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Title: Extending the model of supply management orientation and its effect on supplier buyer performance

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**Introduction:**

Supplier management is becoming a strategically important area and its link to firm performance has been witnessed by lot many firms. Motorola, Marks & Spencer, and Xerox are some examples of firms that have moved towards closer, collaborative relationships with their suppliers. In the global auto industry, the big three US auto makers and many of their European counterparts have joined major Japanese automakers in their attempts toward forming collaborative relationships with few suppliers. Boeing 787 was the result of collaborative working with suppliers after the stagnation it faced initially in the development and production stages. Also strategies like VMI, CPFR are being adopted by many companies to achieve greater performance.

Long term relationships have positive impact on cost, quality, flexibility & satisfaction of the parties involved. While close relationships can be advantageous in many ways, they have some inherent operational risks. Risk might be due to opportunistic behavior, any unfortunate incident at supplier’s end. It’s important to manage partnership risks in the relationships in the present context. According to a survey of business executives done by McKinsey (2006), supplier reliability was rated among the top 3 risks in the supply chain.

In order to find the effect of supplier buyer relationships on their performance & the risks involved therein, an extended framework is proposed in the paper which includes some additional dimensions to capture risk in the framework. In addition to the proposed framework, hypothesis are derived based on the model to study the relationship performance link.
The paper has three sections. The first section deals with literature review on the area of supplier relationships, performance and on the risks within the supplier relationships. In the second section some existing frameworks are discussed which are extended in the paper. The third section has the proposed model to capture risk dimensions in the previous models. Finally the fourth section covers the hypothesis derived and the literature support for it. This model can help to devise some predictive relationship management strategies based on performance requirements.

**Motivation for the research:**

In the supply management context, there is a shift of approach from arm’s length to more close relationships with the suppliers. Japanese companies have pioneered this philosophy and the success of their efforts is visible in the performance of the companies. However in India, still the supply relationships are anecdotal as evidence of close relationships are only evident in automotive industries and hardly any literature is there that deals with the performance of the buyers and suppliers in a collaborative relationship. According to the empirical study done by Dangayach et al, (2003), Indian companies are still emphasizing on quality; however, automobile sector has set to compete globally with high innovation rate, faster new product development, and continuous improvement. Also while performance in relationships is widely studied, measures for reliability are not addressed adequately in the performance measurement.

Thus the paper tries to address this gap by proposing a model that includes both measurement and reliability measures to map the status of supply relationships and to capture impact on
reliability in the relationships. Further the model studies supply management strategies simultaneously, which has not been addressed in the literature.

**Literature Review:**

**Buyer Supplier relationships:**

The strategic importance of supplier management is increasing in majority of companies. Supplier management represents an investment by the buying firm in the supplier that may reduce transaction costs and yield a more cooperative relationship (Carr et al, 1999). In the supplier management there is a continuous shift in the buyer supplier relationship orientation from transactional to long term relation one like alliances and partnerships. Strategically managed long-term relationships with key suppliers can have a positive impact on the firm’s financial performance (Gadde et al, 2001; Carr et al, 1999). Some other benefits sought after from this transaction are lower costs, better communication, coordination and quality & satisfaction (Janda et al., 2002).

There was an interesting finding that US firms are more actively involving suppliers in their integrated product development (IPD) projects, given the adversarial nature of the traditional US buyer-supplier relationship. The fact that the entire IPD process represents a departure from the typical model of product development is partially responsible for the success US firms have had in involving suppliers in product development programs. The trend towards supplier integration has been further strengthened by the widespread adoption of just-in-time (JIT) manufacturing – with its emphasis on more tightly coupled buyer-supplier relationships – and the subsequent extension of JIT principles throughout the supply channel (Birou et al, 1994)
Efforts are made to measure the relationship value. The Expected relationship value focuses on the future benefits to be derived over the life of the relationship. Tangible variables were taken for ERV calculation. However relationships have intangible benefits too. Face-to-face planning and communication with key suppliers will benefit the buying firm in the long run. In addition, purchasing professionals perceive that suppliers are more responsive to their requirements when a cooperative type of relationship exists. All other things being equal, those firms that pursue cooperative type relationships with key suppliers can anticipate some improvement in their firm’s financial performance (Carr et al, 1999).

Success in buyer supplier relationships is evident from increasing quality level, reducing cost, decreasing new product development time & increasing cooperation (Kannan et al., 2006). In addition loyalty to existing suppliers is a risk-reducing strategy (Mitchell, 1995). In addition, Zsidisin et al. (2000) and Zsidisin et al., (2003) draw attention to such initiatives as partnership formation, building strategic alliances, supplier development and developing supplier performance measurement systems, arguing them as risk reducing strategies. In a similar vein, some authors show how agency theory can be used to develop risk-sharing strategies (Eisenhardt, 1989; Zsidisin et al, 2003).

There is considerable evidence that failure to manage supply chain risks effectively can have a significant negative impact on organisations (Mitchell, 1995). Supplier buyer relationship is considered to be one the most crucial link for risk management in supply chains. Cousins et al. (2004) proposed the strategic risk means overdependence on a single or limited number of
suppliers. Puto et al. (1985) identify supplier relationship development as an important risk-handling strategy. A key component of managing networks of interactions is the development of strategies to reduce the risks posed by the inappropriate behavior or performance of particular network members (Ford, 1980; Gadde et al, 2001).

**Risk in buyer supplier relationship:**

In context of buyer supplier relationship there are various ways risk has been defined. Zsidisin et al., (2003) define supply risk as “the potential occurrence of an incident associated with inbound supply from individual supplier failures or the supply market, in which its outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety”. He further stresses that two concepts are involved in the definition of supply risk, i.e., the probability and its impact. Risk is perceived to exist when there is a relatively high likelihood that a detrimental event can occur and that event has a significant associated impact or cost.

Cooper (2006) reflects on two risks in a buyer supplier relation i.e., financial risk & performance risk. Suppliers and buyers of R&D results perceive two exchange risks: first, the risk to achieve a lower profitability on the innovation return than the exchange partner, second, the risk of the partner becoming a competitor by unplanned, one-sided knowledge flows. Both risks motivate opportunistic behavior (Helm et al, 2004).

Hilmer et al (1994) identify the possibility of a loss of vital know-how in particular with respect to core competencies as a major risk factor in outsourcing. It is critical to an organization’s success to understand the supply risk that exists. Failures to address them have resulted in
significant losses like in case of Ford, the company posted a loss of $2.1 billion charge against profits to cover the recall of 13 million tires due to quality issues with supplier.

There has been minimal research conducted on how purchasing organizations assess the risk that exists with inbound supply (Zsidisin, 2004).

Thus the paper has included some of the variables that reflect risk in supplier buyer context. Reliability is considered as a measure of risk management in the paper. The terms risk and reliability might be used to reflect the same context and are used interchangeably in the paper.

Theoretical Framework:

Supply Management Orientation (SMO):

SMO is defined as “The management efforts or philosophy necessary for creating an operating environment where the buyer and supplier interact in a coordinated fashion” (Shin et al, 2000).

This paper tries to extend the construct proposed by Shin et al (2000) to include the other broad patterns of behaviors leading to co-operation in supplier buyer relationships. Co-ordination can be studied at the attitudinal, pattern or activity level (Arshinder et al, 2008). Since the purpose of this study is to help in predicting the outcomes of supply strategies adopted in partnerships, the co-ordinating activities undertaken are grouped into patterns level approaches for managing partnerships.

Supply chain coordination can be described as designing mechanisms with aims at bringing the correlated organizations into the common action, elimination of gaps and overlaps, resource allocation mutually acknowledged and establishment of risk/revenue sharing and compensation. Further the authors argue that making coordination mechanism is to coordinate supply chain
network, reduce transaction costs, improve product quality and create a competitive advantage (Zhao et al, 2007).

The supply management orientation is a key characteristic of strategic partnerships. Buyer spend a large amount of time with the supplier staff, engaged in coordinating tasks (e.g., exchanging ideas about future plans and improvements) as opposed to control tasks (e.g., negotiating contracts and monitoring supplier performance) (Bensaou, 1999). The social climate is very trusting and collaborative which leads to joint actions of the supplier and buyer. When buyers engage in co-operative ventures with suppliers requiring risk and benefit sharing, trust and commitment is inherent in the relationship.

Companies striving to maximize supplier performance using a variety of interrelated tools and techniques, and the effectiveness of any one of these are enhanced by the complementary use of others. Many studies in literature consider simultaneously two or three practices to achieve performance gains. For example, reduced number of suppliers reduces the costs of transaction as well as product cost savings due to joint working. Further quality is improved when suppliers are included in new product development and when joint investments are made in process. These investments are made due to the security of long term contracts with the supplier. Further owing to better information sharing in joint planning as well as alignment of goals between buyer and supplier, co-operation would be achieved (Turner et al, 2000). Thus, consideration of one SCM construct is just.

Table 1. gives broadly the approaches undertaken at the pattern level to implement close partnerships with the aim of improving performance.
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Activities</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality focus</td>
<td>Statistical process control, Quality systems adoption, Quality audits, training</td>
<td>Kannan et al (2004), Ritchie et al (2007)</td>
</tr>
<tr>
<td>Reduced Suppliers</td>
<td>Supply rationalization, dual sourcing</td>
<td>Kannan et al (2004).</td>
</tr>
</tbody>
</table>
Table 1: Approaches for supply relationships management

**Buyer Performance:**

Buyer performance has been the focus of most of studies when dealing with supply management. Authors have used the four categories of cost, quality, flexibility and delivery for measuring the buyer performance (Chan et al, 2003; Gunasekaran et al, 2001; Fynes et al, 2005; Shepherd et al, 2006). Review of literature on supply chain performance metrics provided the performance measures namely on-time delivery of customer orders, backorder level, percentage stock-outs, delivery lead time upon receipt of customer order, manufacturing cycle time, supply chain cycle time, capacity utilization, time to market (Khan et al, 2008).

In a restaurant context, the most important factors moving the restaurateurs toward using fewer suppliers were to save time, improve delivery schedules, work with a supplier who better understands their needs, reduce uncertainty of supplies, and lower procurement costs. They also identified the drawbacks inherent in reducing these buyers’ supplier base, in order of importance as: the potential for opportunistic behavior of the part of the supplier, overdependence, potential conflicts over future prices, and uncertainty over the supplier meeting the respondent’s future needs (Crotts et al., 2001).

Effective supplier integration can also lead to vast improvements in quality, cost, flexibility and new product development cycle time through sharing of risk and rewards (Cousins et al, 2007; Zailani et al, 2005). The attitude of buyers towards their suppliers is a predictor of performance too. (Kannan et al, 2004). Engagement in co-operative relationships led to improvements in technological advances and quality standards (Zsidisin et al, 2003). Longer-term relationships
offer significant benefits like manufacturing flexibility, meet customer service objectives and that these benefits are enduring (Beekman et al, 2004). Thus having a co-operative relationship with supplier can lead to buyer performance gains significantly.

**Supplier Performance:**

Earlier work on supplier selection identified operational criteria for supplier performance important from a buyer’s perspective. It’s interesting to note that intangible criteria of supplier performance sometimes have larger effect on buyer performance than the most common criteria like cost and quality (Vonderembse and Tracey, 1999).

Cost, quality, delivery and co-operation were the identified attributes of supplier performance in the Chinese retail industry context (Zhengyi et al, 2003). A supplier’s operational performance refers to the combination of product development efficiency, process improvements, quality conformity, and short lead time. All else equal, the average absolute performance of suppliers in longer-established relationships should be higher than that of suppliers that have yet to prove themselves over time (Kotabe et al, 2003).

Recently however softer evaluation criteria are gaining attention in literature. Supplier quality, supplier service and supplier management fit were identified from buyer’s perspective while selecting suppliers (Hsu et al, 2006). Some other criteria include co-operation (Zhengyi et al, 2003), environmental friendly operations (Hervani et al, 2005).

Thus efforts are underway to include strategic as well as intangible criteria in supplier evaluation in addition to the operational dimensions.

**Model:**
**Reference Model:**

The model proposed in the paper “Supply management orientation and supplier buyer performance”, by Shin et al., (2000) and Vijayaraghavan et al (2008) are taken as reference for the purpose of the study. The primary objective of this research was to test the impact of a supply management orientation (SMO) on the suppliers’ operational performance and buyers’ competitive priorities cost, quality, delivery, flexibility. The model by Shin et al (2000) was extended by Vijayaraghavan et al (2008) by adding some more items and testing it in Indian automotive industry. Three major research hypotheses associated with SMO, Supplier Performance (SP), and Buyer Performance (BP) were studied answering the following questions

- Does an improved SMO improve supplier’s performance?
- Does an improved supplier’s performance improve the buyer’s performance?
- Does an improved SMO improve internally the buyer’s performance as well?

The SMO is the driver of the structural equation models developed in the study. By doing so, they showed how SMO and SP affect the buyer’s performance in each of competitive priorities. Based on these structural models, they tested the theory that “if a manufacturer buyer adopts an improved SMO, then the adoption of SMO improves both SP and BP”.

**Proposed Model:**

The model extended by Vijayaraghavan et al (2008) lacked comprehensiveness in capturing supply orientation. Similarly items representing intangible aspects had to be included to arrive at the comprehensive model for the Indian scenario. The reference model has been modified by adding certain items that signify risk in the relationship. These items have been taken from the literature review. The main focus of the study would be to
• Identify the variables that represent Supplier Management Orientation (SMO)
• Identify the variables that represent buyer’s performance
• Identify the variables that represent supplier’s performance
• Identify the variables that represent risk in buyer, supplier performance & in SMO

After doing this the next purpose would be to identify the following relationships

• Does an improved Supply Management Orientation of the Manufacturer/buyer improve supplier’s performance?
• Does an improved supplier’s performance improve the manufacturer’s/buyer’s performance?
• Does an improved Supply Management Orientation improve internally the manufacturer/buyer’s performance as well?
• Do contextual variables like supply, demand uncertainty as well as the product characteristics alter the relationships in the model

Based on the model as given in the figure 1, following hypothesis are proposed

**H1:** SMO is positively associated with Buyer Performance

**H2:** SMO is positively associated with Supplier performance

**H3:** Supplier performance is positively related to buyer performance

The literature support for the above hypothesis is provided in table 2, 3 & 4. For the first three hypothesis, strategic sourcing/purchasing/supply management, supplier engagement or supplier collaboration all signify the close relationships with suppliers through various strategies reflecting the theme of co-operation as defined in supply management orientation.
<table>
<thead>
<tr>
<th>Independent variables related to paper</th>
<th>Dependent variables related to paper</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Supply Management (SSM)</td>
<td>Business performance (BP)</td>
<td>SSM → Cust satisfaction → BP</td>
</tr>
<tr>
<td>Long term relationship (LTRO)</td>
<td>Buyer Performance (BP)</td>
<td>LTRO → Inter-org communication → BP</td>
</tr>
<tr>
<td>Strategic Purchasing (SP)</td>
<td>Long term orientation (LTO)</td>
<td>SP → LTO → FP</td>
</tr>
<tr>
<td>Buyer-supplier Engagement (BSE)</td>
<td>Financial Performance (FP)</td>
<td>BSE → SBSR → FP</td>
</tr>
<tr>
<td>Supplier Collaboration (SC)</td>
<td>Performance Improvement (PI)</td>
<td>SC → PI</td>
</tr>
</tbody>
</table>

Table 2: Literature support for Hypothesis 1

Authors:
- Yeung (2008)
- Chen et al (2007)
<table>
<thead>
<tr>
<th>Author</th>
<th>Independent variables related to paper</th>
<th>Dependent variables related to paper</th>
<th>ItIResults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prahinski et al (2004)</td>
<td>Supplier Evaluation Communication Strategy (SECS)</td>
<td>Buyer-Supplier Relationship (BSP) Supplier Performance (SP) Supplier Commitment (SC)</td>
<td>SECS → BSP → SP → SC</td>
</tr>
<tr>
<td>Fink et al (2007)</td>
<td>Buyer Performance - Purchase &amp; production Improvements</td>
<td>Discrete relational continuum Supplier’s Performance</td>
<td>Buyer performance (production improvement) → Supplier’s performance</td>
</tr>
<tr>
<td>Paulraj et al (2007)</td>
<td>Long term relationship orientation (LTRO)</td>
<td>Supplier Performance (SP)</td>
<td>LTRO → Inter-org communication → SP</td>
</tr>
<tr>
<td>Ryu et al (2007)</td>
<td>Interdependence Magnitude (IM)</td>
<td>Norm of Information Sharing (NIS), Supplier Performance (SP)</td>
<td>IM → NIS → SP</td>
</tr>
</tbody>
</table>

Table 3: Literature support for Hypothesis 2
<table>
<thead>
<tr>
<th>Author</th>
<th>Independent variables related to paper</th>
<th>Dependent variables related to paper</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SQM → IMP</td>
</tr>
<tr>
<td>Rodriguez et al (2005)</td>
<td>Supplier Development (SD)</td>
<td>Purchase Performance (PP)</td>
<td>SD → PP</td>
</tr>
<tr>
<td>Lo et al (2006)</td>
<td>Supplier Quality Management (SQ)</td>
<td>Buyer Quality Management (BQ)</td>
<td>SQ → BQ</td>
</tr>
<tr>
<td>Carr et al (2007)</td>
<td>Supplier Development Support (SDS), Information sharing (IS)</td>
<td>Buyers financial performance (BFP), Product Quality Improvement (PQI)</td>
<td>SDS &amp; IS → PQI → BFP</td>
</tr>
<tr>
<td>Ndubisi et al (2005)</td>
<td>Supplier performance (SP) &amp; co-operative Supply strategy (SS)</td>
<td>Buyer’s Flexibility (BF)</td>
<td>SP → BF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SS → BF</td>
</tr>
</tbody>
</table>

Table 4: Literature support for Hypothesis 3
However just understanding the relationship between constructs wont provide a complete understanding of the phenomenon. Contextual variables should be studied which might alter the relationships between the constructs in the model.

Product complexity requires different performance for different products and need for more relational approaches. Hence based on the product complexity, the performance might vary in supplier buyer co-ordinated relations (Laios et al, 2001). It has been argued that when product complexity increases firms adopt a more co-operative approach to take benefit of supplier’s technical capabilities too. Bensaou (1999) identified partnerships are required for components requiring high level of customization, technically complex which requires strong engineering expertise.

If a relationship represents only a small share of a supplier’s total sales, then a supplier may not expend as much effort on relationship communication. Thus supplier dependence would vary the amount of supplier commitment towards buyer’s co-operative efforts and hence would moderate the relationship between SMO and buyer/supplier performance (Claycomb et al, 2004; Bensaou, 1999; Takeishi, 2001).

The nature of the processes, level of decomposability and predictability of productive tasks, and technological features vary from plant to plant and industry to industry, making the various forms of interaction with supplier’s diversely critical (Toni et al, 1999). Environmental uncertainty might affect the degree of co-operation in supplier buyer relationships (Cai et al, 2008). With the level of co-operation, the performance benefits might also be affected due to the varying levels of information exchange and hence benefit/risk sharing.
**H4:** Product complexity moderates the relationships between SMO and supplier/buyer performance.

**H5:** Supplier dependence moderates the relationship between supply management orientation and supplier/buyer performance.

**H6:** Market characteristic (volume, new product and process dynamism) moderates the relationship between supply management orientation and buyer performance.

**H7:** Market characteristic (volume, new product and process dynamism) moderates the relationship between supplier performance and buyer performance.

**Contribution:**

The study would benefit the supply management literature by providing constructs for measuring co-operative supply orientation which can help in advancement of literature by building theories. Further there is a gap in the existing performance constructs, which don’t consider intangible as well as strategic measures. There’s a need to develop a construct that can consider operational, risk as well as intangible dimensions that reflect the effectiveness of a relationship which is important if supplier buyer relationships are to be promoted as an effective strategy. The empirical evidence for the contextual conditions under which such relationships are effective is an added contribution that would help in aligning the strategy with performance requirements. Testing all strategies simultaneously would provide with the interactive effect on performance as this has been a major gap in literature. Further in Indian context, where relationships are still picking up as the supplier management strategy, it would provide a case for companies looking to adopt a strategic supply management approach.
Limitations & Future Research:

The paper provides a conceptual model for supplier buyer relationships. However there are certain limitations and avenues for future research. First, the model proposed in the paper has to be verified by empirical evidence. Second, the model for performance proposed here has to be expanded further to include the various relationships amongst variables that have not been modeled here. Third, the model can even be extended to more tiers of suppliers to represent the supply chain network and the linkages therein between performance effects on various members on the chain. Lastly a look into successful and failed companies who have adopted relationship approach would help in identifying the contextual factors that are still not considered and together this might help in complete understanding of relationship strategy- performance link. This is quite relevant from an implementation point of view.
References:


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