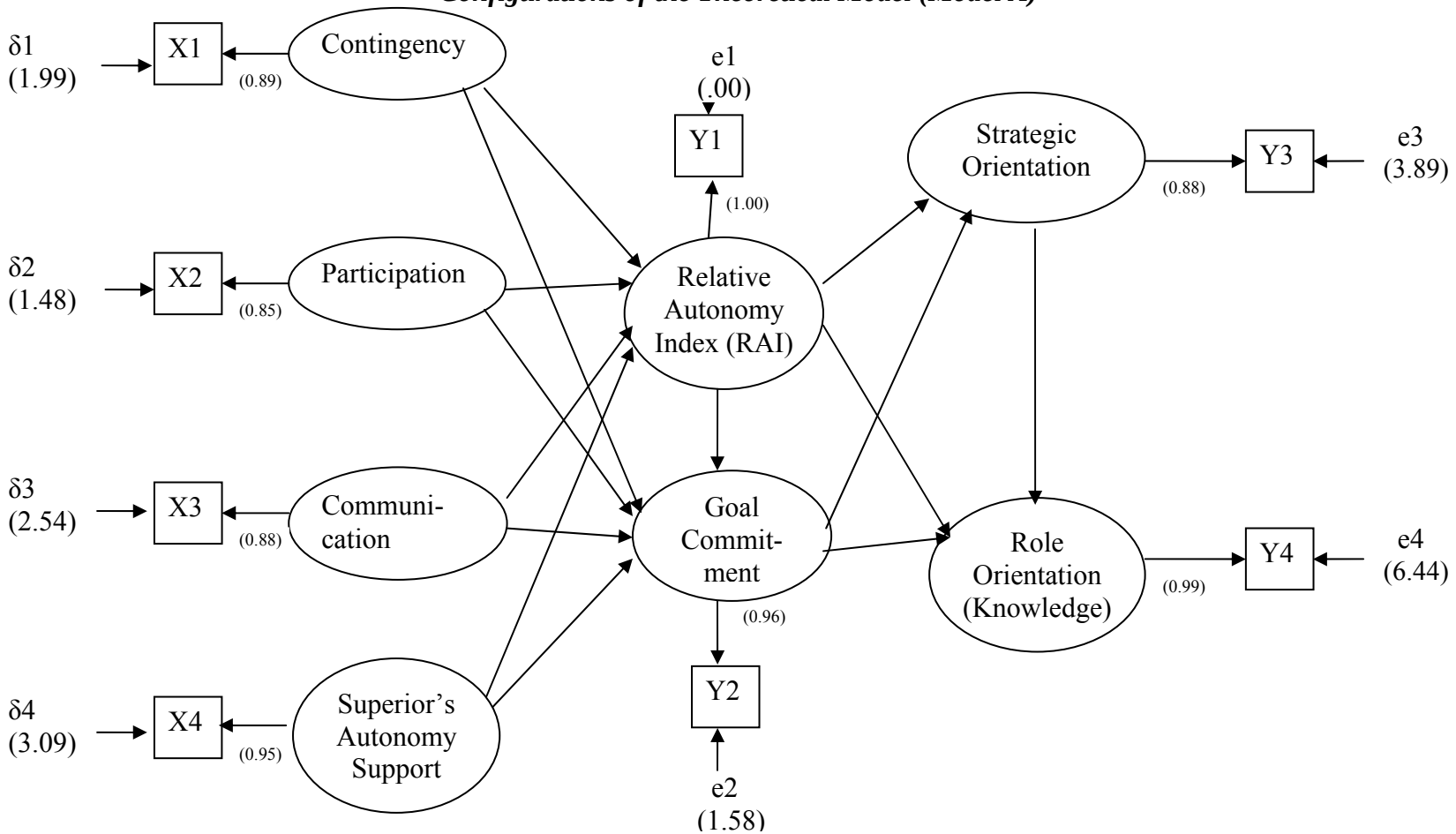

Figure 9: Configuration of the Theoretical Model (Model A). Model A reached a poor model fit and thus a series of post hoc model modifications were conducted.
Chi-square [df=10] =129.75, $p<0.01$; $\chi^2/df=12.98$; GFI=0.86; AGFI=0.48; NFI=0.71; CFI=0.71; TLI=0.19; RMSEA=0.30.

Configurations of t*he Constrained Model (Model B)*

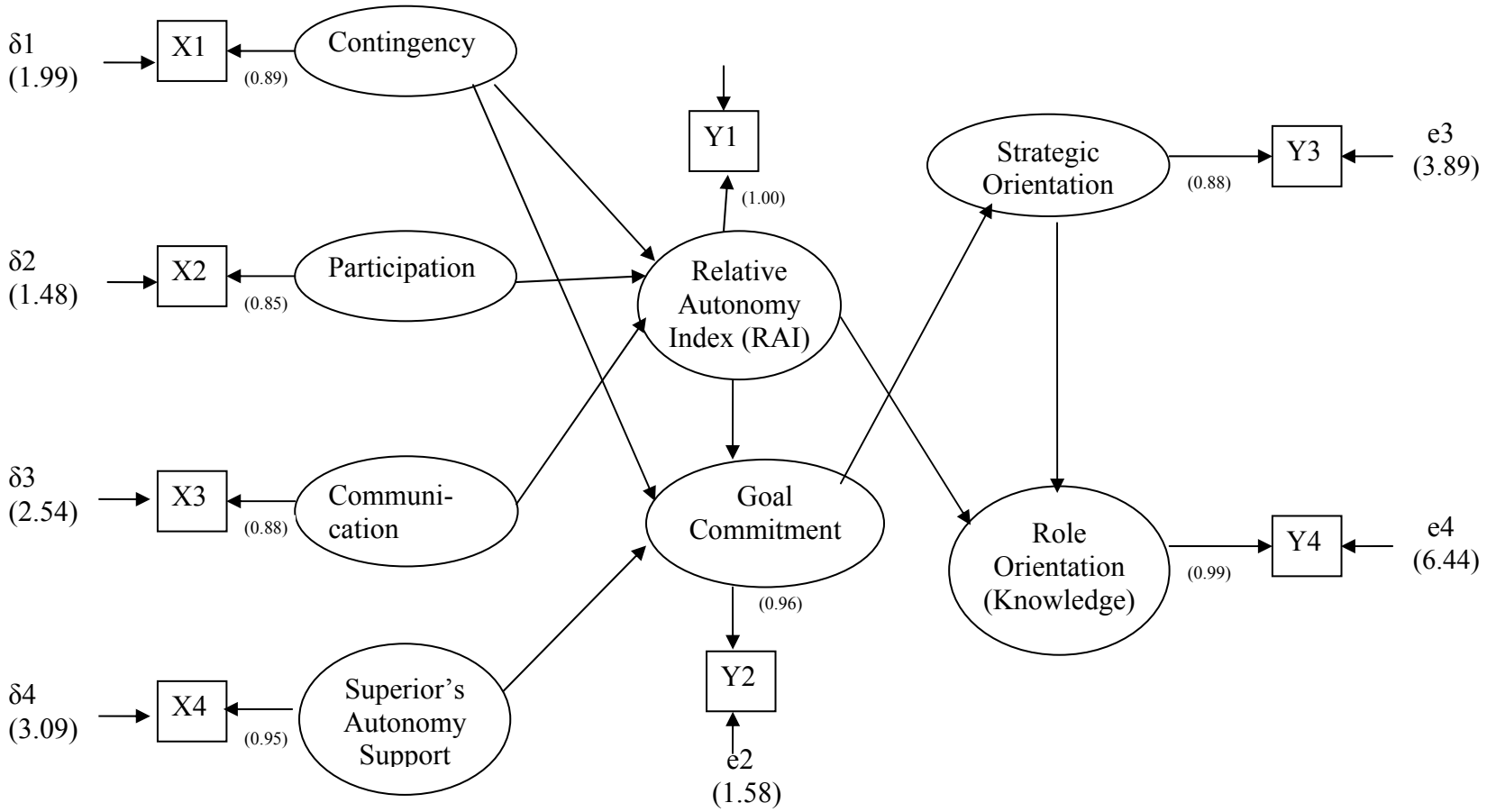

Figure 10: Configurations of the Constrained Model (Model B). Compared with that of model A, the model fit of model B was improved due to the deletion of five insignificant paths. However, the model fit of model B was still not adequate: Chi-square [df=15] =133.70, $p<0.01$; $\chi^2/df=8.91$; GFI=0.85; AGFI=0.65; NFI=0.70; CFI=0.71; TLI=0.46; RMSEA=0.24.

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Configurations of the "Optimal" Model for the Whole Sample (Model C)

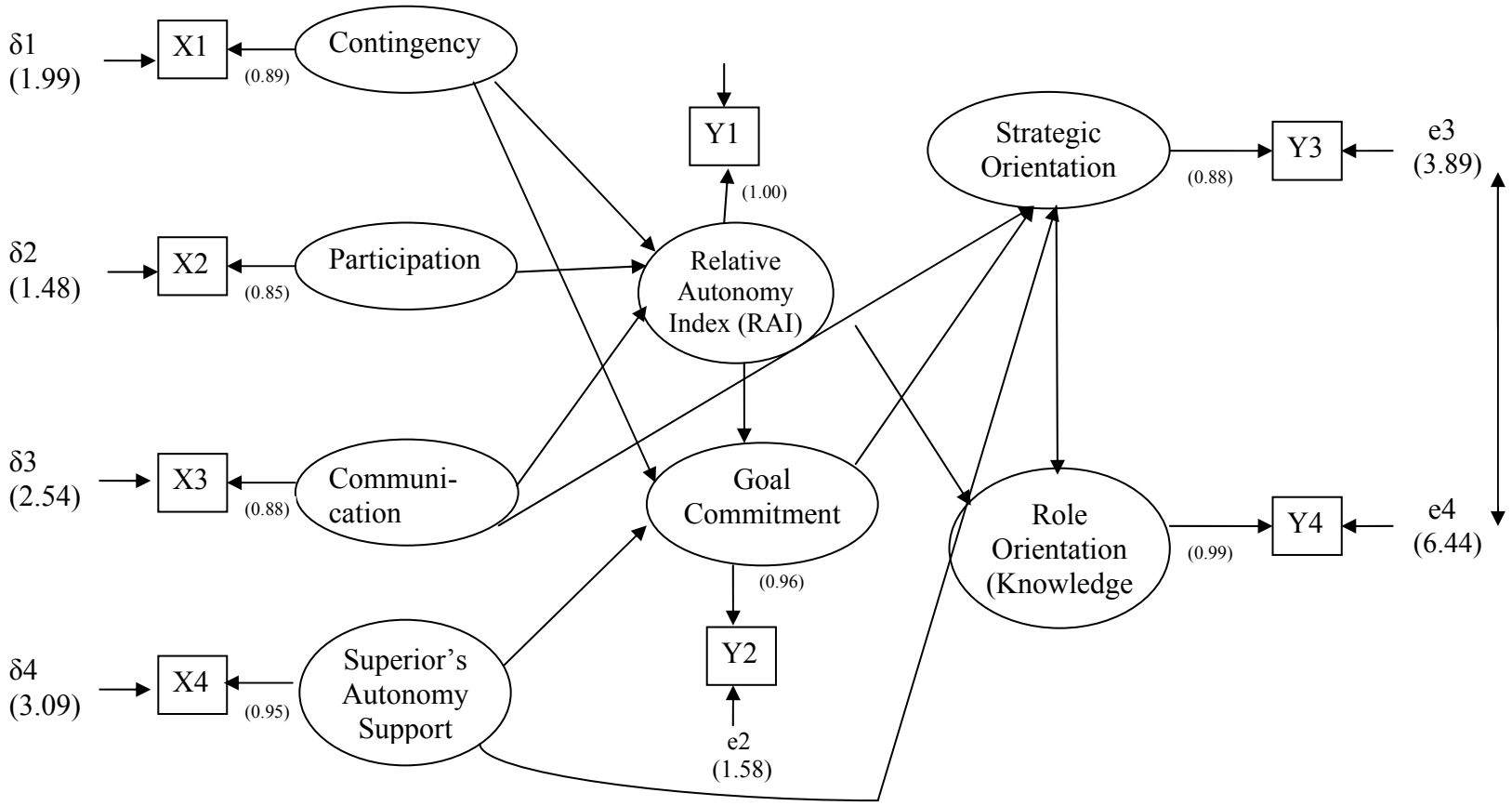

Figure 11: Configurations of the "Optimal" Model (Model C) for the Whole Sample. Based on the modification indices, three previously constrained parameters were freed: Superior's Autonomy Support →Strategic Orientation; Communication→ Strategic Orientation; and e3←→ e4. When estimated on the whole sample, model C reached an adequate fit:
Chi-square [df=12] =22.90, $p<0.03$; $\chi^2/df=1.91$; GFI=0.96; AGFI=0.88; NFI=0.95; CFI=0.97; TLI=0.94; RMSEA=0.08.

155

Path Coefficient Estimates for Model C (for the whole sample, ns=135)

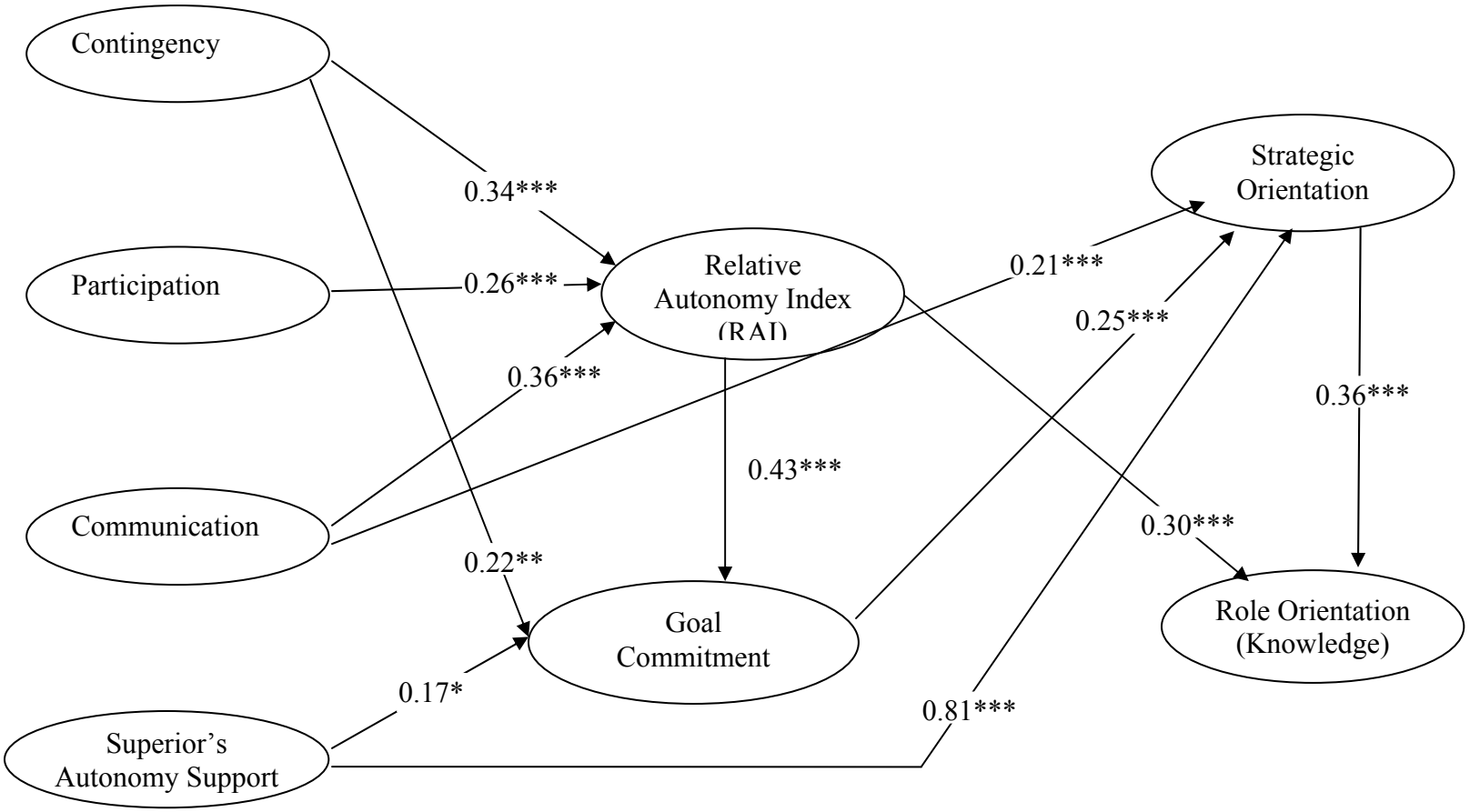

Figure 12: Path Coefficient Estimates for Model C (*for the Whole Sample, ns=135)*
For clarity, the indicators for the latent variables, error terms for the indicators, loadings from latent variables to the indicators, residuals, and correlations among exogenous variables are not included in the figure.
*: significant at the 0.10 level; **: significant at the 0.05 level; ***: significant at the 0.01 level.

156

Path Coefficient Estimates for Model C (for the High Task Uncertainty Sample, ns=66)

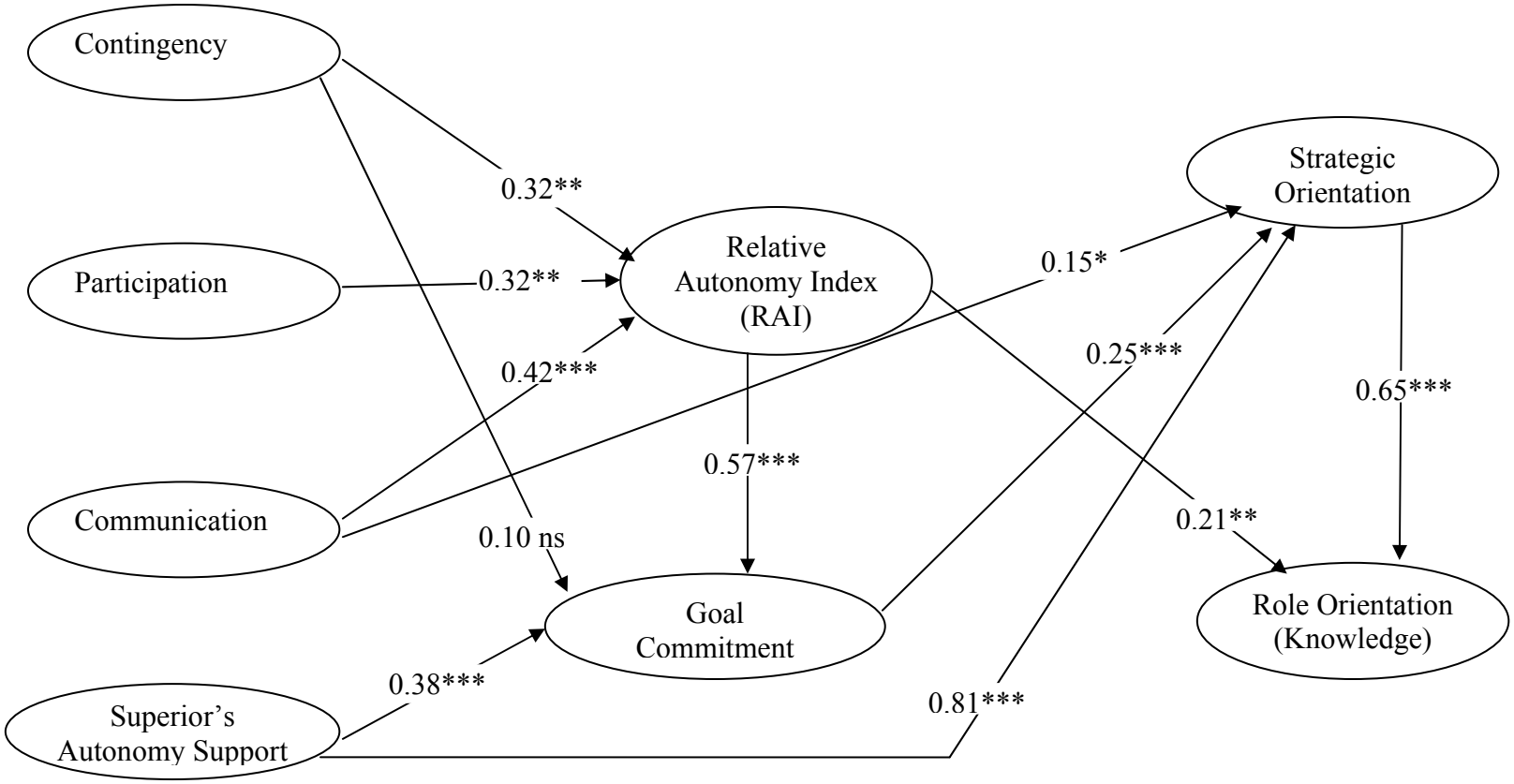

Figure 13: Path Coefficient Estimates for Model C (*for the High Task Uncertainty Sample, ns=66*). When estimated on the high task uncertainty sample, this model reached a good fit:
Chi-square [df=12] =9.94, p=0.62; χ^2/df=0.83; GFI=0.96; AGFI=0.89; NFI=0.97; CFI=1.00; TLI=1.02; RMSEA=0.00.
For clarity, the indicators for the latent variables, error terms for the indicators, loadings from latent variables to the indicators, residuals, and correlations among exogenous variables are not included in the figure.
*: significant at the 0.10 level; **: significant at the 0.05 level; ***: significant at the 0.01 level.

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Path Coefficient Estimates for Model C (for the Low Task Uncertainty Sample, ns=68)

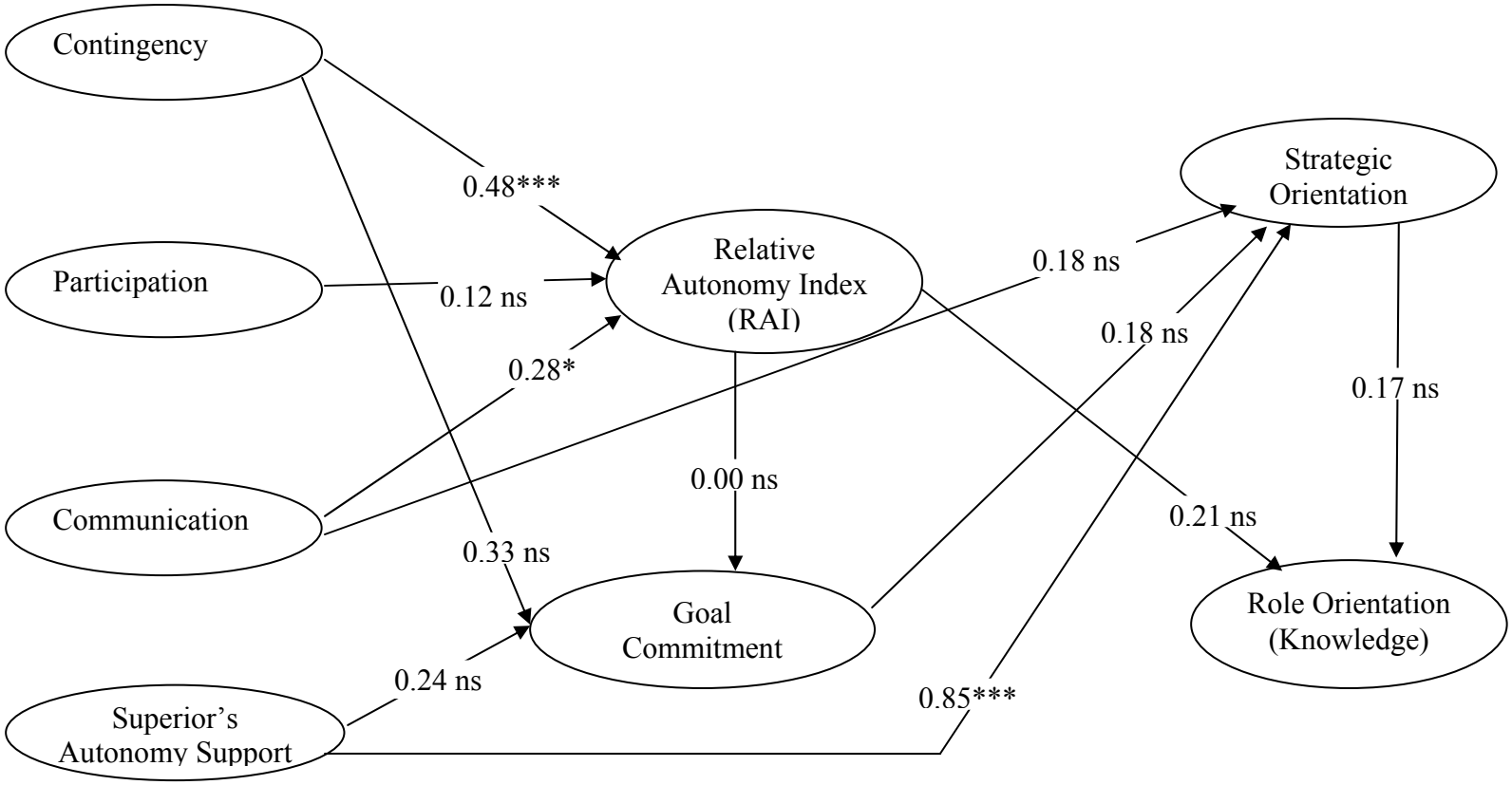

Figure 14: Path Coefficient Estimates for Model C (*for the Low Task Uncertainty Sample, ns=68*). When estimated on the low task uncertainty sample, this model reached an inadequate fit:
Chi-square [df=12] =36.04, $p<0.01$; $\chi^2/df=3.00$; GFI=0.89; AGFI=0.89; NFI=0.83; CFI=0.87; TLI=0.69; RMSEA=0.17.
For clarity, the indicators for the latent variables, error terms for the indicators, loadings from latent variables to the indicators, residuals, and correlations among exogenous variables are not included in the figure.
*: significant at the 0.10 level; **: significant at the 0.05 level; ***: significant at the 0.01 level.

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Configurations of the "Optimal" Model for the Low Task Uncertainty Sample (Model D)

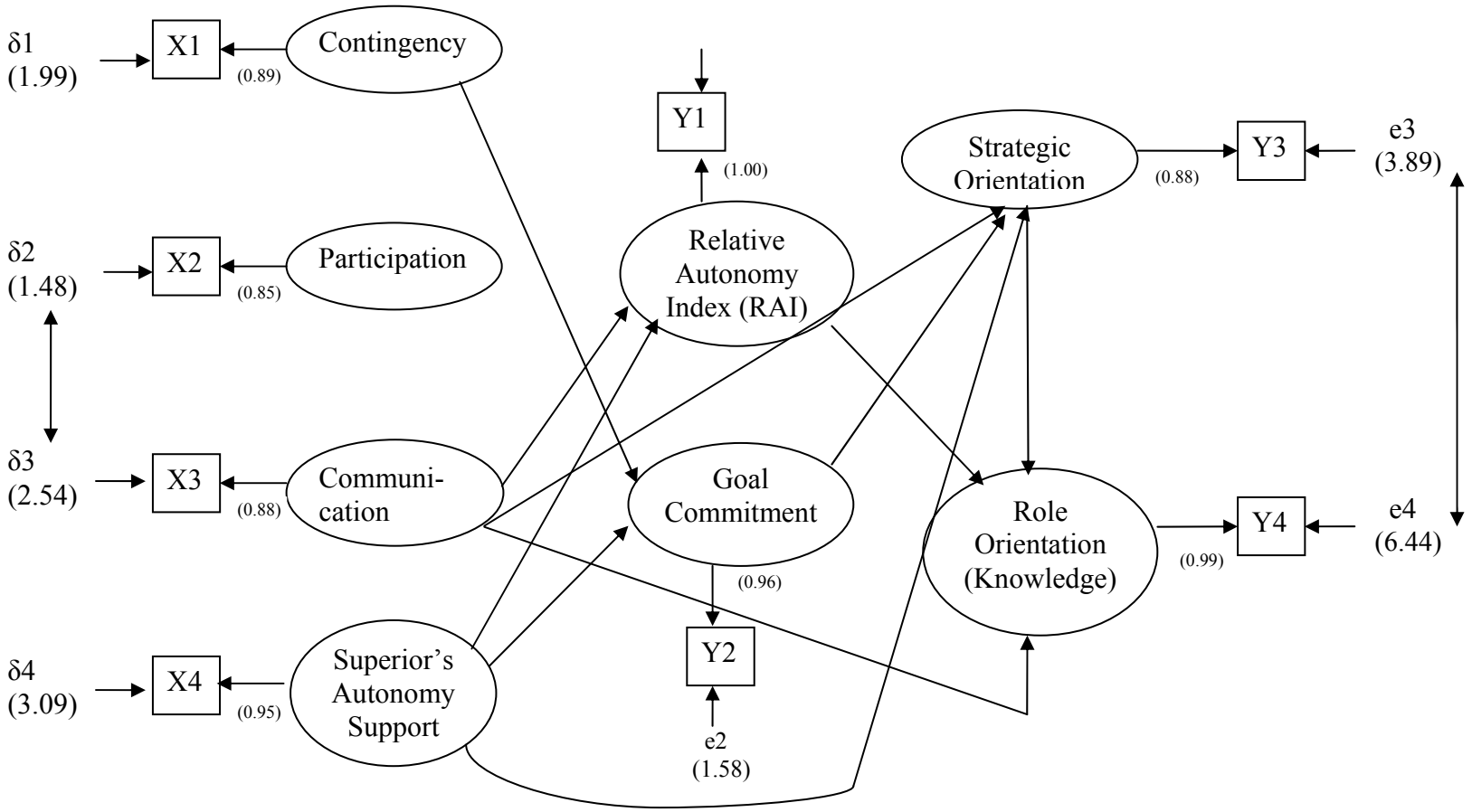

Figure 15: Configurations of the "Optimal" Model for the Low Task Uncertainty Sample (Model D). This model was derived after a series *post hoc* modifications were conducted on Model C. When estimated on the low task difficulty sample, model D reached an adequate fit:
Chi-square [df=13] =13.40, p=0.42; χ^2/df=1.03; GFI=0.95; AGFI=0.87; NFI=0.94; CFI=1.00; TLI=1.00; RMSEA=0.02

159

Path Coefficient Estimates for Model D (for the Low Task Uncertainty Sample, ns=68)

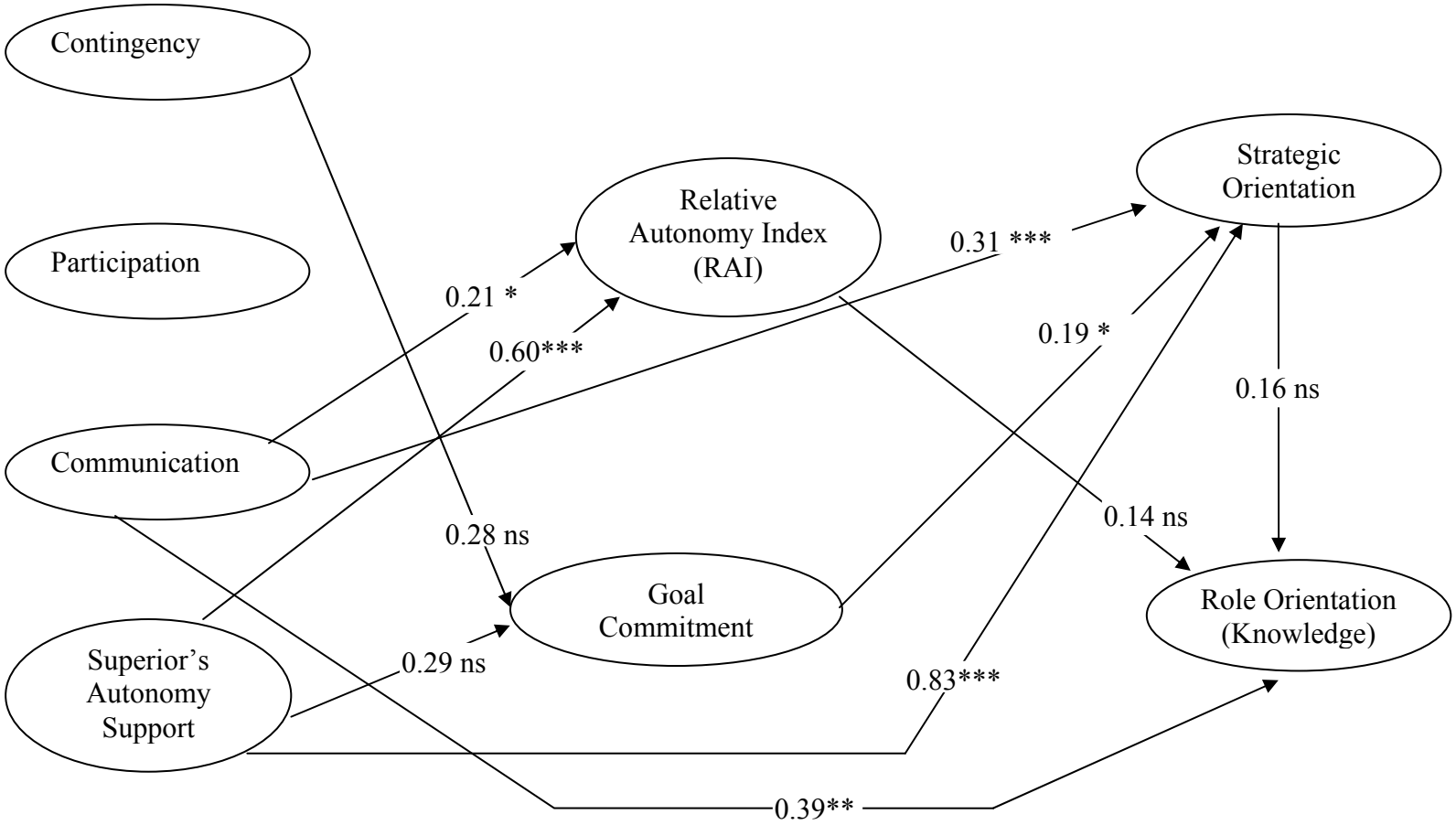

Figure 16: Path Coefficient Estimates for Model D (*for the Low Task Uncertainty Sample, ns=68*) For clarity, the indicators for the latent variables, error terms for the indicators, loadings from latent variables to the indicators, residuals, and correlations among exogenous variables are not included in the figure.
*: significant at the 0.10 level; **: significant at the 0.05 level; ***: significant at the 0.01 level.

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Configurations of Path Model (Saturated) for Testing H6

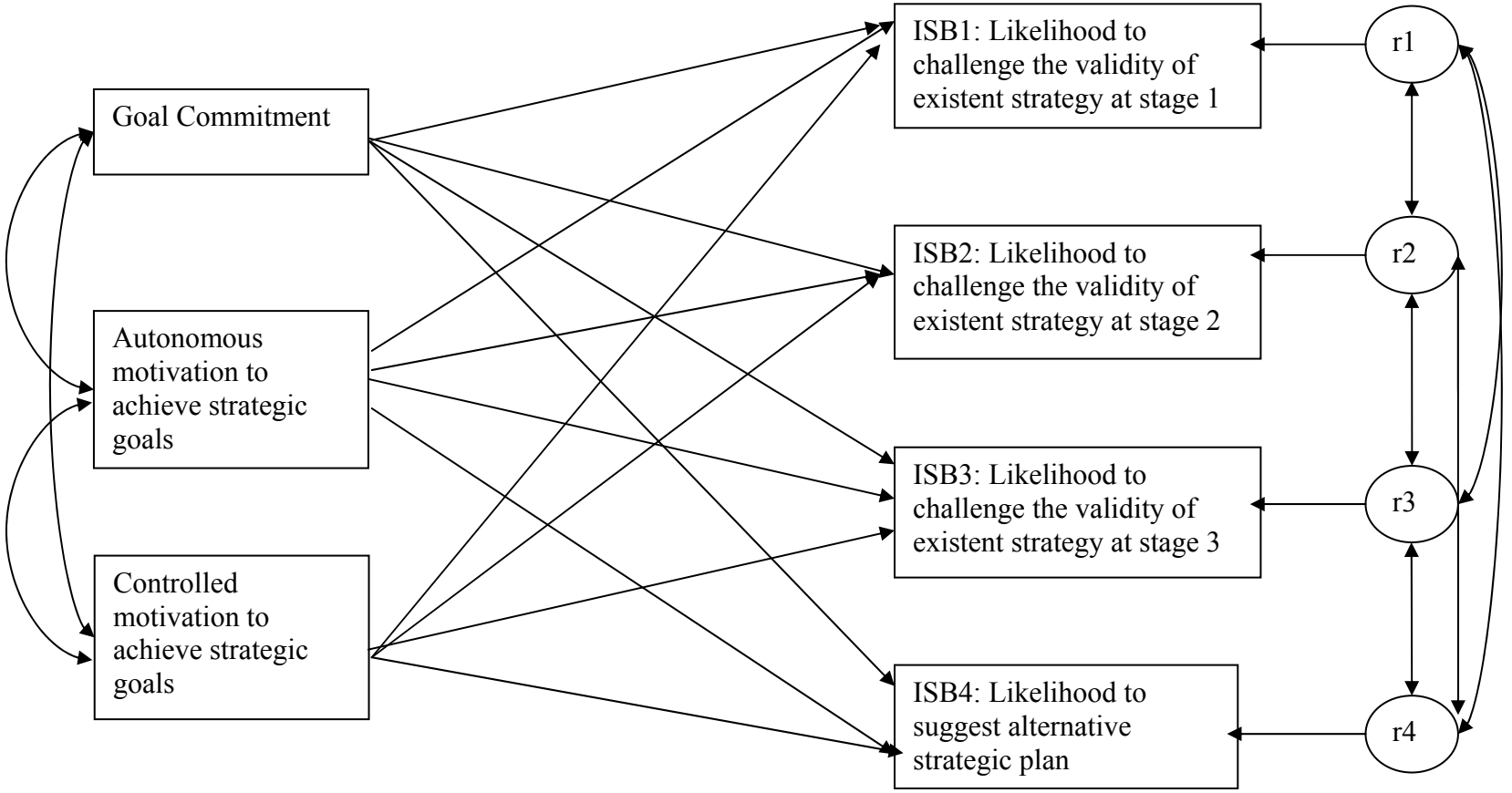

Figure 17: Configurations of Path Model (Saturated) for Testing H6. In this model, all the residual terms (r1, r2, r3 and r4) were allowed to correlate among each other and the correlation among the three predictors were also estimated. These configurations provided a just identified model, i.e., the degree of freedom equals zero. Therefore, model fit could not be estimated.

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Configurations of Path Model (Constrained) for Testing H6

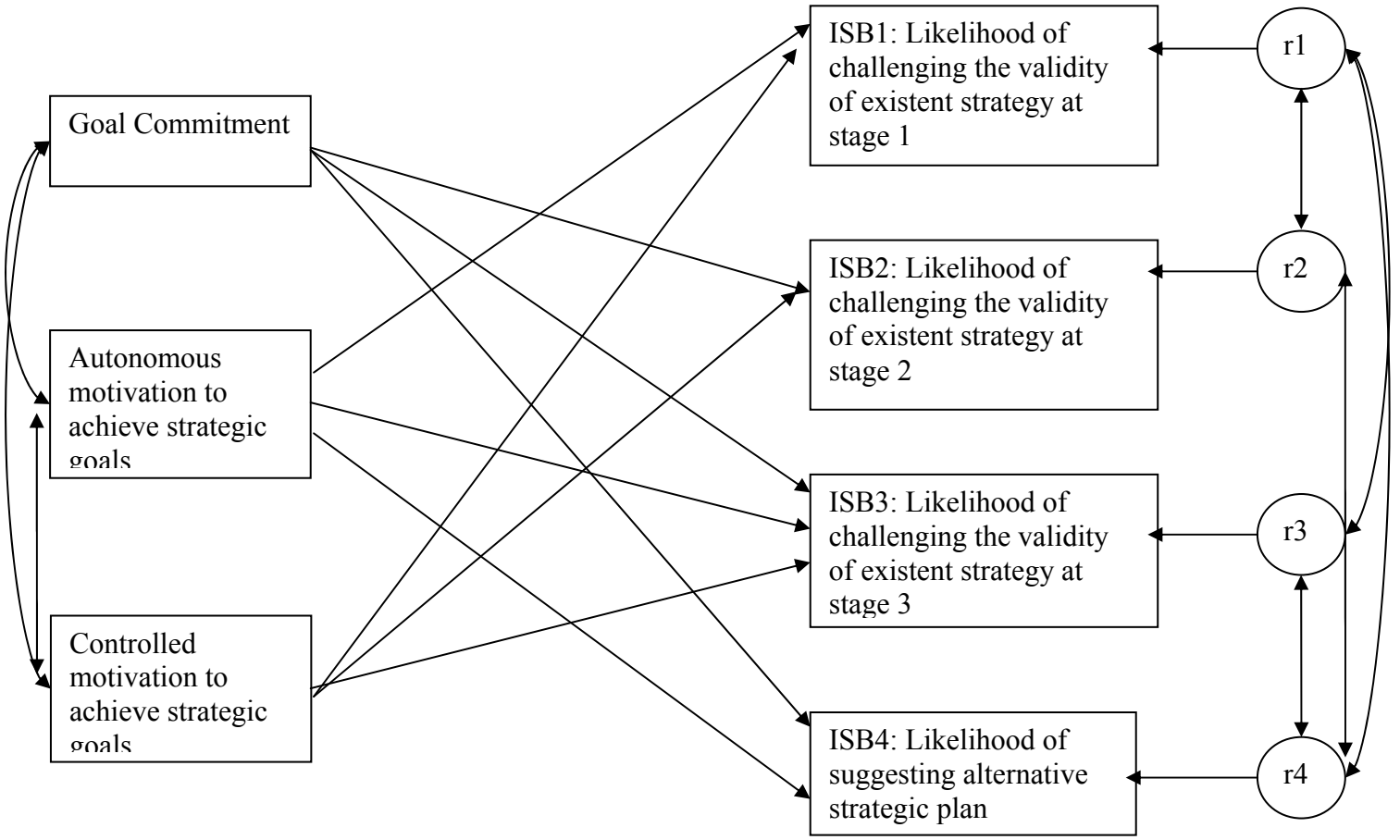

Figure 18: Path Model (Constrained) for Testing H6. Compared with the saturated model (see Figure 17), the following parameters were constrained to zero to improve the parsimony of the model: r2 ←→r3, CM →ISB4, AM→ISB2, and Goal Commitment→ISB1. This constrained model reached an adequate fit:
Chi-square [df=4] =2.82, p=0.59; χ^2/df=0.71; NFI=1.00; CFI=1.00; TLI=1.00; RMSEA=0.08.

Path Coefficient Estimates for the Constrained Model (for Testing H6, ns=70)

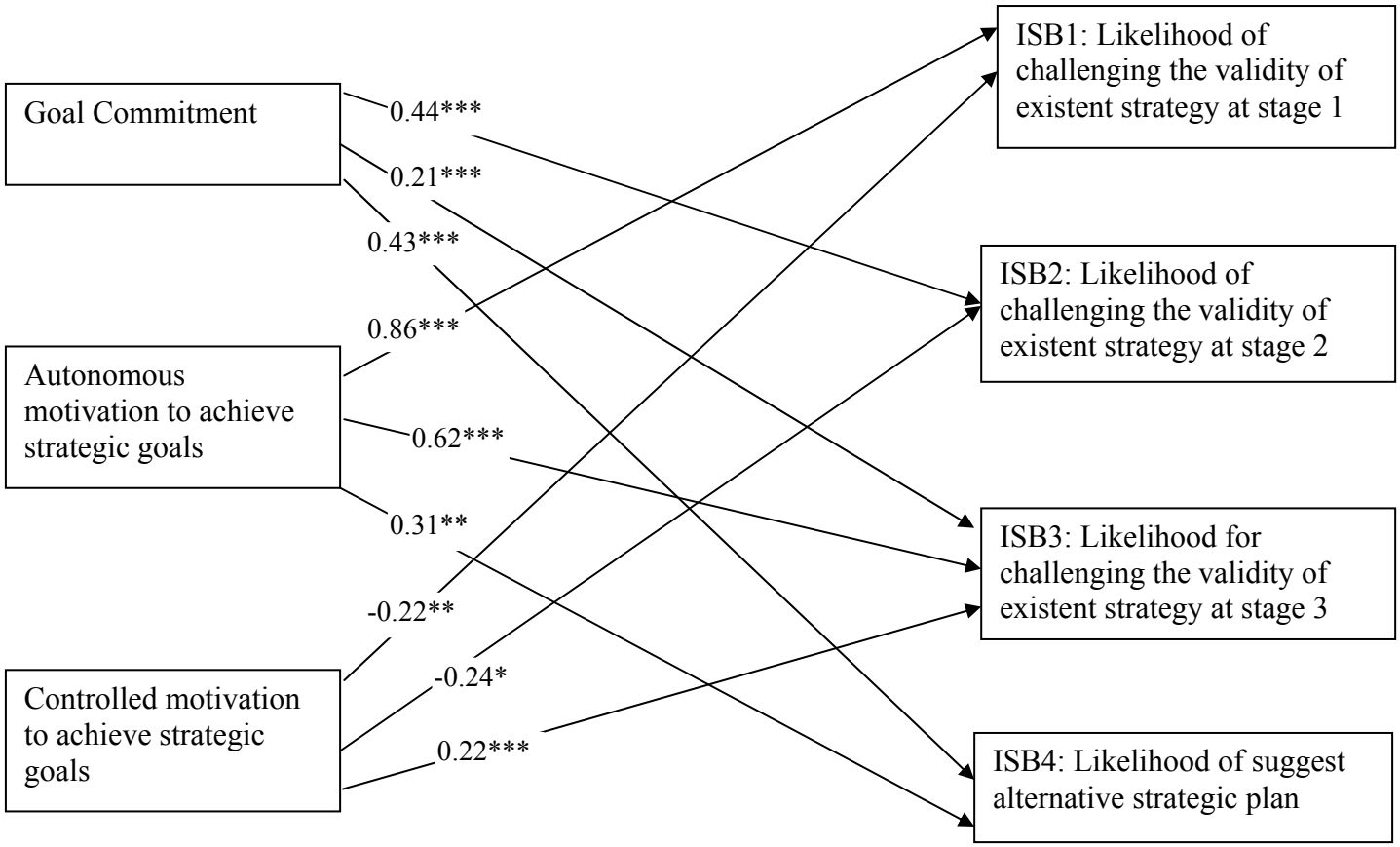

Figure 19: Path Coefficient Estimates for the Constrained Model (for Testing H6, ns=70). H6 was tested based on the path coefficient estimates presented in this figure.
For clarity, the residuals, correlations among exogenous variables and correlations among residual terms are not included in the figure.
*: significant at the 0.10 level; **: significant at the 0.05 level; ***: significant at the 0.01 level.

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TABLES

Table 1: Characteristics of Performance Management Systems (CPMS) Scale (Lui, et al. 2006) (seven-point Likert scale)

Scale Item
1. I am very frequently asked to participate in choosing the criteria used to evaluate my performance.
2. I have a lot of influence in setting the targets used to evaluate my performance.
3. I always have the opportunity to discuss and explain my performance prior to my evaluation.
4. I feel that the selection of my performance targets is pretty arbitrary. (Reverse)
5. It is not clear to me how the measures used to evaluate my performance are related to valued department objectives. (Reverse)
6. Measures of my performance seem to be unrelated to my department goals. (Reverse)
7. It is extremely important for me to achieve my performance targets if I want to obtain financial rewards such as salary increases or bonuses.
8. How much recognition I obtain at work depends largely on how well I can achieve my performance targets.
9. Performing well in my department usually results in obtaining more organizational resources (i.e., a larger budget).
10. I feel that my reputation and status at work will be damaged if I fail to meet my performance targets.

Table 2: Work Climate Questionnaire (WCQ, Baard et al. 2004) that Measures Superior's Autonomy Support (seven-point Likert scale)

Scale Item
1. I feel that my manager provides me choices and options.
2. I feel understood by my manager.
3. My manager conveys confidence in my ability to do well at my job.
4. My manager encourages me to ask questions.
5. My manager listens to how I would like to do things.
6. My manager tries to understand how I see things before suggesting a new way to do things.

Table 3: Role Orientation (Knowledge) Scale (Parker et al. 1997) (seven-point Likert scale)

Scale Item
How important are the following skills and knowledge for you to do your job effectively?
1. Knowing the root causes of work problems that occur.
2. Being able to measure and analyze problems in the work process.
3. Being able to anticipate and prevent work problems.
4. Knowing how to assess the performance of the work group.
5. Being able to make decisions as part of the group.
6. Being able to involve and motivate people.
7. Being able to understand other people's points of view.
8. Understanding how work flows in your work area.
9. Knowing what skills everyone in your work area has.
10. Knowing the priorities of work in your area.
11. Knowing how to allocate tasks without the supervisor.
12. Knowing the overall objectives of the company.
13. Knowing what is different about the goods and/or services provided by this company compared to those provided by competitors.
14. Being willing to challenge and question the way things are done.
15. Being willing to take on and accept new responsibilities.
16. Being able to work out what to do when instructions are vague.

Table 4: Strategic Orientation Scale (Parker et al. 1997) (seven-point Likert scale)

Scale Item
1. In the long run, work is more efficient if people stick to what they already know, rather than learning new things.(Reverse)
2. Efficient workers get on with what they've been told rather than questioning things.(Reverse)
3. Fixing problems as they arise is more efficient than trying to prevent them.(Reverse)
4. When an organization is running smoothly, there's no need to think about changing things.(Reverse)
5. It is important for the company to maintain its productivity even when business is slow.(Reverse)
6. I could do my job perfectly well without knowing the company's overall objectives.(Reverse)
7. I find it reassuring if there is always a large pile of work waiting for me to work on.(Reverse)
8. I can't be expected to be concerned about mistakes other people make.(Reverse)
9. If I know what to do and how to do it, I am not concerned about why.(Reverse)
10. It is not my job to make important decisions about my work.(Reverse)

Table 5: Description of Shorthorn's Balanced Scorecard (BSC) Measures

Shorthorn's Balanced Scorecard Measures

Financial Perspective
1. Store profit before tax
2. Increase in repeat customer sales (*Increase in repeat customer sales as a % of last year's repeat customer sales*)
Customer Perspective
1. Customer retention rate *(repeat customer sales / total sales)*
Internal Process Perspective
1. Average number of new dishes innovated per month
2. "Mystery diner" audit rating *(see note 1 below)*
3. Time to process orders *(number of minutes from customer ordering the main dish to the server handing the order to the customer)*
Learning and Growth Perspective
1. Hours of employee training in a year per employee
2. Streamlining food preparation process (*rating, out of 100%, from quarterly logistics report that is compiled by an independent Logistics consultant.*)

Note 1: In the "Mystery diner" audit, a Shorthorn employee, posing as a customer, rates stores against an explicit ten-element vision of the "perfect dining experience". Elements include: helpfulness, courteousness and friendliness of personnel, and frequency of server's contact with the guest. Perfect scores along all dimensions lead to a score of 100%.

Table 6: Manipulation of SPMS-Reward Linkage

Incentive Plan (Not-Linked Condition)
1. Sales increase (sales increase as a % of prior year's sales)
2. Sales per $ of assets (total sales / average total assets)
3. Operating expenses per $ of sales (operating expenses / total sales)
4. Number of entrees sold per month (number of main dishes sold / month)
5. Average guest check (average $ amount consumed by each guest)

Incentive Plan (Linked Condition)
1. Increase in repeat customer sales
2. Average number of new dishes invented per month
3. "Mystery diner" audit rating
4. Time to process orders
5. Hours of employee training in a year per employee

Table 7: Descriptive Statistics for Study 1 (ns=135)

Variable	Theore-tical Range	Actual Range	Mean (Std. Dev)	Med-ian	Cronbach's alpha
Antecedents					
1. Characteristics of PMS					
(1) Performance-Reward Contingency	1-7	2.00-7.00	4.92 (1.03)	5	0.79
(2) Participative Decision Making	1-7	1.67-5.33	3.79 (0.77)	4	0.72
(3) Communicating Business Objectives	1-7	1.33-7.00	4.24 (1.11)	4	0.77
2. Superior's Autonomy Support (WCQ)	1-7	1.00-6.50	4.27 (0.98)	4.33	0.91
Mediators					
1. Goal Commitment	1-5	1.00-5.00	3.45 (0.89)	3.4	0.92
2. Autonomous Motivation	1-9	1.50-9.00	6.04 (1.59)	6	0.90
3. Controlled Motivation	1-9	1.50-8.50	4.76 (1.51)	5	0.62
4. Relative Autonomy Index (RAI)	-24-24	-17.00-20.00	3.77 (7.77)	2	N/A
Consequences					
1. Strategic Orientation	1-7	2.67-6.50	5.13 (0.69)	5.17	0.77
2. Role Orientation (Knowledge)	1-7	1.57-7.00	4.00 (1.28)	3.57	0.98
3. Internal Attribution	0% - 100%	0%-80%	57.17% (0.13)	60%	N/A
Moderator					
Task Uncertainty	1-7	1.60-5.20	3.26 (0.80)	3.10	0.86

Table 8: Correlation (p value) Among Four Types of Motivation for Study 1 (ns=135)

	1	2	3	4
1. External Regulation	1.00 (0.00)			
2. Introjected Regulation	0.45 (0.00)	1.00 (0.00)		
3. Identified Regulation	-0.23 (0.01)	-0.15 (0.08)	1.00 (0.00)	
4. Intrinsic Motivation	-0.40 (0.00)	-0.20 (0.02)	0.81 (0.00)	1.00 (0.00)

Table 9: Demographics and the Nature of Motivation for Study 1
Panel A: Correlation (p value) between Demographics and the Nature of Motivation

	Autonomous Motivation	Controlled Motivation	Relative Autonomy Index
1. Age (ns=133)	0.06 (0.48)	-0.41 (0.00)	0.25 (0.00)
2. Job Tenure (ns=122)	-0.11 (0.25)	-0.39 (0.00)	0.14 (0.13)
3. Year in Current Position (ns=124)	-0.16 (0.08)	-0.34 (0.00)	0.08 (0.35)

Panel B: The Difference in Nature of Motivation between Managers and Non-Management Employees

	Autonomous Motivation	Controlled Motivation	Relative Autonomy Index
Mean (sd) for Managers (ns=71)	6.10 (1.55)	4.49 (1.47)	4.68 (7.77)
Mean (sd) for Non-Management Employees (ns=57)	6.07 (1.69)	5.16 (1.53)	2.81 (7.86)
F-ratio (p value) of One-Way ANOVA Comparison bet. Managers and Non-Management Employees	0.01 (0.92)	6.38 (0.01)	1.81 (0.18)

Table 10: Effects of Performance and Relative Autonomy Index (RAI) on Internal Attribution: Multiple Regression Results

*Model 1: Internal-Attribution = β0 + β1*Performance + ε*	
1. Sample: the whole sample (ns=123)	
Intercept (t-value)	0.39 (8.04)
Standardized coefficient (t-value)	
Performance	0.33 (3.83) ***
Adjusted R^2	0.11
2. Sample: the low RAI sample (ns=56)	
Intercept (t-value)	0.23 (3.18)
Standardized coefficient (t-value)	
Performance	0.51 (4.32) ***
Adjusted R^2	0.26
3. Sample: the high RAI sample (ns=59)	
Intercept (t-value)	0.59 (8.22)
Standardized coefficient (t-value)	
Performance	0.01 (0.11) ns
Adjusted R^2	0.00

*Model 2: Internal-attribution = δ0 + δ1*Performance + δ2*RAI-Median + δ3*(RAI x Performance) + ε*	
Sample: the whole sample (ns=123)	
Intercept (t-value)	0.27 (4.13)
Standardized coefficients (t-values)	
Performance	0.55 (4.37) ***
RAI-Median	1.21 (3.15) ***
RAI X Performance	-1.27 (-2.98) ***
Adjusted R^2	0.18

Note: The measurement of the criterion variable and predictors follows:
1. Internal-Attribution: the percentage that is attributed to ability and/or effort;
2. Performance: Self-rated performance (on a 9-point Likert scale);
3. RAI-Median: 1 if RAI score is higher than the median value of 2, and 0, otherwise;
4. RAI X Performance: the product of RAI-Median and Performance.

***: Significant at the 0.01 level.
ns: not significant at the 0.10 level

Table 11: Descriptive Statistics from Study 2 (ns=70)

Variables	Theoretical Range	Actual Range	Mean (Std. Dev)	Median
Mediators				
1. Goal Commitment	1-9	2.00-8.00	6.27 (1.32)	6.30
2. Autonomous Motivation (see note 1)	1-9	2.00-9.00	6.73 (1.21)	7.00
3. Controlled Motivation	1-9	3.00-8.00	5.89 (0.97)	6.00
4. Relative Autonomy Index (RAI) (see note 2)	-24-24	-7.00-7.00	1.89 (2.81)	2.00
Dependent Variables				
1. Likelihood to sell issue 1 at stage 1 (IS1)	1-9	5.00-9.00	6.90 (0.85)	7.00
2. Likelihood to sell issue 1 at stage 2 (IS2)	1-9	3.00-9.00	7.23 (1.21)	7.00
3. Likelihood to sell issue 1 at stage 3 (IS3)	1-9	3.00-9.00	8.17 (1.32)	8.00
4. Likelihood to sell issue 2	1-9	5.00-9.00	7.50 (1.10)	8.00
5. Weight assigned to strategy-consistent projects	30%-70%	30%-70%	51.9% (0.17)	50%

Note 1: According to the participants in the pilot test, the intrinsic motivation question is not sensible in the current context. Therefore, Different from Study 1, Autonomous motivation in Study 2 only consists of the score of identified regulation.
Note 2: Because the score of intrinsic motivation is not included in the data analyses, this study does not use RAI (which is a linear function of the four motivation scores) to test the hypotheses.

Table 12: Correlation (p value) Among Four Types of Motivation for Study 2 (ns=70)

	1	2	3	4
1. External Regulation	1.00 (0.00)			
2. Introjected Regulation	0.33 (0.00)	1.00 (0.00)		
3. Identified Regulation	0.59 (0.00)	0.49 (0.00)	1.00 (0.00)	
4. Intrinsic Motivation	0.25 (0.03)	0.55 (0.00)	0.58 (0.00)	1.00 (0.00)

EXPERIMENT INSTRUMENT

A 2 (SPMS-Reward Linkage: not-linked condition vs. linked condition) by 2 (Participative Decision Making: control condition vs. participation condition) between-subject design was used. Participants were randomly assigned to one of the four combinations of the two factors.
(Note: Italicized parts are not shown to the experiment participants.)

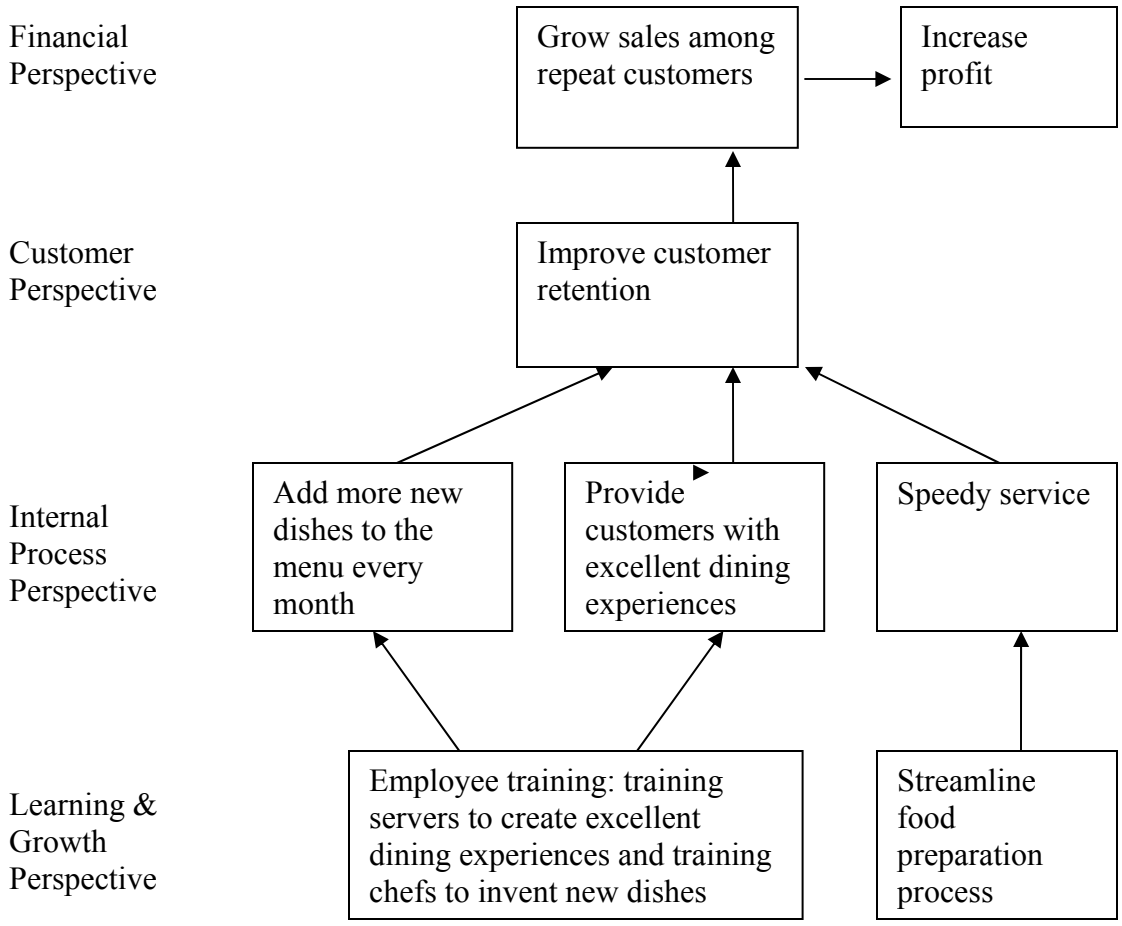
Case 1 (Not-linked X Control Condition)

Ms. Sullivan and her three friends opened the first Shorthorn Steakhouse in March 1990. Since then, their Australia-themed Steakhouse has grown to a restaurant chain that owns 8 stores. Shorthorn aims to provide its customers with generous portions of food at moderate prices, as well as a casual and comfortable dining atmosphere. Please imagine that you are the manager of one of Shorthorn's stores. Your task today is to read the following information about Shorthorn and make a few management decisions.

Shorthorn's New Strategy
Recently Shorthorn's top management shifted its strategic focus from serving tourists to retaining local customers. Shorthorn expects to grow its sales mainly by increasing sales among repeat customers. Shorthorn adopted this new strategy in order to adapt itself to an important change in the local economy. Specifically, a report provided by Bureau of Statistics predicts that the number of tourists in the region will drop significantly (25%-40%) in the next few years.

In order to attain the goal of improving customer retention, Shorthorn plans to take the following actions: (1) providing customers with excellent dining experiences, (2) adding new dishes to the menu faster than its competitors, and (3) serving orders in a speedy way. Shorthorn's management firmly believes that two key foundations for ensuring the success of the above strategic plans are well-trained employees and a streamlined and efficient food preparation process. Figure 1 shows Shorthorn's strategy map, which depicts how Shorthorn plans to achieve its strategic goal (i.e., improve customer retention) by performing well on the above actions (e.g., train employees and streamline food preparation process).

Figure 1: Strategy Map of Shorthorn Corp.



Balanced Scorecard (BSC)

To monitor its strategy implementation, Shorthorn uses a management tool called the Balanced Scorecard (BSC) to measure the performance of each of its eight stores. Consistent with the strategy map (Figure 1), the Balanced Scorecard (Table 1) contains a set of performance measures carefully chosen to represent important aspects in four areas. The four areas are financial performance, customer relations, internal business processes, and learning and growth. These measures together reflect both the drivers and the outcomes of the strategy implementation. Your store's performance on the eight BSC measures is used to evaluate how successfully the strategy has been implemented in your store. The BSC measures are described below in Table 1.

Table 1: Shorthorn's Balanced Scorecard Measures

Financial Perspective
1. Store profit before tax
2. Increase in repeat customer sales (Increase in repeat customer sales as a % of last year's repeat customer sales)
Customer Perspective
1. Customer retention rate (repeat customer sales / total sales)
Internal Process Perspective
1. Average number of new dishes innovated per month
2. "Mystery diner" audit rating (see note 1 below)
3. Time to process orders (number of minutes from customer ordering the main dish to the server handing the order to the customer)
Learning and Growth Perspective
1. Hours of employee training in a year per employee
2. Streamlining food preparation process (rating, out of 100%, from quarterly logistics report that is compiled by an independent Logistics consultant.)

Note 1: In the "Mystery diner" audit, a Shorthorn employee, posing as a customer, rates stores against an explicit ten-element vision of the "perfect dining experience". Elements include: helpfulness, courteousness and friendliness of personnel, and frequency of server's contact with the guest. Perfect scores along all dimensions lead to a score of 100%.

Incentive Plan
Your annual cash bonus, which could be as high as HK$80,000, or 25% of your base salary, is determined by a separate system: the *incentive plan*. This incentive plan consists of five criteria that are listed below in Table 2. At the beginning of each year, top management and the individual store managers together decide the targets for the five criteria. If the store successfully reaches the targets on all five criteria, the store manager gets 100% of the bonus (i.e., HK$ 80,000). Failure to achieve each of the five targets will lead to a deduction of 20% from the total possible bonus. For example, if the store achieved three out of five targets, then the store manager will get 60% of the bonus (i.e., HK$48,000). Thus, no bonus will be earned if the store fails to achieve all five targets.

Manipulation of the SPMS-Reward Linkage:

Table 2: Incentive Plan

1. Sales increase (sales increase as a % of prior year's sales)
2. Sales per $ of assets (total sales / average total assets)
3. Operating expenses per $ of sales (operating expenses / total sales)
4. Number of entrees sold per month (number of main dishes sold / month)
5. Average guest check (average $ amount consumed by each guest)

Practice on Calculating Bonus for a Different Store Manager

Bonus Computation

To make sure that you fully understand this incentive plan, please calculate the bonus for a store manager assuming the following performance for his/her store.

Shorthorn's Balanced Scorecard Measures	Performance
Financial Perspective	
1. Sales increase	Target reached
2. Increase in repeat customer sales	Target not reached
Customer Perspective	
1. Customer retention rate	Target reached
Internal Process Perspective	
1. Average number of new dishes innovated per month	Target reached
2. "Mystery diner" audit rating	Target not reached
3. Time to process orders	Target reached
Learning and Growth Perspective	
1. Hours of employee training in a year per employee	Target not reached
2. Streamlining food preparation process	Target reached

In addition, the financial statements also show the following:

1. Store profit before tax: Target not reached
2. Sales per $ of assets: Target reached
3. Operating expenses per $ of sales: Target not reached
4. Average guest check: Target not reached

This store manager will get an annual bonus of HK$ _____.

Resource Allocation Decision

Resource Allocation Decision

Imagine that from the headquarters, you received some discretionary funds for store development. As a store manager, you can select one or multiple projects that in your mind are the most important to launch. Assume that you have the following four projects in mind. Please rank the four projects based on their priorities for funding. Please keep in mind that the projects that receive the highest ranking are most likely to be funded.

Rank	**Project**
No._____	*Project 1*. To stimulate the creativity for inventing new dishes, periodically send the chefs to culinary workshops.
No._____	*Project 2*. To lower the cost of sales, conduct an analysis on raw ingredients prices and select those reliable suppliers who charge less.
No._____	*Project 3*. To increase the average dollar amount consumed by customers, promote beverage and desserts to the diners.
No._____	*Project 4*. To speed up the food preparation process, standardize the recipes and minimize unnecessary preparation steps.

Propensity to Engage in Issue Selling Behaviors

Specific Issues

A. Recently you noticed that employee training does not effectively improve customers' dining experiences. Specifically, the customer satisfaction rating has not improved since the intense employee training program was launched three months ago. But you do not know why the training is not working as expected and what can be done to better improve customers' dining experiences.

How likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

Later on, you realize that most of Shorthorn's servers have been working for this company for years and they are in general very skillful and devoted. Therefore, the effect of employee training on customers' dining experiences is very limited. But you still do not know what can be done to better improve customers' dining experiences.

Given this piece of information, how likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

A couple of weeks later, you noticed that in general, servers are overworked and many of them are often exhausted and consequently less productive. Now you are thinking that in order to better serve customers, maybe Shorthorn should hire more servers so that servers' shifts can be shortened.

Given this piece of information, how likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

B. The following factual event happened during the past couple of months. Please indicate the likelihood that you would take any action in response to it.

Many customers mentioned to you that they would like to dine outside when the weather allows.

How likely will you suggest that Shorthorn's top management revise its strategy in response to this information?

Not at all 1-----2-----3-----4-----5-----6-----7-----8-----9 Very likely

Goal Commitment

About the Strategic Goals
Imagine yourself as one of Shorthorn's store managers. Please respond to each of the following items as it relates to the strategic goal of *improving customer retention*.

1--------2--------3--------4--------5--------6--------7--------8--------9
Not all true **Somewhat true** **Very true**

1. _____ As a restaurant manager, it would be hard to take this goal seriously.
2. _____ Quite frankly, as a restaurant manager, I would not care if I achieved this goal or not.
3. _____ As a restaurant manager, I would be strongly committed to pursuing this goal.
4. _____ As a restaurant manager, it wouldn't take much to make me abandon this goal.
5. _____ As a restaurant manager, I think this goal would be a good goal to shoot for.

Autonomous and Controlled Motivation

Individuals try to achieve goals for a variety of reasons. For each of the reasons described below, indicate the extent to which it is representative of your motive for trying to achieve Shorthorn's strategic goal of improving customer retention.

1 2 3 4 5 6 7 8 9
Not at all for this reason **Completely for this reason**

1. _____ I would try to achieve Shorthorn's strategic goal because the top management wants me to, or because I'll get reward, praise, or approval for achieving this goal.

2. _____ I would try to achieve Shorthorn's strategic goal because I would feel ashamed, guilty, or anxious if I didn't.

3. _____ I would try to achieve Shorthorn's strategic goal because I really believe that it is an important goal to have and I endorse it freely and value it wholeheartedly.

4. _____ I would try to achieve Shorthorn's strategic goal because of the challenge and enjoyment pursuing the goal would provide me.

Manipulation Check Question and Demographic Questions

Demographic and Other questions

1. To what extent do you think that the Incentive Plan used to determine store managers' cash bonuses is in general consistent with the Balanced Scorecard?

Not at all consistent 1-----2-----3-----4-----5-----6-----7-----8-----9 To a great extent consistent

2. To what extent do you believe that if you performed well on the Balance Scorecard, you would be fairly rewarded by the Incentive Plan?

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3. How realistic do you think the case is?

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4. How difficult was it to answer the questions in the case?

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5. Prior to this survey, to what extent were you familiar with the Balanced Scorecard?

Not familiar at all 1-----2-----3-----4-----5-----6-----7-----8-----9 Very familiar

6. Gender: Male ____ Female ____

7. Age: ____ years

8. Number of years of full time work experience: _____

9. Your current position

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Thank you for participating in this survey!

Case 2 (Linked X Control Condition)

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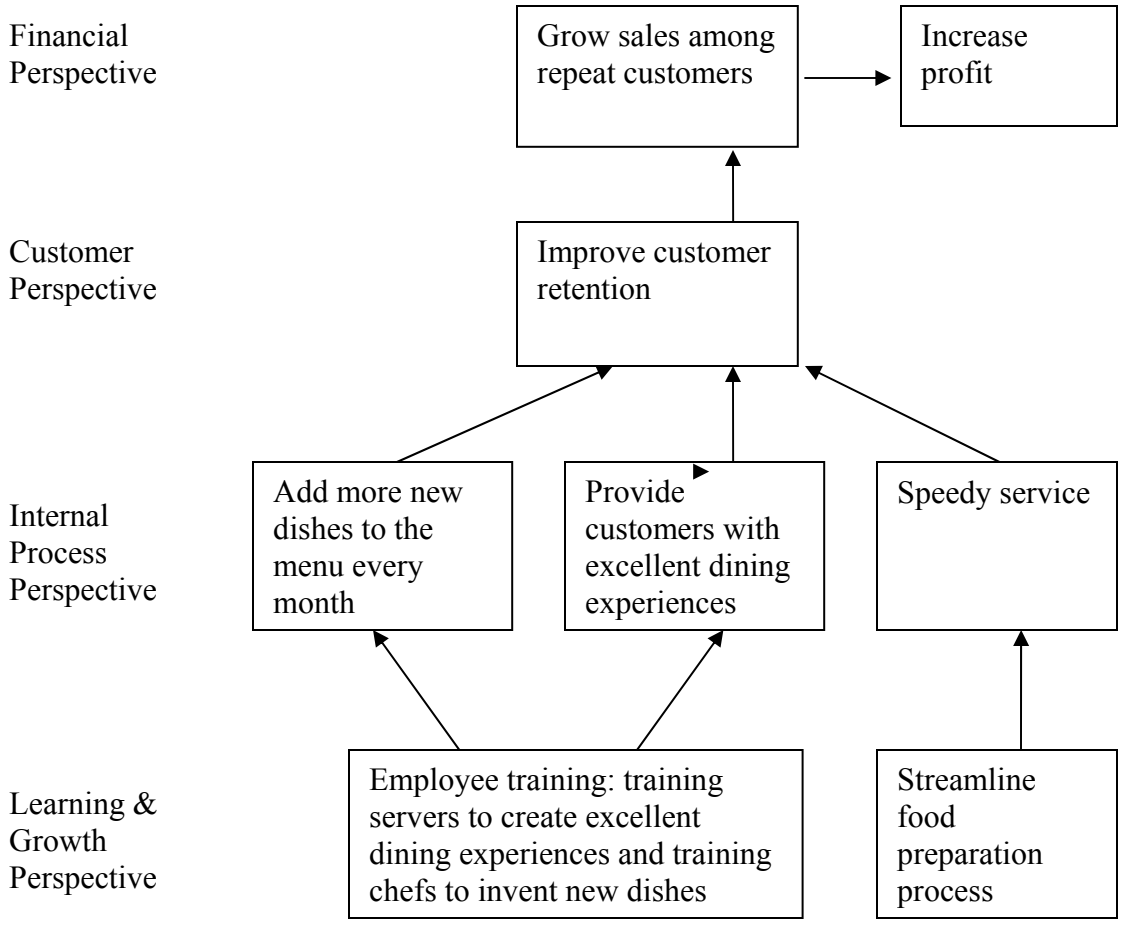

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Thank you for participating in this survey!

Case 3 (Not-linked X Participation Condition)

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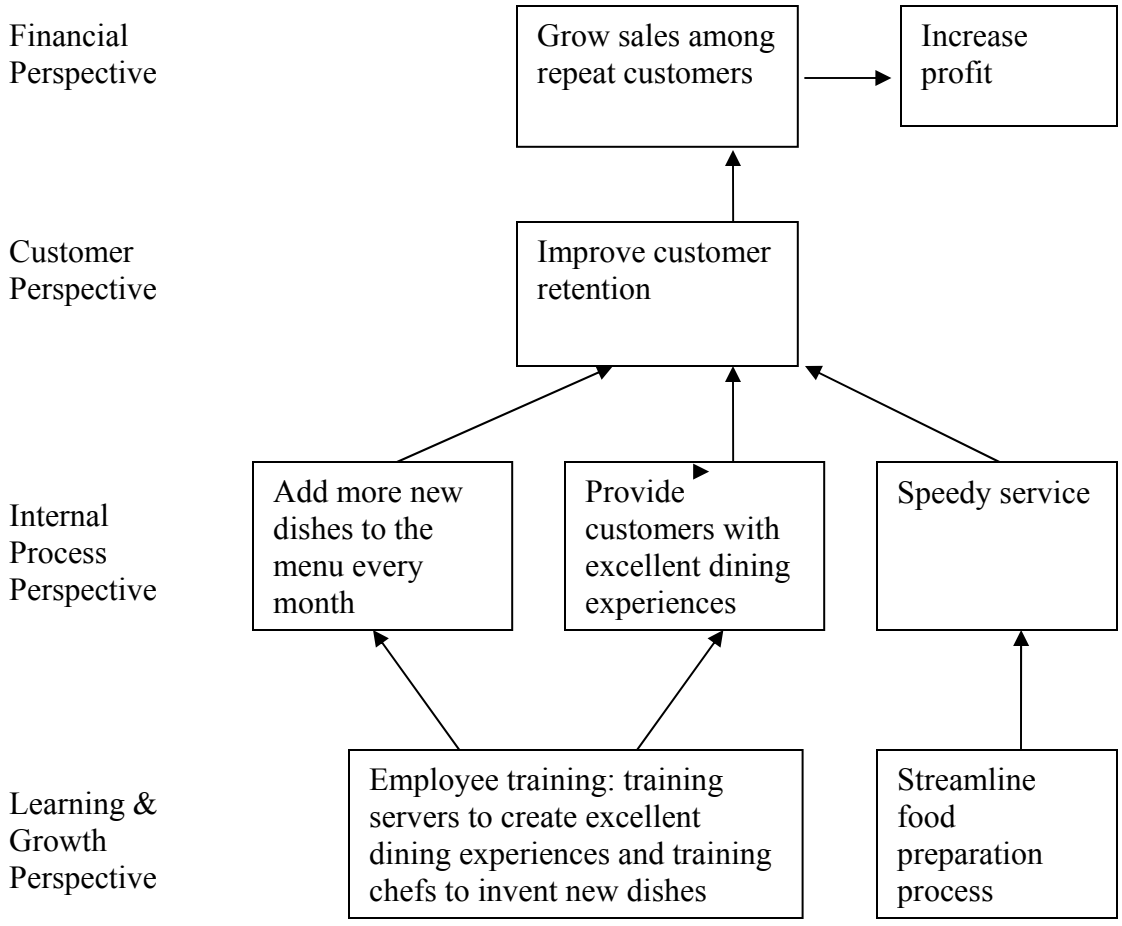

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1. Hours of employee training in a year per employee
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Note 1: In the "Mystery diner" audit, a Shorthorn employee, posing as a customer, rates stores against an explicit ten-element vision of the "perfect dining experience". Elements include: helpfulness, courteousness and friendliness of personnel, and frequency of server's contact with the guest. Perfect scores along all dimensions lead to a score of 100%.

Incentive Plan
Your annual cash bonus, which could be as high as HK$80,000, or 25% of your base salary, is determined by a separate system: the *incentive plan*. This incentive plan consists of five criteria that are listed below in Table 2. At the beginning of each year, top management and the individual store managers together decide the targets for the five criteria. If the store successfully reaches the targets on all five criteria, the store manager gets 100% of the bonus (i.e., HK$ 80,000). Failure to achieve each of the five targets will lead to a deduction of 20% from the total possible bonus. For example, if the store achieved three out of five targets, then the store manager will get 60% of the bonus (i.e., HK$48,000). Thus, no bonus will be earned if the store fails to achieve all five targets.

Manipulation of the SPMS-Reward Linkage:

Table 2: Incentive Plan

1. Sales increase (sales increase as a % of prior year's sales)
2. Sales per $ of assets (total sales / average total assets)
3. Operating expenses per $ of sales (operating expenses / total sales)
4. Number of entrees sold per month (number of main dishes sold / month)
5. Average guest check (average $ amount consumed by each guest)

Practice on Calculating Bonus for a Different Store Manager

Bonus Computation

To make sure that you fully understand this incentive plan, please calculate the bonus for a store manager assuming the following performance for his/her store.

Shorthorn's Balanced Scorecard Measures	Performance
Financial Perspective	
1. Sales increase	Target reached
2. Increase in repeat customer sales	Target not reached
Customer Perspective	
1. Customer retention rate	Target reached
Internal Process Perspective	
1. Average number of new dishes innovated per month	Target reached
2. "Mystery diner" audit rating	Target not reached
3. Time to process orders	Target reached
Learning and Growth Perspective	
1. Hours of employee training in a year per employee	Target not reached
2. Streamlining food preparation process	Target reached

In addition, the financial statements also show the following:

1. Store profit before tax: Target not reached
2. Sales per $ of assets: Target reached
3. Operating expenses per $ of sales: Target not reached
4. Average guest check: Target not reached

This store manager will get an annual bonus of HK$ _____.

Resource Allocation Decision

Resource Allocation Decision

Imagine that from the headquarters, you received some discretionary funds for store development. As a store manager, you can select one or multiple projects that in your mind are the most important to launch. Assume that you have the following four projects in mind. Please rank the four projects based on their priorities for funding. Please keep in mind that the projects that receive the highest ranking are most likely to be funded.

Rank	**Project**
No._____	*Project 1*. To stimulate the creativity for inventing new dishes, periodically send the chefs to culinary workshops.
No._____	*Project 2*. To lower the cost of sales, conduct an analysis on raw ingredients prices and select those reliable suppliers who charge less.
No._____	*Project 3*. To increase the average dollar amount consumed by customers, promote beverage and desserts to the diners.
No._____	*Project 4*. To speed up the food preparation process, standardize the recipes and minimize unnecessary preparation steps.

Manipulation of the Participative Decision Making

Bi-Monthly Meeting

Shorthorn's top management meets with all the store managers at a bi-monthly meeting. The primary goal of this meeting is for store managers to evaluate the soundness of shorthorn's current strategy. The executives recognize that the current strategy (as shown in Figure 1) may not be optimal, and at the same time, they believe that individual store managers know best about the current business conditions and how to get the job done. Consequently, at this meeting, store managers critically examine and even question the soundness of Shorthorn's current strategy and foresee the need for revising it.

Specifically, store managers share information that they believe is significant to Shorthorn's strategy. They then decide whether any component of the strategy should be questioned for its soundness and whether the strategy should be revised accordingly.

Imagine that you are at a bi-monthly meeting.

One of the store managers makes the following comment: "two of my kitchen managers told me that streamlining the food preparation process makes some dishes less tasty."

How would you consider revising shorthorn's strategy in response to this store manager's concern?

_____

_____

_____

_____

Propensity to Engage in Issue Selling Behaviors

Specific Issues

A. Recently you noticed that employee training does not effectively improve customers' dining experiences. Specifically, the customer satisfaction rating has not improved since the intense employee training program was launched three months ago. But you do not know why the training is not working as expected and what can be done to better improve customers' dining experiences.

How likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

Later on, you realize that most of Shorthorn's servers have been working for this company for years and they are in general very skillful and devoted. Therefore, the effect of employee training on customers' dining experiences is very limited. But you still do not know what can be done to better improve customers' dining experiences.

Given this piece of information, how likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

A couple of weeks later, you noticed that in general, servers are overworked and many of them are often exhausted and consequently less productive. Now you are thinking that in order to better serve customers, maybe Shorthorn should hire more servers so that servers' shifts can be shortened.

Given this piece of information, how likely will you report to the executives your concern about the strategy?

Not at all likely 1-----2-----3-----4-----5-----6-----7-----8-----9 Extremely likely

B. The following factual event happened during the past couple of months. Please indicate the likelihood that you would take any action in response to it.

Many customers mentioned to you that they would like to dine outside when the weather allows.

How likely will you suggest that Shorthorn's top management revise its strategy in response to this information?

Not at all 1-----2-----3-----4-----5-----6-----7-----8-----9 Very likely

Goal Commitment

About the Strategic Goals
Imagine yourself as one of Shorthorn's store managers. Please respond to each of the following items as it relates to the strategic goal of *improving customer retention*.

1--------2--------3--------4--------5--------6--------7--------8--------9
Not all true **Somewhat true** **Very true**

11. _____ As a restaurant manager, it would be hard to take this goal seriously.
12. _____ Quite frankly, as a restaurant manager, I would not care if I achieved this goal or not.
13. _____ As a restaurant manager, I would be strongly committed to pursuing this goal.
14. _____ As a restaurant manager, it wouldn't take much to make me abandon this goal.
15. _____ As a restaurant manager, I think this goal would be a good goal to shoot for.

Autonomous and Controlled Motivation

Individuals try to achieve goals for a variety of reasons. For each of the reasons described below, indicate the extent to which it is representative of your motive for trying to achieve Shorthorn's strategic goal of improving customer retention.

1 2 3 4 5 6 7 8 9
Not at all for this reason **Completely for this reason**

1. _____ I would try to achieve Shorthorn's strategic goal because the top management wants me to, or because I'll get reward, praise, or approval for achieving this goal.

2. _____ I would try to achieve Shorthorn's strategic goal because I would feel ashamed, guilty, or anxious if I didn't.

3. _____ I would try to achieve Shorthorn's strategic goal because I really believe that it is an important goal to have and I endorse it freely and value it wholeheartedly.

4. _____ I would try to achieve Shorthorn's strategic goal because of the challenge and enjoyment pursuing the goal would provide me.

Manipulation Check Question and Demographic Questions

Demographic and Other questions

1. To what extent do you think that the Incentive Plan used to determine store managers' cash bonuses is in general consistent with the Balanced Scorecard?

Not at all consistent 1-----2-----3-----4-----5-----6-----7-----8-----9 To a great extent consistent

2. To what extent do you believe that if you performed well on the Balance Scorecard, you would be fairly rewarded by the Incentive Plan?

Not at all 1-----2-----3-----4-----5-----6-----7-----8-----9 To a great extent

3. How realistic do you think the case is?

Extremely unrealistic 1-----2-----3-----4-----5-----6-----7-----8-----9 Very realistic

4. How difficult was it to answer the questions in the case?

Extremely easy 1-----2-----3-----4-----5-----6-----7-----8-----9 Very difficult

5. Prior to this survey, to what extent were you familiar with the Balanced Scorecard?

Not familiar at all 1-----2-----3-----4-----5-----6-----7-----8-----9 Very familiar

6. Gender: Male ____ Female ____

7. Age: ____ years

8. Number of years of full time work experience: _____

9. Your current position

_____

Thank you for participating in this survey!

Case 4 (Linked X Participation Condition)

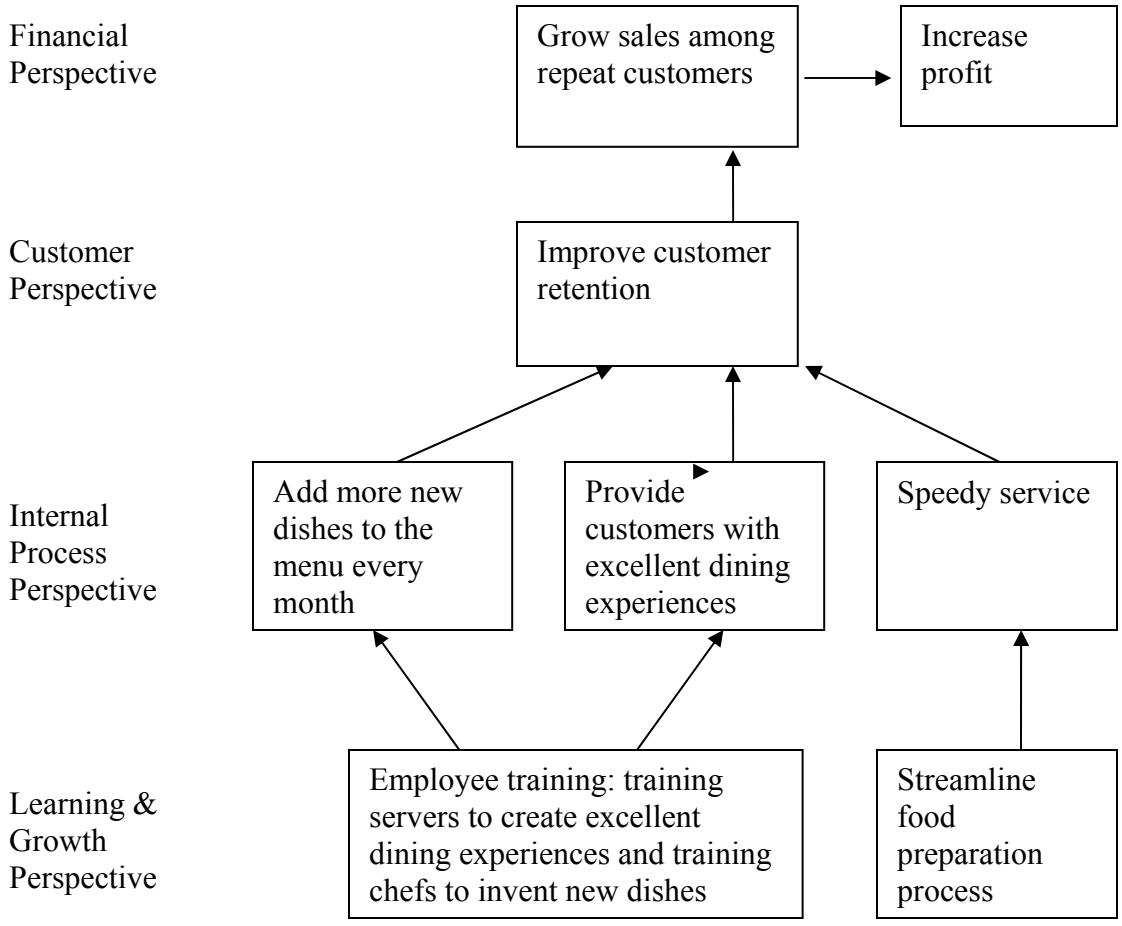
Ms. Sullivan and her three friends opened the first Shorthorn Steakhouse in March 1990. Since then, their Australia-themed Steakhouse has grown to a restaurant chain that owns 8 stores. Shorthorn aims to provide its customers with generous portions of food at moderate prices, as well as a casual and comfortable dining atmosphere. Please imagine that you are the manager of one of Shorthorn's stores. Your task today is to read the following information about Shorthorn and make a few management decisions.

Shorthorn's New Strategy

Recently Shorthorn's top management shifted its strategic focus from serving tourists to retaining local customers. Shorthorn expects to grow its sales mainly by increasing sales among repeat customers. Shorthorn adopted this new strategy in order to adapt itself to an important change in the local economy. Specifically, a report provided by Bureau of Statistics predicts that the number of tourists in the region will drop significantly (25%-40%) in the next few years.

In order to attain the goal of improving customer retention, Shorthorn plans to take the following actions: (1) providing customers with excellent dining experiences, (2) adding new dishes to the menu faster than its competitors, and (3) serving orders in a speedy way. Shorthorn's management firmly believes that two key foundations for ensuring the success of the above strategic plans are well-trained employees and a streamlined and efficient food preparation process. Figure 1 shows Shorthorn's strategy map, which depicts how Shorthorn plans to achieve its strategic goal (i.e., improve customer retention) by performing well on the above actions (e.g., train employees and streamline food preparation process).

Figure 1: Strategy Map of Shorthorn Corp.



Balanced Scorecard (BSC)

To monitor its strategy implementation, Shorthorn uses a management tool called the Balanced Scorecard (BSC) to measure the performance of each of its eight stores. Consistent with the strategy map (Figure 1), the Balanced Scorecard (Table 1) contains a set of performance measures carefully chosen to represent important aspects in four areas. The four areas are financial performance, customer relations, internal business processes, and learning and growth. These measures together reflect both the drivers and the outcomes of the strategy implementation. Your store's performance on the eight BSC measures is used to evaluate how successfully the strategy has been implemented in your store. The BSC measures are described below in Table 1.

Table 1: Shorthorn's Balanced Scorecard Measures

Financial Perspective
1. Store profit before tax
2. Increase in repeat customer sales (Increase in repeat customer sales as a % of last year's repeat customer sales)
Customer Perspective
1. Customer retention rate (repeat customer sales / total sales)
Internal Process Perspective
1. Average number of new dishes innovated per month
2. "Mystery diner" audit rating (see note 1 below)
3. Time to process orders (number of minutes from customer ordering the main dish to the server handing the order to the customer)
Learning and Growth Perspective
1. Hours of employee training in a year per employee
2. Streamlining food preparation process (rating, out of 100%, from quarterly logistics report that is compiled by an independent Logistics consultant.)

Note 1: In the "Mystery diner" audit, a Shorthorn employee, posing as a customer, rates stores against an explicit ten-element vision of the "perfect dining experience". Elements include: helpfulness, courteousness and friendliness of personnel, and frequency of server's contact with the guest. Perfect scores along all dimensions lead to a score of 100%.

Incentive Plan
Your annual cash bonus, which could be as high as HK$80,000, or 25% of your base salary, is determined by a separate system: the *incentive plan*. This incentive plan consists of five criteria that are listed below in Table 2. At the beginning of each year, top management and the individual store managers together decide the targets for the five criteria. If the store successfully reaches the targets on all five criteria, the store manager gets 100% of the bonus (i.e., HK$ 80,000). Failure to achieve each of the five targets will lead to a deduction of 20% from the total possible bonus. For example, if the store achieved three out of five targets, then the store manager will get 60% of the bonus (i.e., HK$48,000). Thus, no bonus will be earned if the store fails to achieve all five targets.

Manipulation of the SPMS-Reward Linkage:

Table 2: Incentive Plan

1. Increase in repeat customer sales
2. Average number of new dishes invented per month
3. "Mystery diner" audit rating
4. Time to process orders
5. Hours of employee training in a year per employee

Practice on Calculating Bonus for a Different Store Manager

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6. Gender: Male ____ Female ____

7. Age: ____ years

8. Number of years of full time work experience: _____

9. Your current position

_____

Thank you for participating in this survey!