



MIT SCALE RESEARCH REPORT

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Research Report: ZLC-2010-5
Supply Chain Integration and Inter-organizational Learning
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Supply Chain Integration and Inter-organizational Learning

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Summary: This project looked at organizational learning in supplier-buyer relationships, producing a general framework for understanding and predicting the dynamics of learning. By being more effective in interchanging knowledge and in the learning process, a successful supplier relationship can achieve improved performance and increase the capability to cope with change in a globalized and rapid changing market.



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KEY INSIGHTS

1. Capacity for learning, cultural alignment, trust and risk-free climate for opinion sharing all have a clear, statistically significant impact on perceived performance.
2. In an industry environment of volatility, and under certain conditions, these elements also have an impact on actual performance.

Introduction

Companies have long been searching for the key components of performance. In recent years management has increasingly focused on supply chain interaction as a potential area for improvement and differentiation. A central driver of the efforts to improve and innovate is the ability to gain new knowledge and apply this to new situations, in other words, learning.

The role of learning in a supply chain relationship has been understood intuitively as important, though this has not been confirmed through actual measurement due to its intangible nature. Some efforts have therefore also been directed towards increasing learning capacity, but as the actual drivers of performance have been largely unknown, companies traditionally tend to spread these efforts across various areas without a clear understanding of the impact.

However, as large companies develop sizable networks of thousands of suppliers, it is becoming increasingly more important to focus on those factors that truly have an impact on performance.

The goal of this thesis was to explore how inter-organizational learning affects the supply chain and which performance drivers should receive increased focus in order to improve the integration of supply chain partners.

Approach

The corporation with which the study was conducted has worldwide operations with more than 50,000 employees. Their supplier base for the parts and service part of the business consist of more than 2000 tier one suppliers.

In order to select potential elements impacting performance, a review of research in the field of inter-organizational learning was conducted. From this two primary models were derived:

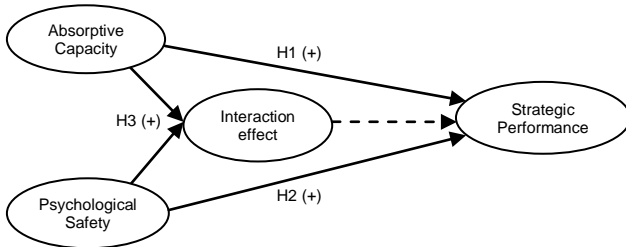


Figure 1 – Representing the hypothesized model used to test the relationship between learning (Absorptive Capacity), safety (Psychological Safety) and perceived performance from the suppliers

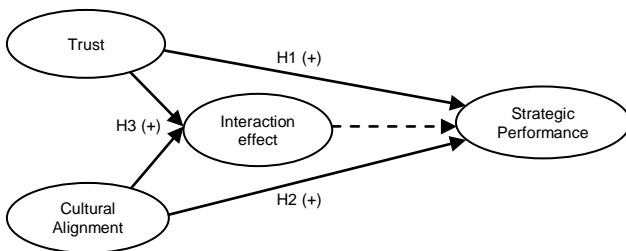


Figure 2 - Representing the hypothesized model used to test the relationship between trust, alignment (Cultural Alignment) and perceived performance from the suppliers

The first step of the research was to collect the necessary input data to test the models, mainly from two sources: (i) a survey, in order to gather the information needed from the suppliers to connect their behavior with their performance. The survey consisted of 1672 suppliers, the top 80% suppliers in terms of 2009 4th quarter spending, from which 415 valid responses were obtained. (ii) KPIs, an input source that came directly from the company and was the actual delivery performance from the suppliers who had answered the survey.

The second step, once we had the inputs, was to conduct a regression analysis to discover if statistical significance could be found to prove the hypotheses from the two models. We discovered that, on one hand, a strong statistical relation exists between trust and alignment, and between psychological safety

and absorptive capacity, and on the other hand, a very weak relation exists from the interaction effects.

The third step was the quasi-experimental research, in which the results of the survey were combined with the impact of an inter-organizational event and the effect of this event upon the KPIs used by the company to measure its suppliers. The analysis of these KPIs (delivery performance) was examined through a classification of the four concepts involved in the models to determine how a specific disruption in time (treatment) affected the dynamics of the supply chain. The analysis was split into two distinct time periods based on the treatment; stability and volatility in the demand environment.

Finally, the findings from the regression and the quasi-experiment were combined to obtain stronger and more general conclusions and to draw several managerial implications that could be useful for the company.

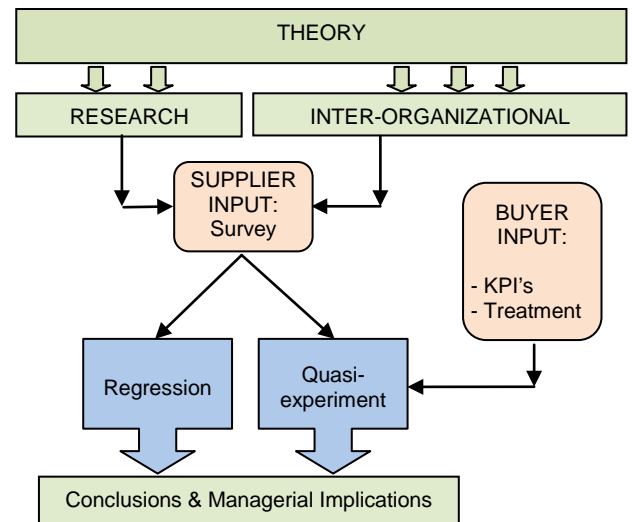


Figure 3 – Overview of the thesis process

Results

Four concepts of behavior between supplier and buyer in a supply chain relationship were explored and found to be positively related to perceived and actual performance with statistical significance.

Learning (Absorptive Capacity)

The ability of an organization to cooperate with supply chain partners in order to explore new information, knowledge, ideas or innovation, to discuss it openly internally, draw new conclusions, and implement ideas into new solutions, was found to be strongly linked to the perceived performance in a supply chain relationship. Given the right risk-safe cooperative environment, this ability can also be

linked to actual performance in a volatile market situation.

Alignment (Cultural Alignment)

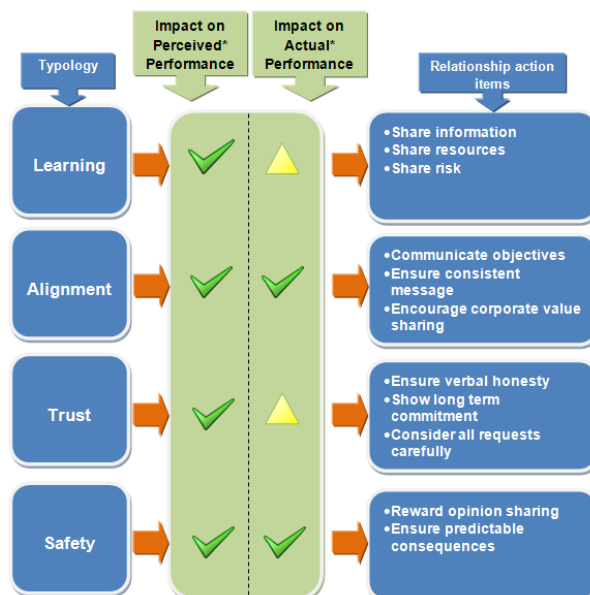
Supply chain partners that are integrated through alignment in their set of values, corporate culture, goals and objectives will tend to have a stronger relationship than those who are not. Furthermore, their ability to predict each other's behavior will also improve the capacity in the relationship to deal with change. The level of alignment in the supplier-buyer relationship was found to have a direct impact on both perceived performance by the supplier and actual performance as measured by the buyer.

Trust

Organizations that take into consideration the impact of their actions on both sides of a supply chain relationship will tend to develop a higher level of trust. Trust is also influenced by working towards areas with mutual benefits. A clear link was found between the perceived level of trust in the supplier-buyer relationship and the perceived performance. However, in an environment of change, trust alone may not be sufficient to drive actual performance. Without common goals and objectives, trust may lead to negative results for one of the partners in the relationship. A high level of trust was found to have a positive impact on actual performance, under the condition that the supplier and buyer were also closely aligned.

Safety (Psychological Safety)

A working climate where opinions and experiences are shared freely without risk of persecution is often believed to be a cornerstone of a functional business. The impact of such a working climate was found to have a direct positive impact both on perceived relationship performance from the supplier side and on the actual performance measured on the buyer's side. In addition to this, as previously stated, a drive towards an improved inter-organizational learning environment will have a direct impact on both perceived and actual performance. However, in order to take full advantage of this, it will be important that the correct working environment is already in place in the relationship. Sharing ideas and past experiences can only be effective if by doing so there is little risk of jeopardizing the relationship. Perceptions are of particular importance in this area, as the willingness to share information will be controlled by the perceived expected consequence of such sharing, regardless of the actual consequence. The direct relationship between safety and learning was also found through the survey results.



Legend:



Has a direct impact



Has an impact, but may have prerequisites



Does not have an impact

*Perceived performance was measured through the survey, actual performance was measured through KPIs

Figure 4 – Concept impact and recommendations

The results are summarized in figure 4, which also includes a number of suggestions for improvement of each concept. The suggestions were based upon the survey results as well as the theoretical concepts behind.

Conclusions

We found how relatively intangible concepts such as trust and cultural alignment, along with a positive environment for voicing opinion and capacity for learning, have a direct impact on supply chain relationship performance. This finding can be used to justify investments into these relationship areas.