

Complex Organizational Buying and Actor Bounded Reliability: Effects on Procurement Performance

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Abstract

Complex organizational buying involves the design and implementation of large-scale solutions. Accordingly, information sharing between the buyer firm and its supplier network is crucial, yet this perspective does not account for actors' bounded reliability. Drawing on organisational information processing theory and bounded reliability theory, the present study hypothesizes that actors' information control (IC) behaviours have a significant, positive effect on procurement performance (PP). Findings from a survey of 294 individuals with complex organizational buying experience support this claim. The findings also suggest procurement type (PT), procurement duration (PD), procurement process formalization (PF), procurement team centralisation (C) and time pressure (TP) have significant effects.

Keywords: *gatekeeping, business solutions, regression*

Track: *Business-To-Business Marketing & Supply Chain Management*

1. Introduction

Common in industries such as mining, construction, information technology, defence, and aerospace, complex organizational procurement processes require multiple interactions between buyer and supplier firms to implement technically sophisticated solutions (Töllner, Blut, & Holzmüller, 2011; Tuli, Kohli, & Bharadwaj, 2007). Accordingly, there is a need for actors (i.e. individuals with responsibility for task execution) employed by the buyer firm or its suppliers to interact with one another to solve problems, to complete tasks and to develop a shared implementation plan (Aarikka-Stenroos & Jaakkola, 2012; McFarland, Challagalla, & Shervani, 2006). Core to these activities is information sharing. Without the successful creation and transmission of information at the actor-to-actor level, it is unlikely that the procurement process will succeed. This is evident where buyer firms do not communicate requirements sufficiently or where these change (Flint, Woodruff, & Gardial, 2002; Nidumolu, 1996), where problems are misdiagnosed or ignored (Aarikka-Stenroos & Jaakkola, 2012; Crowston, 1997), or where unintentional cultural shifts emerge (Marcos & Prior, 2017). These circumstances can have significant consequences (Flowers, 2004).

This study focuses on two research questions. The first of these is: *how, and to what extent, do the information control (IC) behaviours of individual actors affect overall procurement performance (PP)?* In addressing this question, the paper links a micro-level perspective of complex organizational buying with an overall performance outcome. As such, it builds on the initial work of Dawes, Lee, & Dowling (1998), which focuses only on supplier selection. In complex organisational buying, members of the buying centre often go on to become members of the procurement and implementation team. Therefore, the present study offers a more pervasive view of the role of IC in terms of PP than presently in the literature. The second research question is: *how, and to what extent, do implementation team factors such as procurement type (PT), procurement duration (PD), process formalization (PF), procurement team centralisation (C) and time pressure (TP) moderate the relationship between IC and PP?* In examining this question, the study considers the effects of the overall procurement context and, therefore, draws on earlier buying centre research while also introducing organizational information processing theory to this literature as an important theoretical lens.

2. Theoretical Background and Hypothesis Development

Existing organizational buying research shows that a group of actors from within the buyer firm, often from the supplier firm and, sometimes, from other backgrounds, converge as a buying centre to make purchase decisions on behalf of the buyer firm (Lewin & Donthu,

2005; Wilson, Lilien, & Wilson, 1991). The focus of this literature has been on the actual purchase decision. Accordingly, it has been somewhat silent on the nature of the procurement at hand. Research into complex organizational buying, where the focal procurement is a complex solution (Töllner et al., 2011; Tuli et al., 2007) suggests that making the purchase decision is only one aspect of a longer-term pattern of activity. Buying centre members often go on to become members of an implementation team. In considering this broader perspective, it is apparent that individual actors continue to play important roles.

The criticality of information sharing in these environments is clear. At the buyer-supplier firm level, higher innovation, lower risk, better efficiency and better coordination are just some of the benefits (Ebrahim-Khanjari, Hopp, & Iravani, 2012; Özer, Zheng, & Ren, 2014; Yigitbasioglu, 2010). However, the propensity of an organization to develop and share information is subject to constraints. Organizational information processing theory posits that the organization is an information processing entity that relies on an alignment between the need for information processing and its capacity for information processing (Galbraith, 1973; Premkumar, Ramamurthy, & Saunders, 2005). The need for information processing increases as the organizational context has more uncertainty. To manage this problem, the organization can enhance its information processing capability through improvements in processes and systems. The organization can also encourage better coordination and it can define task scope more discretely and simply. However, these provisions are not always possible. This is particularly the case in complex organizational buying. Instead, the innovative, creative nature of the inter-firm collaborations necessary in complex organizational buying tend to require an ability for actors to manage change and deal with uncertain environments, often without the luxury of a well-defined information processing capability at the organizational level.

In complex organizational buying, a considerable burden rests with actors such as project managers, bid managers, sales managers, operations managers, and procurement managers to work collaboratively. The complex organizational buying context yields a diverse array of information that requires quick thinking and decision-making (Santos & Spring, 2015; Xin, Chai, Ojanen, & Brombacher, 2013). For the actors charged with these tasks, they have limited opportunity to receive this information, to process it and to act on it. Limitations in time, information access, and resource access affect their ability to fulfil task requirements, despite their best intentions. That is, they are subject to bounded reliability (Kano & Verbeke, 2015; Marcos & Prior, 2017; Verbeke & Greidanus, 2009).

In complex organizational buying, it is likely that actors that contribute to the overall procurement process affect outcomes through their specific activities. Building gradually over

time, these activities amount to the actions that comprise the implementation of the solution at hand. Given the presence of bounded reliability, it is likely that actors are able to share only a portion of information that they can access with other actors. Due to this phenomenon, it is probable that actors who share information in a controlled and deliberate fashion (i.e. information control (IC) (Dawes et al., 1998) will contribute to stronger procurement performance (PP) overall. Hence, the study hypothesizes:

H1: There is a significant positive relationship between IC and PP in complex organizational buying processes.

Despite the importance of individual actors in complex organization buying, organizational information processing theory highlights the role of information processing capability as an important determinant of organizational performance (Galbraith, 1973; Premkumar et al., 2005). This study conceptualizes the implementation team as an important unit of analysis. The implementation team comprises actors from the buyer firm and from supplier firms with the responsibility for designing and implementing the solution. Accordingly, the implementation team dimensions are likely to moderate the effects of IC on PP. Drawing on the buying centre literature, this study hypothesizes that a series of these attributes have effects due to their ability to influence information availability, and information flow.

H2: a) procurement type (PT), b) procurement duration (PD), c) procurement process formalization (PF), d) procurement team centralisation (C) and e) time pressure (TP) moderate the effects of IC on PP.

3. Methodology

3.1. Research Approach

This study involves a survey of Sri Lankan managers with experience in complex organizational buying processes for large-scale, capital-intensive goods with values greater than LKR 10M. Through face-to-face data collection and a snowballing approach, 304 responses were collected to the printed questionnaires. An analysis of responses led to the decision to remove ten cases due to excessive missing data, extreme outliers, and unengaged responses. The final sample is 294 (or 96% of the sample frame). Of these respondents, most are middle managers (56%), or senior managers (23%), with departmental members (14%), and directors/CEOs (7%) accounting for the remainder. About 36% of the respondents have 6-10 years industry experience, 22% have 11-15 years, 16% have more than 20 years, 14% have 16-20 years, and 12% have less than five. 79% are male, and 21% are female. 46% are aged 31-40, 24% are 41-50, 19% are 21-30, 10% are 51-60 and 1% are in the 61-70.

Industries with representation in the sample include information and communication technology (30%), defence (22%), construction (19%), real estate development (5%), manufacturing (3%), public administration (2%) and other (17%). Respondents gave their perceptions on buying situations that include building procurement (54%), plant/machinery and equipment buying (20%), software /IT system (16%), infrastructure (7%) and the combination of above purchases (3%). Purchase values include 39% at more than 100M, 32% between 10M-25M, 10% between 25M-50M as well as 75M-100M, and 9% are 50M-75M.

3.2. Measures, reliability and validity

We adapted existing scales to measure IC (Jemison, 1984), and PP (Liu, Chen, Chen, & Sheu, 2011). A five-point Likert scale ranging from strongly disagree (=1) to strongly agree (=5) was used to measure the items. We conceptualized IC as information sharing in terms of individual ability and inclination to share information. This considers that individuals in procurement committees control the disposition of information deciding whom, when and what portions of the acquired information and knowledge should be given to others (Jemison, 1984). PP involves successfully completing the procurement process in terms of fulfilling predetermined functional, financial and implementation related parameters (Liu et al., 2011). PT is collected through a categorical question of ‘What is the product that was procured/purchased?’ The categorization is as follows: Building Development/ construction, Machines/ Plant and equipment, Software/ IT systems, Infrastructure developments, and Other- specify. PD is also collected as a categorical question of ‘How long did it take to complete the project?’ in term of years and all the projects came under 1 – 6 years period. In addition to PT and PD moderators, PF, C and TP scales are adapted from Lau, Goh, and Phua (1999). PF is defined as to what extent purchasing tasks are formally prescribed by rules, policies, and procedures required to be followed, C is defined as to what extent purchasing decisions are controlled and made by a select few key members of the buying center within higher hierarchical positions in the organization and TP is defined as to what extent buying center members felt pressure to get decision quickly (Lau et al, 1999).

We conducted a panel review and a pilot study before the actual survey. A panel of expert includes three academics and five professionals in the field with the experiences of organizational procurement. Next, a pilot study was conducted with 31 individuals of the target sample. The reliability test was carried out on the pilot data, and Cronbach’s alpha value for all variables were above the threshold of 0.7.

We conducted confirmatory factor analysis using AMOS version 24. The fit indices of the overall measurement model are the relative chi-square (χ^2/df) = 1.931, normed fit index (NFI)

= .889, Goodness of fit index (GFI) = .932, adjusted goodness of fit index (AGFI) = .901 and root mean squared error of approximation (RMSEA) = .056. These indices show that model satisfactorily fit. Further, all the factor loadings are above the cut off loadings of 0.6 and statistically significant ($p < 0.01$) indicating the convergent validity of the measures (Ponder, Bugg Holloway, & Hansen, 2016). Further, Average variance extracted (AVE) method also use to test the convergent validity and except PP and TP, the other variables got the AVE threshold of 0.5. However, Fornell and Larcker (1981) explain that if AVE is less than 0.5, but CR is higher than 0.6, the convergent validity of the construct is still adequate. Reliability is assessed through Cronbach's Alpha which scores are greater than 0.7 (Cronbach, 1951) and Composite reliability which scores greater than 0.7 (Hair, Black, Babin, & Anderson, 2010). Finally, discriminant validity is tested by examining the inter-correlation which value is less than 0.8 (Kline, 1998), indicates discriminant validity. The common method bias was tested by using common latent factor (CLF) approach, and differences between with and without CLF showed less than 0.2 indicating no common method bias issue in the model.

	Alpha	CR	AVE	1	2	3	4	5
1. IC	0.788	0.80	0.58	1				
2. PP	0.786	0.79	0.50	.329**	1			
3. PF	0.839	0.84	0.64	0.050	.177**	1		
4. C	0.744	0.75	0.51	0.077	-0.068	-.329**	1	
5. TP	0.701	0.70	0.54	0.001	-0.081	-.129*	.304**	1

**= $p < .01$, *= $p < .05$ (2-tailed)

Table 1 – Scores of Alpha and Correlations

4. Results

Figure 1 illustrates the results of the study. To examine hypothesis 1, the authors estimated a direct relationship between IC and PP and included several controls using maximum likelihood estimation in AMOS version 24. This produced a significant, positive result and, therefore, hypothesis 1 was accepted – IC does affect PP in this way. To examine hypothesis 2, the authors ran five additional models that include product terms between IC and each of the implementation team attributes. PT appears to have a significant dampening effect on the relationship between IC and PP. PD did not appear to have any significant effects. PF had a significant, positive effect on the relationship between IC and PP, as did C and TP. These findings led to the acceptance of H2a, c, d and e.

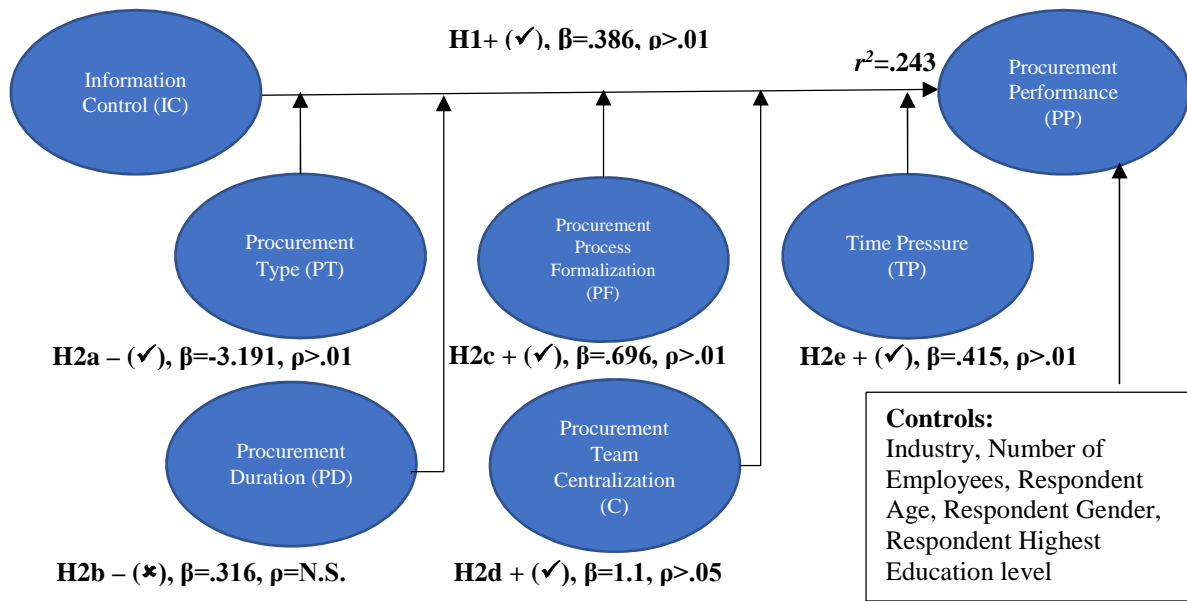


Figure 1 - The Results of the Study

5. Discussion and Conclusion

The study shows a significant, positive relationship between IC and PP. This provides support for the claim that actors experience bounded reliability during complex organizational buying and that if information sharing is deliberate and focused, there are significant positive effects on overall procurement performance. This is a different interpretation on the role of individuals in previous buying center research. Rather than individuals that attempt to influence or manipulate a buying process to suit their own purposes (e.g. achieving sales outcomes) (Dawes et al., 1998; Thomas, 1984), a broader set of actors are also relevant but are subject to different motivations. Since procurement performance is a more pervasive construct than simply arriving at a joint purchase decision, it follows that the actors responsible for implementation have important relative impacts.

Moreover, highlighting the importance of actors' bounded reliability in complex organizational buying processes illustrates an important dilemma when considering organizational information processing theory. While research in this area implies the existence of specific behavioral phenomenon of actors (e.g. through the creation of lateral relations and by managing tasks so that they are 'self-contained') (Galbraith, 1973; Premkumar et al., 2005), there is no consideration of bounded reliability. By envisaging actors as information creators and conduits, scope exists to broaden the scope of organizational processing theory to link more closely to this micro-level perspective.

The study findings also show that, consistent with the core claims of organizational processing theory, that information-processing capability has significant effects on the

relationship between IC and PP. The present study suggests several new dimensions that are also worth noting as important elements of information-processing capability when considering the implementation teams that enact complex organizational buying processes. Procurement type clearly has an influence. However, the nature of the team itself is also important. To enhance the positive effects of IC on PP, implementation teams should consider more formalization and centralization. These attributes appear to help organizations cope with the uncertainty and excessive information efficiently and effectively. The findings also show that time pressure can also be positive. As an important cultural element, time pressure can force individuals to focus on their specific task allocation.

6. References

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