



RESEARCH ARTICLE

# Effect of Governance Dimensions on Operational Performance through Process Coordination in Drug Making Industry of Thailand

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**ABSTRACT**

During the last few years, the process of coordination has been considered as a mutual process for the purpose of providing knowledge as well as sharing information. The current study has the primary aim is to highlights the role and impact of IT governance, relational governance as well as contractual governance on the operational performance of the drug making industry with the mediating role of process coordination. Although, there are multiple ways for the data collection, however in the given study the survey questionnaire method is used to collect the data regarding the mystery process of coordination. Furthermore, the research is applied to the item response theory such as  $26 \times 20 = 520$ . Almost 417 respondents respond to the survey questionnaire out of 179 were female and 238 were male. Besides this, under the analysis different analysis techniques are applied such as KMO, Bartlett's test, SEM and descriptive statistics test for a different purpose. The results and hypothesis acceptance or rejection has indicated that all hypothesis has accepted. It has explained that the IT governance, contractual and relational governance all have a positive impact on the operational performance of the companies in a significant way. Furthermore, the results have also indicated that the process of coordination has a significant mediating role also. Finally, it is recommended that future studies and researchers must highlight the other useful factors such as motivational factors to study the operational performance of the firms.

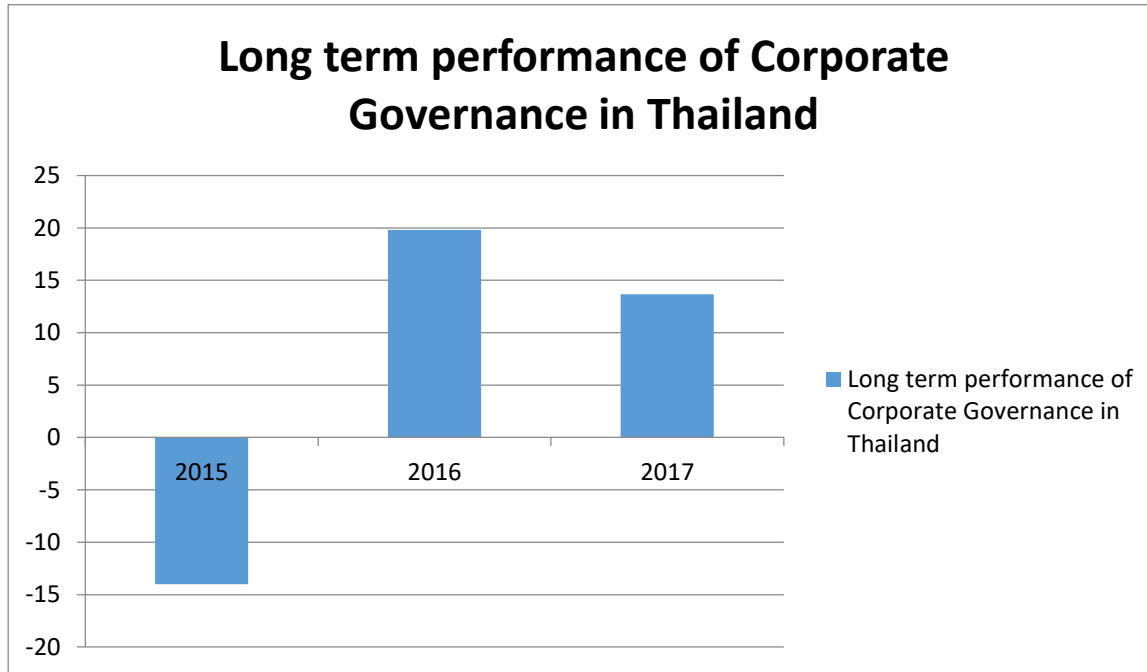
## INTRODUCTION

The global economy has fostered new ways of technological innovation in the businesses that has caused a transformation from traditional to digital aspects which refers to the sharing of information with trust, cooperation and connectivity between the user and the provider of information (Kayikci, 2018). Recently, research scholars have started focusing on the user – provider relationship and the ways to govern it (Arranz & De Arroyabe, 2012; Lai, Tian, & Huo, 2012; L. Wang, Yeung, & Zhang, 2011).

**Table 1.1: South Asian countries taking Governance more seriously (Niekki Asian review)**

Country	Score
Singapore	69
Hong Kong	66
Thailand	58
Malaysia	55

This concept is getting increasingly popular in major companies of Thailand, especially those with supply chain (Cai, Jun, & Yang, 2010; Flynn, Huo, & Zhao, 2010; Li, Poppo, & Zhou, 2010). In order to control and coordinate the behavior of individual firms, they usually adopt the Contractual, Relational or IT Governance mechanisms to safe guard these relationships (Bstieler & Hemmert, 2015) so that additional costs can be reduced and operational performance be increased.



**Graph 1.1: Long term performance of CG in Thailand**

Previous research workshave explored the relationship between the variables of interest, but further investigation is recommended to see how the contractual, relational and IT governance impacts the firm's performance (Chi, Zhao, George, Li, & Zhai, 2017; Ju & Gao, 2017; Kembro & Selviaridis, 2015; Mithas & Rust, 2016; Oshri, Kotlarsky, & Gerbasi, 2015; Q. Wang, Huo, & Zhao, 2020), creating a clear gap in literature, which this study will fill. This study has the following research objectives:

- To investigate the impact of Contractual Governance on Operational Performance
- To investigate the impact of Relational Governance on Operational Performance
- To investigate the impact of IT Governance on Operational Performance
- To investigate the impact of Process coordination as a mediator in the relationship of Corporate Governance and Operational Performance
- To investigate the impact of Process coordination as mediator in the relationship of Relational Governance and Operational Performance
- To investigate the impact of Process coordination as moderator in the relationship of IT Governance on Operational Performance

The main scope of this study is to investigate the impact of Contractual, Relational and IT governance on the operational performance in drug making industry of Thailand and investigate the impact of Process coordination as a mediator in these relationships. Theoretically, this study adds contribution to the theories of TCE and SET and literature content by examining the underlying mechanism in these relationships with Process coordination as a mediator. Practically, this study has implications

for firms that aim to improve their operational performance by implementing CG, RG and IT governance.

The structure of this paper is as follows. The paper starts with Introduction and moves to a detailed review of literature in the next section. Then, the research methodology, results and analysis is given. The paper ends with discussion and conclusion, along with the limitations and implications of the research.

## **LITERATURE REVIEW AND THEORETICAL BACKGROUND**

This study is based on the two theories, the transaction cost economics (TCE) and the social exchange theory (SET). TCE states that firms are confronted with behavior on the part of few opportunists that lead to increase in the transaction costs (Dyer, 1997; Dyer & Chu, 2003) and to gain competitive advantage in the industry (Dyer & Singh, 1998). Hence, these firms have to adopt contractual governance in order to cope with such issues (Wacker, Yang, & Sheu, 2016). The SET states that as a result of social interaction, bilateral relationships come into being that involves 'trust and relational norms' (Q. Wang et al., 2020).

### **Impact of Corporate Governance**

TCE propose that firms need to adopt practice of contractual governance in order to coordinate the involved transactions and to control the mal practice of opportunism (Huo, Fu, Zhao, & Zhu, 2016; Huo, Wang, Zhao, & Hua, 2017; Wacker et al., 2016). Contractual governance mechanism is used for effective safe guarding of relationships and involves contracts in detail and the applications for contract. The detailed contracts explain the roles and responsibilities held by both parties. Contract application explains the severity of the disciplinary action which can be taken as a result of contract violations (Abdi & Aulakh, 2017; Bstieler & Hemmert, 2015; Lu, Guo, Qian, He, & Xu, 2015; Lumineau & Henderson, 2012; Oshri et al., 2015; Wacker et al., 2016). Scholars like have proved that direct relationship is present between CG and OP of firms (Huo, Ye, & Zhao, 2015; Q. Wang et al., 2020), hence, this study can hypothesize:

Hypothesis 1: Contractual Governance has significant association with Operational Performance

### **Impact of Relational Governance**

The SET claims that RG is a self-enforcing governance that involves trust and relational norms so that the opportunists can be avoided and the rules and obligations can be effectively enforced (Cai, Jun, & Yang, 2010; Chen, Preston, & Xia, 2013). The information sharing, as a result, reduces extra costs and improves the operational performance to boost the profits (Cai et al., 2010; D. Q. Chen, Preston, & Xia, 2013; Chi et al., 2017; Kayikci, 2018; Li et al., 2010; Lioliou, Zimmermann, Willcocks, & Gao, 2014; Mellewigt, Madhok, & Weibel, 2007). A study proved that relational governance is directly linked to the firm's operational performance (Q. Wang et al., 2020), hence this study can hypothesize:

Hypothesis 2: Relational Governance has significant association with Operational Performance

### **Impact of IT Governance**

IT Governance involves the specification of the rights on decisions and accountability in such a framework that forges desirable behavior using IT. It is considered a viable option for improving the firm's efficiency and effectiveness (Chi et al., 2017; Liu, Huo, Liu, & Zhao, 2015). Using IT governance, many firms can create value for the users and partners by providing online interface that could be used for 'searching, ordering, and paying' for the desired products (D. Q. Chen et al., 2013; Lioliou et al., 2014). Therefore, for achieving high performance, firms can get benefit from IT governance strategies and a direct relationship exists between them (Chi et al., 2017; Mithas & Rust, 2016), thus this study can hypothesize:

Hypothesis 3: IT Governance has significant association with Operational Performance

### Mediation of Process Coordination

The purpose of Process coordination provides in detail the information that needs to be shared and in what way. It involves the identification of problems and suggesting ways to improve the logistics process through information sharing. With this, the flow of materials is set smooth that reduces the needs for inventory and transportation, and makes the firms attain 'economies of scale and scope'(Huo et al., 2017; Moharana, Murty, Senapati, & Khuntia, 2012). Trust and norms are antecedents of process coordination as well as they promote the reliability with which the critical information can be shared. Study conducted by has proved that PC is directly linked to the firm's operational performance. They also showed that both components of CG and that of RG are positively linked to the process coordination(C. Chen, Zhu, Ao, & Cai, 2013; D. Q. Chen et al., 2013; Jiang, Li, Gao, Bao, & Jiang, 2013; Lioliou et al., 2014; Lumineau & Henderson, 2012). In the study conducted by Q. Wang et al., (2020), the process coordination has been used as a mediating variable in these relationships. Also, the IT governance mechanism is directly related to the firm's performance(Chi et al., 2017). Hence, this study can investigate the impact of process coordination as a mediator in these relationships and can hypothesize:

Hypothesis 4: Process coordination significantly mediates the relationship of Corporate Governance and Operational Performance

Hypothesis 5: Process coordination significantly mediates the relationship of Relational Governance and Operational Performance

Hypothesis 6: Process coordination significantly mediates the relationship of IT Governance and Operational Performance

### Research Model

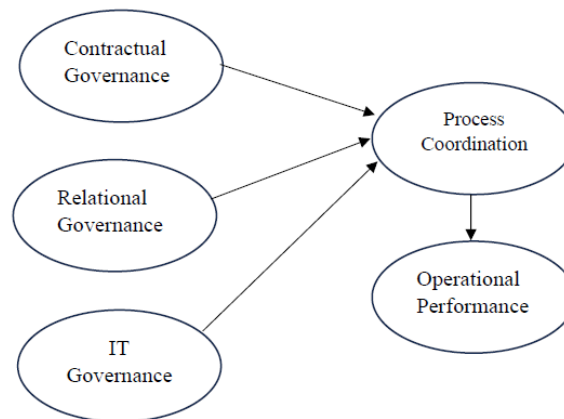


Figure 1 Conceptual Framework

## METHODS

### Sample Characteristics

A questionnaire based survey design was used for this study. The chosen sampling method was of convenience sampling. The responses were generated via a self-administered pencil and paper questionnaire. The questionnaires were distributed after getting permissions form concerned authorities. The name of respondents and their organizations haven't been disclosed in order to maintain respondent anonymity. The researcher implied the method of item response theory following the criteria of twenty response against each item i.e.  $26 \times 20 = 520$ , Therefore the total

number of distributed questionnaires were 520. Out of these 520, 58 questionnaires weren't received back and 45 were discarded due to missing values. The remaining 417 were used for data analysis.

### **Measures**

The scales were selected through extant literature search. The finalized scale items had previous scores of reliability and validity, therefore they were considered apt to be included into this study. However, the content validity of scale items was ensured by having 2 different academicians review the questionnaire. Then MBA graduate students were also asked to fill the questionnaire as a pretest. Changes were made according to their feedback. In accordance with the directions of Campbell, Brislin, Stewart, and Werner (1970) the questionnaire was first devised in English and then translated into Thai using the forward and back translation method. Two linguists and academicians who are fluent in both Thai and English were referred for the translation. All scale items were measured on a five point Likert scale ranging from "1=strongly disagree" to "5=strongly agree".

### **Contractual Governance**

Contractual Governance was measured on the basis of two dimensions, detailed contracts and contact applications. The scale consisted of seven items and was developed and adapted by the studies of Wuyts and Geyskens (2005), Antia and Frazier (2001) and Jiang et al. (2013). A sample item includes "When dealing with our main third-party logistics (3PL) provider, our contract precisely defines the cooperation goal and key performance indicators (such as price, delivery, lead time, and damage rate)".

### **Relational Governance**

Relational governance was measured on the basis of trust and relational norms. These dimensions were developed and adapted in the questionnaire on the basis of the studies conducted by Tian, Lai, and Daniel (2008), Heide and John (1992) and Kumar, Scheer, and Steenkamp (1995). The scale consists of 13 items in total. A sample item includes "When an unforeseen situation occurs, both parties are flexible in accommodating each other to solve problems/needs".

### **IT Governance**

The scale for IT or information sharing governance was established on the basis of the studies carried out by Morash and Clinton (1998) and Narasimhan and Kim (2002). A sample item includes "We can use our main 3PL provider's information systems to track the status of our cargo."

### **Process Coordination**

The scale for Process Coordination was established on the basis of the studies carried out by Morash and Clinton (1998) and Narasimhan and Kim (2002). A sample item includes "We conduct joint planning to anticipate and resolve operational problems with our main 3PL provider."

### **Operational Performance**

The scale for measuring operational performance was developed and adapted from the studies of Miller and Roth (1994) and Devaraj, Krajewski, and Wei (2007). A sample item includes "We are more flexible when dealing with customers' special requirements".

## **RESULTS**

### **Demographics**

A sample of 417 respondents was finalized to be used for the analysis. The sample consisted of 57.1 percent male and 42.8 percent female respondents. The ages of 76.3 percent of the respondents were ranged between 20 and 35. Whereas, the working experience of 72.7 percent of the respondents was

in between 2 and 8 years. The managers, supervisors and assistant managers were the constituents of the sample therefore the age and experience statistics are high.

### Descriptive Statistics

Table 1 is showcasing the results of the descriptive analysis. The data follows a normal distribution as the skewness values are within the prescribed limit of  $-1+1$ . The mean values of constructs, variables, are nearing 4 which is an indication of the respondents' agreement with the statements of the questionnaire. However, outliers were found present in the responses for It governance.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
OperPerf	417	1.00	5.00	3.1435	1.11114	-.107	.120
ContGove	417	1.00	5.00	3.3481	1.05901	-.305	.120
RelaGove	417	1.00	5.00	3.4502	1.21375	-.469	.120
IT_Gove	417	1.00	5.28	3.3664	1.19316	-.418	.120
ProcCond	417	1.00	5.00	3.4812	1.18984	-.477	.120
Valid N (listwise)	417						

### KMO and Bartlett's Test

The sample is adequate as the KMO measure is above 0.6 and is approaching 1. The sphericity of Bartlett's is also significant and demonstrates the non-relevance among the construct items, thus they can be used for factor testing.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.942
Bartlett's Test of Sphericity	Approx. Chi-Square
	12211.975
	df
	325
	Sig.
	.000

### Factor Loading

All of the individual scale items are significant and contribute in the overall variance of the construct, as the values of loadings are greater than 0.7. The problem of cross-loading doesn't persist as well.

	Component				
	1	2	3	4	5
OP1			.804		
OP2			.863		
OP3			.836		
OP4			.793		
OP5			.817		
CG1	.765				
CG2	.748				
CG3	.805				
CG4	.859				
CG5	.829				
CG6	.880				
CG7	.833				
RG1		.842			
RG2		.854			

RG3		.857			
RG4		.895			
RG5		.909			
RG6		.900			
IG1				.852	
IG2				.861	
IG3				.851	
IG4				.855	
PC1					.821
PC2					.846
PC3					.875
PC4					.864

### Convergent and Discriminant Validity

Convergent validity is established on the basis of AVE and CR (Hassan, Hameed, Basheer, & Ali, 2020; Iqbal & Hameed, 2020), whereas discriminant validity is determined on the basis of MSV and the self-correlation diagonal of variables. As table 4 demonstrates AVE and CR are greater than 0.5 and 0.7, MSV is less than AVE and the self-correlation values are greater than others, thus both discriminant and convergent validity is present.

**Table 4: Convergent and Discriminant Validity**

	CR	AVE	MSV	IG	CG	RG	PC	OP
IG	0.944	0.809	0.271	0.899				
CG	0.949	0.729	0.305	0.438	0.854			
RG	0.923	0.858	0.271	0.521	0.414	0.926		
PC	0.930	0.770	0.233	0.341	0.483	0.415	0.877	
OP	0.946	0.779	0.305	0.480	0.552	0.514	0.440	0.883

### Model Fitness

In order to demonstrate the fitness of the model a CFA test is performed on the construct. The CMIN value is 2.689 (under 3), IFI and CFI are 0.96 (greater than 0.9), GFI is 0.867 (greater than 0.8) and RMSEA is 0.064 (less than 0.08). All factors are in accordance with the threshold ranges, thus the model is proclaimed fit.

**Table 5: Confirmatory Factors Analysis**

Indicators	Threshold range	Current values
CMIN/DF	Less or equal 3	2.689
GFI	Equal or greater .80	.867
CFI	Equal or greater .90	.960
IFI	Equal or greater .90	.960
RMSEA	Less or equal .08	.064

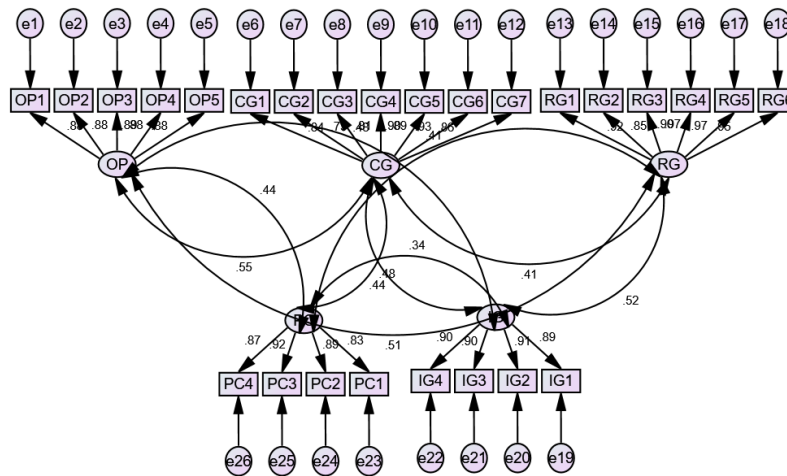


Figure 1: CFA

SEM

A unit increase in IT\_Gove will produce a change of 16.6 percent in OperPerf, the hypothesis is accepted as the relationship is significant. A unitary increase in RelaGove will produce a change of 22.3 percent in OperPerf the hypothesis is accepted because the relationship is significant. A unit change in ContGove will produce a change of 33.1 percent in OperPerf, the relationship is significant and the hypothesis is accepted. ProcCond mediates the relations between the dependent and independent variables. It produces an effect of 1.5 percent through IT\_Gove, 2.3 percent through RelaGove and 3.8 percent through ContGove. The first hypothesis is rejected due to insignificant relationship and the latter two are accepted due to significance of associations.

Table 6: Structural Equation Modeling

Total Effect	IT_Gove	RelaGove	ContGove	ProcCond
ProcCond	.129**	.201**	.331***	.000
OperPerf	.180**	.246**	.378***	.115*
Direct Effect	IT_Gove	RelaGove	ContGove	ProcCond
ProcCond	.129*	.201	.331***	.000
OperPerf	.166**	.223**	.341***	.115*
Indirect effect	IT_Gove	RelaGove	ContGove	ProcCond
ProcCond	.000	.000	.000	.000
OperPerf	.015	.023*	.038*	.000

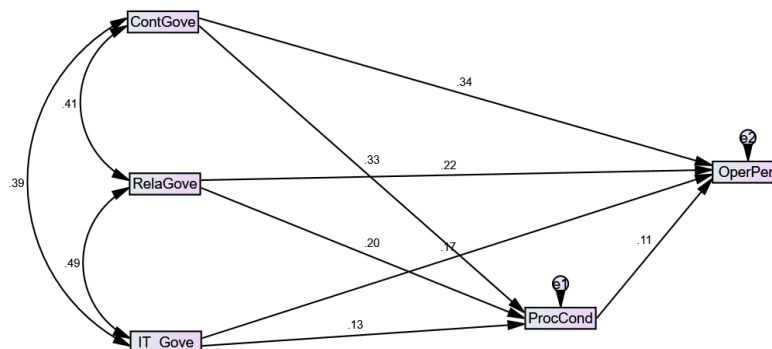


Figure 2: SEM



## DISCUSSION

A study by Pittino, Martínez, Chirico, and Galván (2018) manifest that governance dimensions have a crucial part in enhancing the operational performance of any particular sector. It is seen that in the past few years, governance dimensions become important in the pharmaceutical sector of Thailand. According to the measurements of the results regarding a relationship between IT governance activities and Operational performance indicates that the relationship is positive. This relationship is positive and accepted because the IT governance activities create an up to the dated framework to the industry to produce measurable results in the achievement of their strategies and goals, hence the first hypothesis of the study has been accepted. According to the second result of the research, it is cleared that the impact of relational governance activities on operational performance is positive. Relational governance can develop a system of sharing ideas and also leads to developing further relationships (Benítez-Ávila, Hartmann, Dewulf, & Henseler, 2018). Results related to mediating variables showed that process collaboration can positively mediate the relationship between governance activities and operational performance of the sector, as process collaboration can enhance the flexibility level of the firm and generate more creative ideas (da Silva, 2019). The operational performance of the firm positively influenced by these activities, therefore this hypothesis of the study has been accepted.

## CONCLUSION

The given study investigated the impact of governance dimensions which generally include contractual, relational and IT governance practices on the operational performance of the drug-making sector of Thailand. The following study also investigated the mediating impact of process collaboration in improving the operational as well as the financial performance of the drug-making sector of Thailand. To evaluate the impact of governance variables most of the data of the research is collected from about 417 employees of the Pharmaceutical sector of Thailand.

## Implications and Limitations

The results of the study contribute to enhance the operational performance of the drug-making sector of Thailand and help them to understand the significant impact of governance activities like contractual, relational and IT governance practices. The following study also helps the sectors of drug-making in understanding the significance of process collaboration and its impacts on the operational performance of the sector. This study also offered novel insights into the governance activities and its relationship with the operational performance of the firm. Despite those helpful implications above, the given study also has some limitations that offered directions and recommendations for future analysts and studies. First, the given study did not analyze other motivating aspects and factors related to the operational performance of the sector. Second, the given study only collects data from some employees of the Pharmaceutical sector, which represents only one side of the sector. Third, the study only focuses on the arena of operational performance in Thailand.

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