14. Strategic Management
Competitive Session

Formalization and Flexibility: An Investigation of Operational Governance from a Learning Perspective

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ABSTRACT: *We investigate how operational governance formalization and flexibility affect organizational performance, both directly and jointly. We build our arguments using learning mechanisms. Based on 434 observations from project managers in a large multi-department government organization, we hypothesize a positive-increasing U-shaped learning curve effect regarding governance formalization and a positive effect regarding governance flexibility. Most importantly, we hypothesize that governance formalization and flexibility exhibit joint effects. We find that governance flexibility increases performance when formalization is low and decreases performance when formalization is high. Our finding that flexibility can be counter-productive to performance is novel. Overall, this paper contributes to the operational governance literature by clarifying how learning mechanisms explain the joint effects of governance formalization and flexibility.*

Keywords: *Strategy, Strategy Process, Business Level Strategy, Competitive Advantage*

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INTRODUCTION

Over the past decade, there is growing scholarly interest in the impact of operational governance in strategic management research (Schnatterly, 2003, 2009; Schnatterly & Maritan, 2003). As Foss (1998, p. 1) stated; 'many issues of strategic management are now conceptualized as problems of effective governance'. Operational governance generally considers defining, measuring, monitoring, and managing organizational activities toward performance (Schnatterly, 2003, 2009). Two most prominent constructs discussed in literature to understand operational governance are formalization (Eisenhardt, 1985; Hall, 1982; Simons, 1991, 1994; Slater, Olson, & Hult, 2006) and centralization (Fredrickson, 1986; Mintzberg, 1981). The degree of formalization is the extent to which governance processes are explicitly prescribed (Eisenhardt, 1985; Hall, 1982; Simons, 1991, 1994; Slater et al., 2006). The literature tends to use centralization as a coarse proxy to represent flexibility with centralized governance being less flexible than decentralized governance. Governance flexibility is the ability of the governance process to change in response to environmental changes (Sherehiy, Karwowski, & Layer, 2007; Verdú-Jover, Lloréns-Montes., & García-Morales., 2005). Because formal governance processes have traditionally been viewed as lacking flexibility, most operational governance scholars tend to view formalization and de-centralization (flexibility) as opposite ends of the same continuum (Baum & Wally, 2003). In contrast, we take the view that governance formalization and flexibility co-exist as independent attributes. In this sense, we follow

the logic of "co-existence" from the ambidexterity literature (Gibson & Birkinshaw, 2004; O'Reilly III & Tushman, 2008) and the strategic planning literature (Dibrell, Down, & Bull, 2007). Taking the coexistence approach allows us to investigate an important and understudied relationship. Thus, our research question is: how do operational governance formalization and flexibility jointly influence organizational performance?

To develop a more comprehensive view of how a firm's operational governance influences organizational performance, we draw on the learning from experience literature (Anand & Khanna, 2000; Kale, Dyer, & Singh, 2002) and the knowledge-based view (Grant, 1996a, 1996b; Kogut & Zander, 1992) to delineate how governance formalization and flexibility will directly and jointly influence organizational performance. While the literature generally discusses a positive effect of governance formalization, our study extends the previous research by proposing a curvilinear, learning-curve effect of governance formalization. Our argument is based on learning from experience mechanism. The accumulated learning and knowledge building in formalized governance process are argued to result in the increases in competitive efficiency (Day & Montgomery, 1983; Dodgson, 1993). Our second construct, flexibility, is an important but under-researched aspect of operational governance. We also build our flexibility argument using a learning mechanism resulting in innovative efficiency from search and change (Dodgson, 1993). Thus, we hypothesize a positive relationship between governance flexibility and organizational performance. Most importantly, we argue that governance formalization and flexibility have joint effects. The joint effect hypothesis is based on the argument that a high emphasis on search and change resulting from governance flexibility will impart disturbance to the experiential learning and knowledge-building accrued in governance formalization.

Our empirical analysis is based on data collected through a survey of a large multi-unit government organization in 2009. The organization is the Information Technology branch of one of the states in the USA. This branch included the information technology project managers and system developers for all agencies of the government of the state. We test our theoretical arguments based on 434 observations from project managers.

This study makes two contributions to the research on operational governance. First, our study contributes to operational governance research by considering the co-existence of governance formalization and flexibility. This "complementary" perspective of governance formalization and flexibility is generally missing from the extant literature. In our analysis, a formalized governance system may simultaneously be flexible. Second, taking the view that formalization and flexibility co-exist, this study provides new insights into explaining the mechanisms as to how governance formalization and flexibility influence performance. This study is, to the best of our knowledge, the first to incorporate learning mechanisms in operational governance research. Overall, our finding that the additive effect of high governance flexibility and high governance formalization can be counter-productive to performance is significant, both theoretically and practically.

The remainder of the paper is organized as follows. The next section presents the theoretical background and hypotheses development on operational governance formalization and flexibility. Then, the paper proceeds in sections include a description on data, the analysis of the data using survey regression and a discussion of the empirical results. We conclude by discussing our findings, implications, limitations, and insights for future research.

THEORETICAL BACKGROUND

Multiple theoretical perspectives offer insights for the study on operational governance. The primary theoretical foundation for operational governance is control theory (Simons, 1994, 1995). However, control theory literature is fragmented. Specifically, there is substantial overlap with several related theoretical streams in the literature such as resource orchestration (Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011) and business process management (Marginson, 2002; Smart, Maddern, & Maull, 2009). These literatures propose a variety of constructs to abstract across operational governance processes in different firms. Among all these constructs, formalization and centralization draw most research attention (Hall, 1982; Simons, 1991, 1994; Slater et al., 2006). As explained previously, formalization refers to the extent that governance processes are prescribed explicitly (Eisenhardt, 1985; Hall, 1982; Simons, 1991, 1994; Slater et al., 2006) and centralization is a crude proxy of the flexibility of operational governance (Fredrickson, 1986; Mintzberg, 1981).

In our study, we offer news insights to operational governance research by drawing on the literature of organizational learning from the experience (Anand & Khanna, 2000; Kale et al., 2002) and the knowledge-based view of the firm (Grant, 1996a, 1996b; Kogut & Zander, 1992). Research on organizational learning posits that previous experience plays an important role in organizational learning (Anand & Khanna, 2000; Szulanski & Jensen, 2006). From experiential learning perspective, learning is defined as "the process whereby knowledge is created through transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984, p. 41). Therefore, our argument is also built upon knowledge-based view which holds that knowledge is a fundamental source of competitive advantage (Grant, 1996a, 1996b; Kogut & Zander, 1992). We investigate organizational performance as an interactive outcome of governance formalization and flexibility. We argue that both governance formalization and governance flexibility influence performance through learning mechanisms. In the following sections, we provide background on these two dimensions of operational governance and develop hypotheses on how they influence organizational performance both directly and jointly.

HYPOTHESIS DEVELOPMENT

Governance Formalization and Performance

We take an experiential learning perspective and argue for positive returns of governance formalization. We build our arguments based on the mechanism of experience accumulation, learning, knowledge building, and efficiency improvement. Previous research suggests that governance processes are shaped by accumulated experience (Eisenhardt, Furr, & Bingham, 2010; Szulanski & Jensen, 2006). Organizations tend to learn from their experience by formalizing their experience into their governance process (Levitt & March, 1988; Siggelkow, 2001). When operational governance is of low formalization, organizational performance is anticipated to be low. This is because low formalization in governance process typically results from a lack of governance experience and an inability to specify an evidence-based procedure. The lack of governance experience further limits organizational learning and knowledge building (Andrews & Smith, 1996). When there is limited learning and knowledge building in governance process, competitive efficiency is anticipated to be

low (Day & Montgomery, 1983; Dodgson, 1993). Therefore, the low level of formalization resulting from lack of experience results in low levels of efficiency and thus low performance.

Operational governance is made more formalized as successful experience accrues to the process (Cohen & Levinthal, 1990; Helfat, 1994; Zahra & George, 2002). The process of gaining and learning from experience results in a growing storage of experience-based knowledge (Haleblian & Finkelstein, 1999; Lieberman, 1987). The accumulated experience-based knowledge increases competitive efficiency as organizations have specified evidence-based procedure to follow and thus are more efficient in accomplishing tasks and also in learning from new experience (Eisenhardt, Furr, & Bingham, 2010; Siggelkow, 2001). Overall, the rationale of experiential learning, knowledge building, and competitive efficiency improvement suggests that more formalized governance processes tend to increase firm performance (Eisenhardt, Furr, & Bingham, 2010; Siggelkow, 2001). Importantly, the learning literature anticipates that this increase will be non-linear with increasing slope as experience accumulates (Yelle, 1979). Following the learning curve logic, we propose an upward U-shaped effect of governance formalization. Therefore, we hypothesize:

Hypothesis 1: *The degree of formalization in operational governance is positively related to performance, resulting in a positive-increasing U-shaped relationship.*

Governance Flexibility and Performance

Flexibility in operational governance generally refers to the organizational ability to adjust the governance processes in response to environmental changes (Sherehiy et al., 2007; Verdú-Jover et al., 2005). Extant literature has generally discussed centralization as a proxy toward a lack of flexibility in operational governance process (Fredrickson, 1986; Mintzberg, 1981). High degree of centralization typically results in failure to respond quickly to environmental stimuli, thus allowing for less flexibility at operational level. However, centralization is generally concerned with the concentration of power and largely focuses on corporate control. It is not a precise measurement toward flexibility at an operational level. As a result, flexibility is an important but under-researched construct in the literature of operational governance.

Governance flexibility allows for shifts of actions in response to external changes and thus stimulates organizational learning (Fiol & Lyles, 1985; Galbraith, 1973). With flexibility in governance process, organizations have leeway and tend to be more open to new ideas (Verdú-Jover et al., 2005). Also, governance flexibility encourages the capturing and searching for new opportunities (Ebben & Johnson, 2005; Siggelkow, 2001). The openness to change and search for opportunities build organizational learning (Miles & Cameron., 1982). This is consistent with the argument in learning literature that organizational learning requires structures and systems that are more adaptable and responsive to change (Kanter, 1990; Peters & Waterman., 1982). The learning resulting from governance flexibility promotes innovative efficiency (Day & Montgomery, 1983; Dodgson, 1993), which is typically associated with competitive advantage and higher performance. Therefore, flexibility in governance process facilitates organizational learning, improves innovative efficiency, and thus contributes to organizational performance. Hence, we hypothesize:

Hypothesis 2: *The flexibility of operational governance is positively associated with organizational performance.*

Interactive Effects of Governance Formalization and Flexibility on Performance

In Hypothesis 1, we argue for a positive-increasing U-shaped effect between governance formalization and organizational performance based on learning from experience mechanism. In Hypothesis 2, we argue for a positive relationship between governance flexibility and organizational performance based on learning. In this hypothesis, we follow the logic of co-existence from the ambidexterity literature (Gibson & Birkinshaw, 2004; O'Reilly III & Tushman, 2008). This logic indicates that formalization and flexibility are independent one of another. Since both governance formalization and flexibility influence performance following learning mechanisms, in hypothesis 3, we investigate how governance formalization and flexibility will jointly influence performance.

Following the learning mechanism, we believe governance flexibility influences performance differently contingent upon the level of governance formalization. We begin by considering the situation when governance formalization is low and examine the effect of governance flexibility from low to high. When both governance formalization and flexibility are low, organizational performance

is predicted to be low. This is because low level of governance formalization leads to low level of competitive efficiency as it is argued in Hypothesis 1 and low level of governance flexibility results in low level of innovative efficiency as it is argued in Hypothesis 2 (Day & Montgomery, 1983; Dodgson, 1993). In other words, the organisation continues doing what it has always done. However, as the flexibility in governance process increases, organizational performance will increase as governance flexibility leads to learning from new ideas and opportunities and thus improves innovative efficiency. Importantly, the positive effect of governance flexibility will be further supported by a lack of constraint from low level of formalization in governance. Therefore, we argue that increasing governance flexibility will improve organizational performance when governance formalization is low. This logic follows the argument of Hypothesis 2.

Next, we consider the situation when governance formalization is high and examine the effect of governance flexibility from low to high. With high governance formalization and low governance flexibility, the effect of governance formalization dominates. Analogous to the rationale in Hypothesis 1, organizational performance is expected to be high. As the governance flexibility increases, organizations are able to change and adapt operational governance in alignment with external environment (Ebben & Johnson, 2005; Siggelkow, 2001). High level of governance flexibility, characterized by changes in governance process, is likely to influence the learning from experience mechanism that was previously seen as creating competitive efficiency in governance process. As a result, the formalization benefits that accrue from experiential learning and knowledge-building are likely to be disturbed by a high emphasis on governance flexibility (Dodgson, 1993; Fiol & Lyles, 1985). As the formalized governance process that was learned from experience will necessarily change through governance flexibility, organizations have to relearn and re-accumulate the experience-based efficiency. Hence, we contend that when governance formalization is high, high flexibility decreases performance. Based on the above argument, we hypothesize as follows:

> ***Hypothesis 3:*** *Governance formalization and flexibility exhibit a joint effect on organizational performance. Specifically, flexibility improves performance when formalization is low and decreases performance when formalization is high.*

DATA AND METHODS

Sample and Data Collection

We examined the above hypotheses with data collected through a detailed survey in a large government organization in 2009. This multi-department organization is the Information Technology branch of a state government in the USA. The use of such multi-department government organization is ideal to test our model. First, in this organization, each department has a different governance process to manage their programs, thus providing variance for this study. The variance in governance process was particularly high in this organization because the organizational strategy was to allow unique control approaches given high management turnover and diverse experience levels. Second, the nature of government information technology work tends to result in a high level of commonality among environmental attributes. Thus, difference between the variables of interest is more likely caused by internal phenomena rather than external causes. Therefore, testing our model in this multi-department organization will provide an ideal context of high commonality among environmental influence and high variance in governance process.

The respondents of our survey are project managers and system developers. We view them as quasi-independent representatives of teams of project-based activity. Questionnaires were delivered by e-mail to 770 participants and 447 were returned, for a response rate of 58.1%. The current study focused on 434 observations as not all respondents provided full data. Age of participants ranged from 22 to 72 (n = 339, mean = 48, and s.d. = 10.75). Education levels were reported as 6.5 percent high school, 18.8 percent some college, 15.5 percent associate degree, 44.0 percent bachelor's degree, and 15.2 percent graduate degree. Tenure with the state government ranged from 0-31 years (n = 347, mean = 5.13, and s.d. = 5.1).

Dependent Variable

Performance In our study, we measure performance by asking respondents to assess the performance on four goal areas in this organization: Cost Performance, Quality Performance, Internal Customer Satisfaction Performance, and End-user Customer Satisfaction Performance (see Appendix 1). For example, respondents were asked to rate the cost performance in their department over the past

year on a five point Likert scale from strongly disagree to strongly agree to "My department currently meets our cost requirements." The mean score, calculated as the average of the responses on the four goal areas assesses performance in the study.

Independent Variable

Governance Formalization The governance formalization construct refers to the extent to which governance processes are explicitly prescribed (Hall, 1977; Olson, Slater, & Hult, 2005). As validated scales for measuring the degree of governance formalization are lacking, we developed a five-item, 5-point measure which included the extent to which organizational governance process is clearly defined and managed (shown in Appendix 1). The items in this measure were based on first-hand observations in the organization and discussions with department managers (Eisenhardt, 1989). An example question is "Think about the improvement activity in your IT department recently and rate the level of agreement with the statement-these activities use a structured (defined) process." Higher scores on the scale from 1=strongly disagree and 5= strongly agree indicate higher level of formalization in operational governance.

As the scale measuring the degree of formalization of operational governance is new, we conducted a series of reliability and dimensionality assessments to evaluate the quality of our measures. Initially, we calculated Cronbach's alpha and average variance extraction (AVE) to evaluate the reliability of the measures. The Cronbach's alpha for the five items is 0.90 which is above the threshold of 0.7 (Fornell & Larcker, 1981; Nunnally, 1978) and the value of AVE is above the threshold of 0.5 (Hair, Ringle, & Sarstedt, 2011). The high Cronbach's alpha and AVE indicate high level of reliability in the scale measuring governance formalization. To test unidimensionality of the measures, we conducted exploratory factor analysis on the five items measuring governance formalization. Only one factor was found and the factor loadings for all items were generally above the criterion of 0.5. The single factor loading with eigenvalue greater than one suggests the unidimensionality of the construct (Steenkamp & Van Trijp, 1991).

Governance Flexibility The governance flexibility construct is defined as the degree to which governance process adapts to changing needs. In our study, governance flexibility is measured by one

item "My IT Department adapts the improvement procedures to meet changing customer needs" (see Appendix 1).

Analysis

Our hypotheses were tested using regression with an interaction term. We mean centred independent variables to reduce multicollinearity concerns. All variable inflation factors were less than 2, suggesting that multicollinearity is not a concern. We used survey regression with clustering by departments to analyse the data. We selected this procedure because our data were collected via survey of multiple respondents within different departments.

We run our model in a stepwise process - Model 1 governance formalization only, Model 2 adds governance formalization squared to test hypotheses 1. Model 3 adds governance flexibility to test hypothesis 2. Model 4 adds interaction term of governance formalization and flexibility. Model 5 is the full model with interaction to test Hypothesis 3.

Results

The Pearson correlations and descriptive statistics for the variables included in the study are shown in table 1. The correlations matrix shows statistically significant correlations in the direction hypothesized. Performance correlates positively with governance formalization ($p<0.001$) and governance flexibility ($p<0.001$).

Table 2 shows the results of the hypothesis tests. Hypothesis 1 was supported as the coefficients of governance formalization and formalization squared are positive and significant ($p<0.05$). Therefore, there is a learning curve (positive-increasing U-shaped) effect of governance formalization on performance. Hypothesis 2 was also supported (0.23, $p<0.001$), demonstrating a positive relationship between governance flexibility and performance. Hypothesis 3 argues that flexibility contributes to performance when governance formalization is low and decreases performance when governance formalization is high. We found moderate support for Hypothesis 3 with the significant coefficient of the interaction between governance formalization and flexibility. To further observe the relationship theorized in Hypothesis 3, we constructed a graph of the interaction with two standard deviation data (see Figure 1). In Figure 1, we observe that governance formalization and flexibility

have joint effects on performance depending on the degree of formalization of operational governance. When governance formalization is low, governance flexibility has an additive effect on performance. When governance formalization is high, governance flexibility decreases performance.

[Insert Table 1 & Table 2 about here]

DISCUSSION

The purpose of this study is to investigate the joint effects of governance formalization and flexibility on organizational performance. Our theoretical foundation is built upon the literature on organizational learning from the experience (Anand & Khanna, 2000; Kale et al., 2002) and the knowledge-based view of the firm (Grant, 1996a, 1996b; Kogut & Zander, 1992). In Hypothesis 1, we extended prior research by arguing for and empirically demonstrating a learning-curve effect of governance formalization based on learning mechanism. This Hypothesis 1 is supported. Scholars may note that we only hypothesized a U-shape and not the full S-shape of some learning curve work (Jovanovic & Lach, 1989; Murre, 2014). To empirically evaluate the S-shaped curvilinearity, we performed a test on governance formalization cubed. The result was not significant, indicating we did not reach the saturation point of learning with our data. With regard to Hypothesis 2, we also built our arguments following a learning mechanism. The prior literature generally uses centralization as a coarse proxy toward a lack of flexibility. In our study, we examine the direct effect of governance flexibility and find support for a positive relationship between governance flexibility and organizational performance.

Most importantly, our findings support Hypothesis 3, as illustrated in Figure 1. We took a provocative stance and argued for high governance flexibility to be detrimental to performance when governance formalization is high. We find support for a positive-increasing U-shaped effect of governance formalization in Hypothesis 1 and a positive effect of governance flexibility in Hypothesis 2. Operational governance formalization, built by learning from experience, has a strong positive influence on performance. And, governance flexibility benefits performance only when governance formalization is low. However, it may be interesting to scholars and practitioners that the additive effect of high governance flexibility and high governance formalization can be counter-productive to

performance. The findings are significant for the operational governance literature, as our results provide new insights on the combined influence of governance formalization and flexibility.

Several limitations of the study suggest avenues for future research. First, our study is based on the data collected in a large multi-department organization. Although using a government organization to test the model is ideal given the commonality among environmental attributes and high variance in governance process, the data for this study are from a "single" organization. This sampling strategy limits the generalizability of the findings. Future research should include a greater variety of organizations to increase generalizability of our findings. Second, our data are from a cross-sectional survey. The cross-sectional nature of our data limits the causal claims in the explanation of the mechanisms. Future research with longitudinal data is recommended to extend our study. Third, in our study, we measure operational governance flexibility with a single item. Although the one-item measurement adopted in the study captures the change nature of governance flexibility, multi-item measurement is recommended in future to offer richer understanding of governance flexibility. Numerous sensitivity and robustness tests were undertaken, but we only present several examples here due to space limitations. Specifically, as a further test of the organization level perspective, we replace the project manager observations with department means and then run the regression analysis. The results in all models are quite significant ($p< 0.05$). Additionally, we also performed a censored Tobit analysis as our dependent variable is a Likert scale measure and the results are also robust.

CONCLUSION

Overall, we believe this study provides novel insights to operational governance research. Our study takes a step forward in governance research by considering two important constructs to understand operational governance: formalization and flexibility. Most importantly, we incorporate learning mechanisms to understand how governance formalization and flexibility may influence performance, both directly and jointly. Our finding that governance flexibility can be detrimental to performance when governance formalization is high provides a strong implication to the research on operational governance. If future research confirms and builds on our findings, considerable advancement may be made in the research area of operational governance.

Table 1: Pearson correlation and descriptive statistics

Variable	N	Mean	s.d.	Max	Min	1	2
1. Performance	438	3.64	0.67	5	1.69		
2. Governance formalization	438	3.23	0.80	5	1	0.50***	
3. Governance flexibility	439	3.47	0.95	5	1	0.51***	0.59***

Table 2: Survey regression with clustering by department results for performance

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercepts	3.64***	3.56***	3.57***	3.56***	3.57***
Direct effects					
Governance formalization	0.42***	0.48***	0.31**	0.35**	0.38**
Governance formalization^2 (squared)		0.13*	0.12*	0.20**	0.21**
Governance flexibility			0.23***	0.18**	0.20**
Moderation effect					
Flexibility×Formalization				-0.11*	-0.13*
Flexibility×Formalization^2					-0.03
F value	30.98***	46.87***	123.31***	133.91***	91.89***
Ajusted-R^2	0.24	0.27	0.34	0.35	0.35
Adjusted-ΔR^2		0.03	0.07	0.01	0.00

Note: N=434; $^+$p<0.1, *p<0.05, **0<0.01, ***p<0.001 two-tailed tests

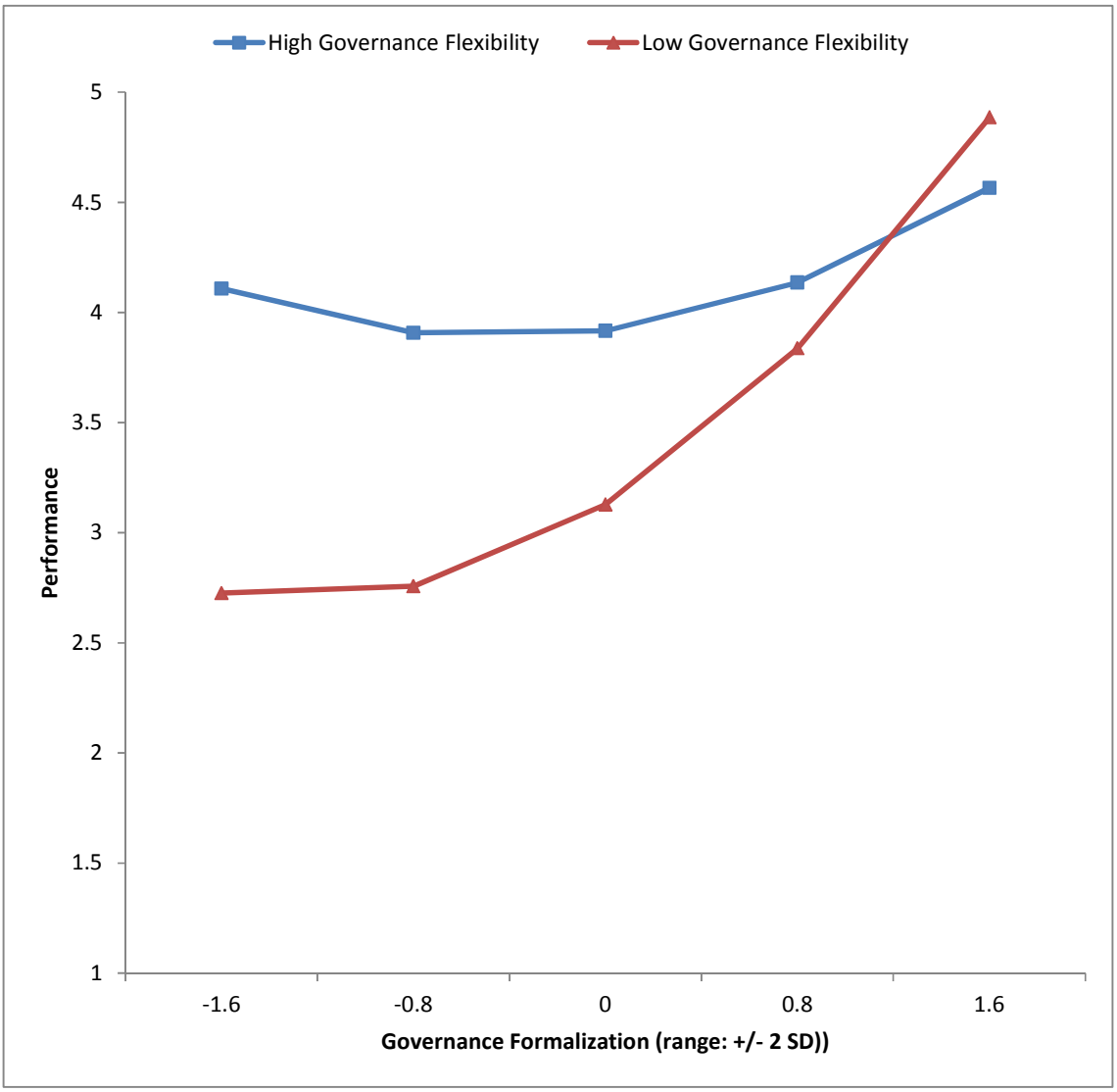

Figure 1: Joint effects of governance formalization and flexibility on performance

APPENDIX: Survey Item Questions

Governance Formalization:

Think about the improvement activity in your IT department recently and rate the level of agreement with the following statements (0 = "strongly disagree" and 5 = "strongly agree").

1. These activities use a structured (defined) process.
2. These activities use program management approaches (project charters, time plans, etc).
3. These activities use objectives and performance metrics to promote improvement progress.
4. These activities use detailed action item follow-up approaches.
5. The employees adhere to the defined procedures for improvement or change.

Governance Flexibility

Think about the improvement activity in your IT department recently and rate the level of agreement with the following statements (0 = "strongly disagree" and 5 = "strongly agree").

1. My IT department adapts the improvement procedure to meet changing customer needs.

Performance

Rate the performance of your department over the last year on each item below (0 = "strongly disagree" and 5 = "strongly agree").

1. My department currently meets our customer requirements.
2. My department currently meets our cost requirements.
3. My department currently meets our quality requirement.
4. My department has made improvements over the last year.

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