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Unity is strength: A study of supplier relationship management integration*

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ABSTRACT

Researches on the supply chain management within the last decade demonstrate that business processes integration can increase the performance effectiveness and efficiency across the chain. This study intends to investigate the integration of the supplier relationship management (SRM) process between the manufacturer and its first upstream tier of suppliers within the construction equipment industry. This research also strives to identify the potential obstacles to the SRM integration and provides solution suggestions to overcome these barriers. In this regard, the review of the literature and subsequent analyses of the empirical findings from European construction equipment manufacturers illustrate that the SRM process integration can take place through the integration of its several sub-processes into strategic and operational characteristics. In this context, the lack of goal congruence, commitment, and trust between the manufacturer and its supplier are the major potential barriers to the SRM integration.

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1. Introduction

The intensive global market competition encourages manufacturers to establish strategic long-term relationships with their suppliers to have more efficient and effective performance and thus attain higher competitive advantages (Tseng, 2014). Supplier relationship management (SRM) process integration (Barua, George, Motilal, Porter, & Vann, 2013; Croxton, Garcia-Dastugue, Lambert, & Rogers, 2001; Vanpoucke, Vereecke, & Boyer, 2014) can help achieve this objective. Berente, Vandenbosch, and Aubert (2009) define integration as a synchronizing action that coordinates two or more organizational processes with the goal of performance improvement. Similarly, Forslund and Jonsson (2007) define integration as a process in which two or more enterprises jointly conduct and carry out the activities and processes within the supply chain. (See Tables 1 and 2.)

Given the benefits of the SRM integration, several researchers (Bharadwaj & Matsuno, 2006; Kato & Schoenberg, 2014; Vanpoucke et al., 2014) have called for further studies about this integration within the supply chain actors. In this context, Park et al. (2010) provide a framework for the SRM process integration. Kato and Schoenberg

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http://dx.doi.org/10.1016/j.jbusres.2016.04.034 0148-2963/© 2016 Elsevier Inc. All rights reserved. (2014) study the impact of the SRM process integration on the customers. Perols, Zimmermann, and Kortmann (2013) conduct a research on SRM process integration focusing on time-to-market aspects in healthcare and information technology (IT) industries. Despite these efforts, no case-based research focuses on SRM process integration between the manufacturer and its first upstream tier of suppliers within the construction equipment industry of Sweden. Existing research merely discusses the importance of electronic supply chain management in Swedish firms (Oghazi, 2014) or investigates the antecedents and consequences of enterprise systems exploitation in Swedish service firms (Oghazi, 2013). Nevertheless, these studies draw on surveys and do not explicitly reflect the notion of SRM process integration between the manufacturer and its first upstream tier of suppliers.

Furthermore, SRM process integration could face potential obstacles. Forslund and Jonsson (2009) discuss obstacles in performance management process integration within a dyad. Katunzi (2011) discusses potential obstacles for manufacturers in integrating with their supply chains partners. Despite these efforts, no studies explicitly study the obstacles to the SRM process integration between the manufacturer and its first upstream tier within the Swedish construction equipment industry.

To address these research gaps, this study focuses on Swedish construction equipment industry. This industrial sector encounters low demand level, which is noticeable in its little activities in the export market (Teknikföretagen, 2014). This study, by offering a solid theoretical base and a framework for SRM process integration, can help those firms that are active in this sector to achieve higher competitive advantage thus leading to a higher demand for their products.

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Table 1

SRM process integration through the sub-processes.

Name of SRM sub-process	Company	SRM sub-process integration
◆Strategic sub-processes		
Review corporate, marketing, manufacturing and sourcing	Engcon	-Integration through the exchange of accurate and reliable information regarding
strategies	Sandvik	the potential suppliers' production capability, capacity, quality, cost of product,
-	Scania	flexibility and speed of production.
	VCE	
	Engcon	-Integration in order to have access to the suppliers' production capacities,
	Sandvik	technical skills and transportation facilities with the purpose of implementing a
	Scania	dual sourcing strategy.
	Peab	
Identify criteria for segmenting suppliers	Engcon	-Information that the suppliers provide in the first strategic sub-process allows
	Sandvik	one to identify the criteria for the suppliers' segmentation into the key and
	VCE	Statiudiu offes.
	Peah	agreement (PSA) that meets the demand of both manufacturer and its suppliers
Provide guidelines for the degree of differentiation in the	Engcon	-Integration through the comprehensive negotiations with the key suppliers over
product and service agreement	Sandvik	the creation of "customized" PSA that satisfies their requirements in order to
1	Scania	motivate the key suppliers to be more committed and establishing solid long-term
	Peab	relationship with them.
Develop framework of metrics	Engcon	-Exchange of intra-organizational data between the manufacturer and its suppliers
	Sandvik	in order to have better understanding of each other capabilities and needs. This
	Scania	exchange takes place in the first strategic sub-process.
	VCE	-Then based on the exchanged data that reflects partners' capabilities, the
	Peab	integration takes place through the discussions that occur by face-to-face meetings
		between the partners about the feasible and realistic metrics that they can
Davalon guidelines for sharing process improvement	Engcon	uccerning for future performance measurement.
benefits with suppliers	Engcon	from the process improvement (e.g. reducing the lead time)
benefits with suppliers	Scania	from the process improvement (e.g. reducing the lead time).
	VCE	
	Peab	
Operational sub-processes	F	
Differentiate suppliers	Engcon	-Information exchange that results from the integration of the first strategic
	Scania	growth rate, profitability, and strategic value
	Peah	growth rate, promability, and strategic value.
Prepare the supplier/segment management team	Engcon	-Holding inter-organizational meetings with each one of the five key suppliers
	0	independently.
		-Integration with the key suppliers through these meetings by structuring a
		mechanism for sharing the technical resources.
		-Creating a cross-functional team and involve both the key and standard suppliers
		into this team.
	Peab	-Having an independent cross-functional team with each key supplier. Each team
	Scania	includes members of both the key supplier and the manufacturer for better
	VCE	Operationalization of the PSA in the further sub-processes.
	Eligcoli	coordination during the DSA execution
Internally review the supplier/supplier segment	Engcon	No integration
internany refress the supplier supplier segment	Sandvik	
	Scania	
	Peab	
	VCE	
Identify opportunities with the supplier/supplier segment	Engcon	-Supply chain partners desire to improve four key performance indicators during
	Sandvik	their partnerships. These indicators are cost, quality, environmental affect and
	Scania	delivery performance.
	Peab	-The inter-organizational team that results from the integration during the second
	VCE	operational sub-process can develop a decision of consensus between both
		do so partners can exchange resources knowledge and transportation facilities:
		three initiatives which are triggers of the integration
Develop the product and service agreement and	Engcon	-After the development of the PSA through the negotiations in the second and third
communication plan	Sandvik	strategic sub-process, the integrated supply chain partners should draft and then write
-	Scania	down the agreed elements and factors in order to finalize the PSA for its execution.
	Peab	-The PSA should also clearly state the communication procedure to avoid future
	VCE	potential disputes.
Implement the product and service agreement	Engcon	-During the PSA implementation, partners should integrate through the exchange
	Sandvik	of knowledge and technical support.
	Scania	-ror better coordination, partners should have meetings on the regular basis and
	Pead VCE	uiscuss the implementation comprenensively.
Measure performance and generate supplier	Fngcon	-Integration through the joint performance measurement along with the
cost/profitability reports	Sandvik	supplier helps the manufacturer to track the roots of deviations within wider
, promuting reports	Scania	range of supply chain actors.
	Peab	-Integration can also increase the accuracy of measurement because the
	VCE	integrated supplier is closer to and has higher involvement with the further
		upstream tiers of suppliers.

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Table 2

Obstacles to the SRM process integration and their respective solutions.

Name of SRM sub-process	Company	Potential obstacles to sub-process integration	Solutions for overcoming the obstacles
 Strategic sub-processes Review corporate, marketing, manufacturing and sourcing 	Engcon Sandvik	-Suppliers exaggeration over the information regarding their capabilities.	-Having a particular clause in the contract that prevents such deviations by setting certain punishment or penalty for the time
Identify criteria for segmenting suppliers	VCE Engcon Sandvik Scania Peab Engcon Sandvik Scania	-In dual sourcing strategy, one supplier may delay in delivering the supply which influences the manufacturer respective delivery to its own customer. -The key supplier may be reluctant to offer its highest production and service capabilities.	-Suppliers should be able to supply the manufacturer without exploiting their maximum production capacities. -The PSA must encompass and consider potential changes in the supplier's production with respect to forecast. -Manufacturer motivates supplier to offer its best by sharing with the supplier the profit that results from the respective supplier's performance improvement.
Provide guidelines for the degree of differentiation in the product and service	VCE Peab Engcon Sandvik Scania Peab	-Supplier and manufacturer cannot agree upon the contract clauses. Supplier has unrealistic requirements.	-Having coordinated internal sectors and creation of purchasing department to develop a solid supplier relationship plan can increase the bargaining power of the manufacturer.
Develop framework of metrics	Engcon Sandvik Scania VCE Peab	-Supplier intends to lower the standards of metric to ease its own operation and responsibilities by providing underrated data about its production and service capabilities.	-Manufacturer provides the supplier with the intra-organizational information in order to establish stronger ties and increase the sense of belonging of the supplier to the "bigger business group".
Develop guidelines for sharing process improvement benefits with suppliers	Engcon Sandvik Scania VCE Peab	-Difficulties in connecting the supplier's improvement of the certain processes such as lead-time to the respective profit that the manufacturer earns.	-Agreeing upon the percentage of the profit to be shared with the supplier for its improvement of certain processes such as lead time. Then adding it into the PSA.
♦Operational sub-processes Differentiate suppliers	Engcon Sandvik Scania Peab	-Reluctance of the suppliers to provide certain information regarding its activities and capabilities because of the confidentiality concerns.	-Manufacturer provides advanced knowledge and/or skill such as certain technology or gives significant quality of information regarding its respective operations to the supplier in order to establish stronger trust and relationship.
Prepare the supplier/segment management team	Engcon	-Since Engcon has only three employees at the purchasing department, handling all the independent meetings with the key suppliers is difficult for them.	-Meetings take place only for necessary subjects that influence the products delivery and attributes.
Internally review the supplier/ supplier segment	Engcon Sandvik Scania Peab VCE	-No integration.	-No integration.
Identify opportunities with the supplier/supplier segment	Engcon Sandvik Scania Peab VCE	-Reluctance of the supplier to share its knowledge, resources, and transportation facilities at the high capacity due to the lack of trust and/or commitment.	-Encouraging supplier for full commitment by establishing trust with supplier. -Sharing certain percentage of profit with the supplier as a result of process improvement leads to higher supplier's trust and commitment.
Develop the product and service agreement and communication plan	Engcon Sandvik Scania Peab VCE	-Integrated partners lead to complexities in case that the cooperation due to the situation in which one of the integrated partners does not reach the agreed demands.	-Accurate and comprehensive assessment of the partner at the initial phase before the PSA negotiations can avoid the potential obstacle.
Implement the product and service agreement	Engcon Sandvik Scania Peab VCE	-Integrative implementation of the PSA.	-Both integrated partners should systematically monitor and control the processes of the PSA implementation.
Measure performance and generate supplier cost/profitability reports	Engcon Sandvik Scania Peab VCE	-Integrated supplier may intend to cover its own deviations of the performance by referring it to the further suppliers' tiers.	-Applying internal measurement along with the joint performance measurement with the integrated supplier for higher control.

This study addresses the following research questions:

- 1. How do the manufacturer and its first upstream tier integrate the supplier relationship management process?
- 2. How can the manufacturer and its first upstream tier overcome the potential obstacles to an integration of their supplier relationship management process?

This study aims to contribute to the managers by providing them with required theoretical base to implement the SRM process integration with their partners. The study also identifies the obstacles to this integration and recommends potential solutions in order to overcome these obstacles. In addition, the study contributes to the literature by fulfilling the existing research gaps about the SRM process integration and its respective obstacles. The results of this study can open rooms for the future expansions over the subject of SRM process integration.

2. Literature review

The SRM process integration improves companies' interaction with their suppliers (Hong, Park, Jang, & Rho, 2005). Several studies have

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analyzed the notion of SRM process following the research by Croxton et al. (2001), which provides a theoretical framework for the implementation of the supply chain management. Croxton et al. (2001) also offer a theoretical contribution by providing insight into the details of the activities carried out within the supply chain management's core business processes (including SRM process) that The Global Supply Chain Forum defines (Croxton et al., 2001). The study divides the SRM process into 12 sub-processes of which 5 are strategic and the remaining are operational sub-processes (Croxton et al., 2001) or, according to Lambert and Schwieterman (2012), "micro-level" processes.

Strategic sub-processes describe the definition and the structure of the entire process (Croxton et al., 2001). These sub-processes allow one to establish a strategy for the integration of SRM process between the supply chain partners (Croxton et al., 2001). The strategic part of the SRM process aims to identify the targeted products and service components, to establish criteria for differentiating the suppliers, to enable suppliers to tailor the product and the service offering, to determine framework of the metrics, as well as to develop an appropriate mechanism with the suppliers to fairly share the process improvement advantages (Lambert & Schwieterman, 2012).

Operational sub-processes refer to the executive phase of the process (Croxton et al., 2001). Operational sub-processes actualize the process after its establishment in the strategic phase (Croxton et al., 2001). Operational sub-processes include supplier differentiation, management team preparation, internal supplier review, identification of the opportunities with the suppliers, development of the product and service agreement (PSA) and communication plan, implementation of the PSA, as well as the performance measurement and relative reports (Croxton et al., 2001). For a detailed explanation of these sub-processes please see Lambert and Schwieterman (2012), Choy, Lee, and Lo (2003), Croxton et al. (2001), Payne and Frow (2004), or Zablah, Bellenger, and Johnston (2005).

Despite the positive influences of the SRM process integration; a growing debate exists about the integration benefits that firms could achieve (Danese & Romano, 2011). For this reason, several authors (Mostaghel, Oghazi, Beheshti, & Hultman, 2015; Fabbe-Costes & Jahre, 2008; Van der Vaart & Van Donk, 2008) strongly emphasize accurate implementation of the business process integration in order to maximize the firms' benefits. Sohrabpour et al., 2016 ivestigate supply chain needs and satisfaction in interaction with the product and packaging system without considering SRM integration objectives. In this regard, firms should address the potential obstacles to SRM integration to reach the objectives of the integration.

Cousins and Mengue (2006) highlight the costs of the integration implementation as one of the major obstacles. They argue that the unorganized integration can cause extra costs which lead to the opposite outcome of what the firm expects. Das, Narasimhan, and Talluri (2006) argue that the corporate inflexibility and slowness of the responses to the external changes and uncertainties are obstacles to the integration. Integrated partners' lack of willingness to share key information (Pohlen & Coleman, 2005) and lack of common tools in various terms such as information technology (IT) and performance measurement can also prevent the effective integration between the partners (Mostaghel, Oghazi, Beheshti, & Hultman, 2012; Faisal, Banwet, & Shankar, 2007; Gunasekaran & Ngai, 2004). Furthermore, Faisal et al. (2007) add security issues into the obstacles. In this regard, Dos Santos and Smith (2008) claim that the illegal access and interference of the competitors to the integrated corporate's informational system strongly discourage the supply chain firms to integrate with one another.

In addition, lack of commitment and lack of trust (Ellram, 1995) are also obstacles to long-run integration. Lee and Whang (2000) point out that some firm managers are reluctant to share relevant data with their integrated partners due to the lack of trust. This distrust can cause fundamental problems to the process of integration because mutual trust on confidentiality and on the future of the partnership is necessary (Neuman & Samuels, 1996; Sohal, Moss, & Ng, 2001). In this regard, Moorman et al. (1993, p. 82) define trust as "a willingness to rely on an exchange partner in whom one has confidence".

To develop a successful partnership and to reach the mutual goals between the partners, firms must have business communications associated with the positive atmosphere of discussions, interdependence and shared constructive expectations (Larzelere & Huston, 1980). Mohr and Sohi (1995) consider the lack of proportioned formality as yet another obstacle to the integration. Additionally, scholars argue that over-formality can cause distortion and withholding of information. On the other hand, lack of formal supplier selection and measurement as well as lack of formal procedure to conduct the SRM process can thwart the effective buyer–supplier relationship (Bemelmans, Voordijk, Vos, & Buter, 2012).

3. Operationalization model

Fig. 1 presents the operationalization model, which follows the theoretical findings.

According to the operationalization model in Fig. 1, the integration of SRM process takes place through the integration of its sub-processes. In this context, SRM sub-processes consist of 5 strategic and 7 operational ones. Also, according to the literature, 10 obstacles that can slowdown and/or prevent the integration to occur. These obstacles are the lack of trust, lack of communication and common goals, lack of common tools, lack of commitment, lack of willingness, specificities of the IT system, degree of formality, security barriers, inflexibility, and cost of integration.

The collective use of these sub-processes and the aforementioned obstacles provides systematic questions for the interview in this study.

4. Data and method

This study follows the positivist approach and develops the results through competitive analysis and experiments (Walliman, 2011). The study is qualitative in nature, which expresses the individual perceptions and experiences rather than the conclusions drawing on the solid facts (Gillham, 2000; Kolb, 2008; Merriam, 2015). According to Lewis, Thornhill, and Saunders (2007), a gualitative study emphasizes quality and more detailed investigation through in-depth interviews, while a quantitative study lacks deepness and is more general. This study applies the qualitative method because the objective is to find in-depth primary data through semi-structured interviews. To do so, five companies result from a non-probability and judgmental sampling technique. According to Malhotra, Birks, and Wills (2013), in nonprobability judgmental sampling, the authors choose the sample group based on their judgments and preferences in order to address the purpose of the study. These five companies are Engcon, Sandvik, Volvo construction equipment (VCE), Scania, and Peab, which are all active in the construction equipment industry. The study classifies the sizes of the organizations according to the number of employees (Statistics Sweden 3, 2013). Case studies normally use personal interviews (Yin, 2009). Researchers usually prefer this instrument because interviews improve the flexibility during the process of data collection (Bryman & Bell, 2007).

For the 5 interviews, the study develops an interview guideline (available upon request) through the operationalization process, which scientifically links the theoretical findings with the interview questions. The interviewees received the interview guideline a few days in advance to enable them to prepare for the interviews. The interview guideline is semi-structured, which means that the guideline mentions the main research dimensions, whereas the sub-dimensions spontaneously came up during the interview. Voice recorders document the contents of the interviews, which take place either through the phone or face-to-face meetings. The appendix illustrates some

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Fig. 1. Operationalization model.

general information about these interviews. The interview contents and findings are available in the study by Fakhrai Rad et al. (2015).

The analytic technique that this study uses is cross-case synthesis. The research deals with each case separately during the empirical data collection, but at the end, the analytical procedure took place by combining the findings of all the 5 studied cases (Yin, 2014). This technique allows better general view over the subject and respective case studies and shows if different cases demonstrate similar results (Yin, 2014).

This research has high respect to the ethical considerations. The research selects competent and relative people for the interviews (Pimple, 2002). The participants came to the understanding about the goals prior to the interviews. The study accurately considers confidentiality of the data. Interviewees participated the interviews voluntarily. The interviewees can access the results of the research study. Ultimately, the method strongly emphasized respect for the privacy of the participants (Kumar, 1996).

5. Discussion

The theoretical and empirical findings show that the integration of the SRM process between the manufacturer and its first upstream tier of supplier within the case studies can take place through the integration of the SRM sub-processes. Nonetheless, firms must also tackle some obstacles to enable the SRM sub-processes integration within the studied cases.

The summary of the analyses of research question 1 is as follows.

The summary of the analyses of research question 2 is also as follows.

In light of the information provided above, the manufacturer and its first upstream tier of supplier can integrate 11 sub-processes (1 sub-process is internal) within the studied cases in order to perform the SRM process with higher efficiency and effectiveness.

The integration of strategic sub-processes between the partners can take place through major discussions and negotiations over the PSA. Partners should agree upon various themes such as the process improvement profit sharing and the metrics for the performance measurement, and clearly define the results of the agreement within the respective clause of the PSA in order to avoid further potential disputes. During the PSA negotiations, the integrated partners should have a team-orientation to enable the maximization of mutual benefits. The integration of the strategic sub-processes is rather informational because this integration requires exchange of significant quality of knowledge and information (Forslund & Jonsson, 2007).

Furthermore, within the operational sub-processes' information that results from the strategic sub-processes, firms can use integration to categorize the suppliers into the key and standard ones for different levels of differentiation. A manufacturer creates a cross-functional and inter-organizational team along with each of the key suppliers in order to highlight the opportunities for enhancement. These teams are also responsible for the draft and final PSA implementation. The operational sub-processes' integration includes joint monitoring and measurement of the performances during the PSA implementation for more accurate and comprehensive control. Operational integration encompasses sharing of the resources, knowledge and transportation facilities. This integration is not just informational (data exchange), but also organizational because this integration requires the exchange of ideas, trust, and joint performance measurement (Forslund & Jonsson, 2007).

However, the sub-processes' integration within the case studies may face certain obstacles that partners have to overcome to pave the 6

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integration way. Analytical results demonstrate that the lack of goal congruence, commitment, and trust between the manufacturer and its supplier constitutes the major potential obstacles. This expression suggests that partners can overcome most of the obstacles through the establishment of the mechanism that gives the supplier the sense of belonging to the bigger "industrial family". This feeling encourages the supplier to align its goals with the ones of the manufacturer and creates the goal congruence. Once the supplier feels itself as a part of the "bigger family" and aligns its goals with the one of the manufacturer, the supplier will commit to the operations and will trust the integrated manufacturer. To achieve this goal, the manufacturer should prove its consideration of its suppliers. For this purpose, depending on the industrial specificities and the supply chain characteristics, the manufacturer should provide the supplier with the incentives (e.g. financial incentive, technology and/or knowledge transfer, resources and information sharing) to earn its trust.

In addition, the manufacturer must maintain its internal structure to prevent deviations. The manufacturer must carry out supplier selection and categorization as well as accurate independent performance measurement to enable the integration and overcome the respective obstacles.

This study has certain limitations. The first limitation refers to the number of interviewed companies. The Swedish construction equipment industry has few available companies. The study aims at interviewing more companies in this sector to expand the empirical data; unfortunately, only 5 firms agree to participate. The second limitation encompasses the fact that the interviews took place only with one responsible person within each company. The fact that the managers have no time prevents including interviews to two managers in different departments of each firm to strength the view over the companies' operations.

On one hand, managers can use the framework to improve the integration of the SRM process within the respective supply chains. On the other hand, scholars should conduct further studies about the integration of other 7 key business processes that The Global Supply Chain Forum defines and that constitute the core concepts of the supply chain management (Croxton et al., 2001).

Appendix A. Interviews general information

Company	Interviewee	Position	Date	Duration	Interview technique
Engcon	I1	Purchasing Manager	March 2015	123 min	Face-to-face
Sandvik	12	Vice President Sourcing for Global Tools and Services	April 2015	78 min	Phone
Volvo CE	13	Purchasing Manager and Site Representative	April 2015	132 min	Face-to-face
Scania	I4	Manager Material Control	April 2015	97 min	Face-to-face
Peab	15	Managing Director of Peab Bildrift AB and Purchasing Manager of Peab's Industry business unit.	April 2015	64 min	Phone

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