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Building sustainable organizational capabilities through supply chain innovation

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Abstract
Organizational performance directly affecting supply chain management practices. A continuous innovation in supply chain is important for corporations to achieve sustainable competitive advantage, to differentiate from competitors. Contemporary supply chain management stresses coordinating supply chain stakeholders into seamless unit in meeting customers demand and enhancing competitive advantage. Although companies concentrate on innovating independently for developing capabilities, companies however demonstrate reliance on creating their supply chain innovation capability.
As markets became global, competition intensified. This forced the companies to innovate to be competitive and carryout holistic, fully integrated approach to their supply chain designs. This can replace traditional thinking in pursuit of effective and responsiveness supply chain. The research addresses gap in the literature between supply chain innovation and organizational capabilities. The study explore how organizations expand their efforts in improving relationships for developing capabilities of supply chain and what capabilities do firms develop to create innovation capacity within a supply chain.
Companies in Karnataka, India surveyed to examine the inter relationship beteen organizational capability and supply chain innovation. The results showed that supply chain innovation has positive relationship with organizational capabilities and supply chain integration mechanisms do impact supply chain innovation.

Keywords: Supply chain, innovation, competitive advantage, capabilities, performance

1. Introduction
Success or failure of supply chain management is determined by the end customer due to their dynamic attitudes, pushing businesses to reexamine their strategies (Towil and Christopher, 2007). The survival is major concern of organizations in dynamic business environment (Piyush Singhal *et. al*., 2011). To be competitive, firms need to be partners with their customers. As competition intensified and markets became global, supply chain processes and operations get to be more complex. Hence, overcoming complexity and uncertainty for survival in steadily changing environment is prime concern of supply chain practices.The different firms in supply chain adopt appropriate management practices if they want to protect their brands (Amaeshi *et,al.,2007).*
The supply chain innovation is imperative for firms to be competitive and create differential advantage over competitors (Spekman, Spear, and Kamaiff, 2002; Van de Ven, 1986; Porter, 1985). The sustainable competitive advantage requiring its supply chain partners to innovate together to reach a new market potential. Firms must work in integrated manner with their supply chain partners both upstream and downstream to deliver a truly sustainable service, as customers increasingly demand sustainable supply chain (Preuss, 2005). The organizations with effective supply chain and risk management are capable to manage risks, surpass the market and acquire competitive advantage (Mark strom, 2011). Researchers have combined supply chain capability and innovation for improving organisation competitiveness could (Danneels, 2002, Marshall, 2004; Teece, Pisano and Shuen, 1997).
The objective of this paper is to explore how does intra and inter organizational relationships influence in developing capabilities of supply chain and what capabilities do firms develop to create innovation capacity within a supply chain.
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firms develop to create innovation capacity within a supply chain?

1.1. Competitive advantage through Supply chain.

The degree to which an organization has the ability to differentiate over its rivals in the market referred as Competitive advantage. Acquiring a position of enduring performance over competitors by attaining competitive advantage is critical for fulfilling vested interests of its supply chain partners. Effective supply chain management can provide a major source of competitive advantage. The source of competitive advantage is found firstly in the ability of organization to differentiate itself in the eyes of customers, from its competition and secondly by operating at low cost. The major sources of competitive advantage depicted in figure1. The companies develop their capabilities viz., variety of products, quick response, faster delivery, sensitive to price changes, high service level, build and deliver innovative products quickly, allow an organization to discriminate itself from its competitors

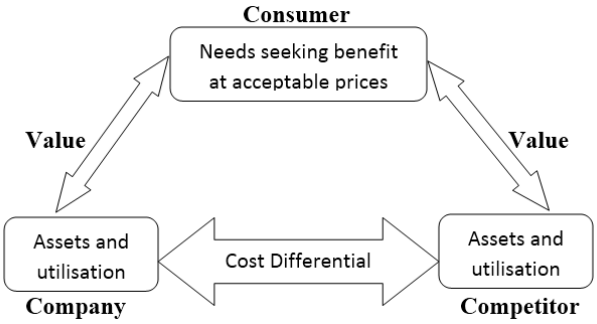

Fig 1: Sources of Competitive advantage

1.2. Supply chain Relationships as Competitive advantage.

Lambert, D. M. and associate (2006), explained Supply chain relationships as groups of companies going into a business to secure supply and demand as component of a dynamic business environment. The practitioners and scholars believe that organization competitiveness is not sustainable by depending on simply individual organization. Endorsing strategic approach to developing supply chain relationships viz., coordination, cooperation and integration within supply chains are seen as basic to survival for many firms.

Organizations must have effective relationship across supply chain partners to achieve coordination and integration i.e., intra-organisational and inter-organisational integration. Supply chain partnerships are specific to either two-way (Gulati, R., Nohria, N., and Zaheer, A., 2000) or three way formal relationships (Madhavan, R. *et al.*, 2004), and share a high degree of integration through mutual and specific agreements.

Strategic supply chain relationships are seen as critical to high performance and developing innovation capacity to meet both demand and supply as globalization drives rapid changes in market and company operations (Wang, X. J. & Peng, J. S.,J., 2008). Supply chain relationships are strategically assembled by firms to acquire resultant capabilities that ensure competitive advantage through the innovation capacity of the supply chain. The capabilities most relevant in developing supply chain innovation capacity, which is frequently the impetus to realign to address the needs of dynamic market conditions and create new market trajectories (figure 2).

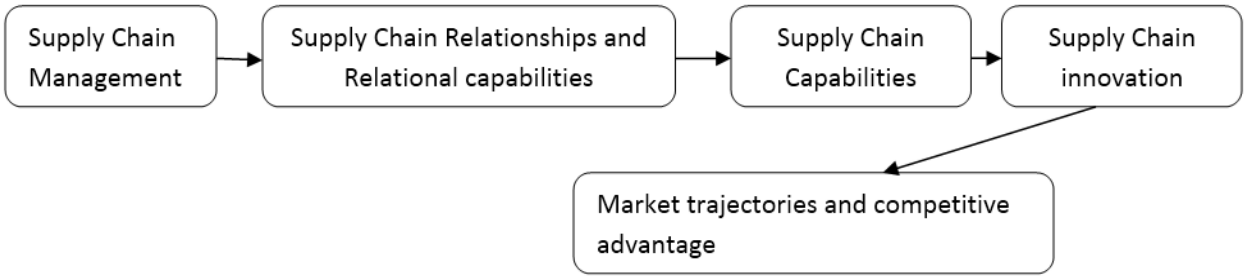

Fig 2: Framework of Supply chain Relationship and competitive advantage
(Maree Storer and Paul Hyland, 2009)

1.3 Methodology.

It is an exploratory pilot study across a small sample of companies located in North-Karnataka, India. A self-administered questionnaire was considered as the most appropriate data collection instrument for this research. The questionnaire developed by Maree Storer and Paul Hyland (2009) used by validating it in this study. The questionnaire was sent to senior managers by email to a convenience sample of 75 organizations, actively involved in the wide range of supply chain activities and relationships. Completed questionnaires were received from 53 respondents after follow-up and telephonic discussion. As the study sample size is small and descriptive statistics utilized and the results only provide basic indications about how some firms relate to their supply chain in terms of organizational capabilities and innovation capacity. The parametric tests that are more suitable to smaller sample sizes are used. Descriptive ranges utilized in this study relate to the levels of importance the firms attach to the relevant topics, from no importance to moderate importance to high importance, or not applicable at all.

2. Results and Discussion

Many of the respondent firms under study were developing or attempting to develop long term strategic supply chain relationships, particularly through supply chain partnerships as opposed to larger scale collaborations. Significantly more number of firms indicated they were always seeking long-term dyadic (two way) or triadic (three way) contractual partnerships. On the other hand with only few firms were involved in short term contracts. However, organizations involved on a regular basis in cooperative arrangements with competitors significantly lower. The results of the study are discussed below.

2.1 Important Activities for maintaining supply chains

Table 1 shows the level of importance respondent firms place on alignment and integration activities identified as integral to partnering or collaborating for competitive advantage. Interestingly, the results were in tune with the study of Maree Storer and Paul Hyland (2009), more than 52% of firms believe that developing joint capabilities to respond to market changes is of high importance. Following amalgamating logistics (52%), aligning functions across supply chain (50%) are next important activities. However, contradicting this are the low numbers of firms identifying the need to align other strategic and innovative activities with supply chain partners of high importance.

Table 1: Important Activities for maintaining supply chains

Sl.No.	Activities that are important in maintaining supply chains	Low Importance (%)	Moderate Importance (%)	High importance (%)	N/A (%)
1	Aligning functions across supply chain organizations	20	25	50	5
2	Aligning complementary organizational capabilities	15	29	46.6	9.4
3	Integrating and aligning communication and information systems	16	34	45	5
4	Integrating logistics across supply chain organizations	7	33.5	52	7.5
5	Integrating governance and quality systems	16	29	49.5	5.5
6	Aligning management strategies	23	28.5	39.5	9
7	Aligning financial capability	37	37	20	6
8	Integrating and aligning research, development and innovation capability	24.5	45	24	6.5
9	Developing collective market strategies	20	50.4	18.6	11
10	Developing joint capability to respond to changing market conditions	2	36	52.3	9.7

2.2 Supply chain capabilities to meet changing markets and customer requirements.

The literature identified that supply chain actors need to be able to react to change and realign their capabilities to achieve competitive capabilities required to develop supply chain innovation capacity to address changes in the market. Table 2 provides the respondents' attitudes toward adapting, reconfiguring and coordinating capabilities to meet supply chain market needs. Adapting processes, products and systems to market and customer needs (64.13%), reconfigure resources and capabilities on demand (63.03), coordinate and integrate resources and capabilities on demand (62.03%) are highly important to respondent firms. On the other hand coupling and decoupling supply chain relationships to acquire a different combination of resources and capabilities are important to 26.3% of respondents. Ability to align functions to meet supply chain demands is also important for 54% of respondents. Similar results were identified in the study of Maree Storer and Paul Hyland (2009).

Table 2: Supply chain capabilities to meet changing markets and customer requirements.

Sl.No.	Supply chain dynamic capabilities to meet changing markets and customer requirements	Low Importance (%)	Moderate Importance (%)	High Importance (%)	N/A (%)
1	Ability to align functions with supply chain demands	5.00	28.13	54.00	11.63
2	Ability to align infrastructure requirements with supply chain demands	10.00	27.00	53.00	10..00
3	Ability to align human resources and capabilities with supply chain demands	10.88	26.13	52.11	10.88
4	Ability to adapt processes ,products and systems to market and customer needs customer needs	3.00	18.88	64.13	14.00
5	Ability to reconfigure/recombine resources and capabilities on demand	3.10	20.88	63.03	13.00
6	Ability to coordinate and integrate resources and capabilities on demand	3.10	20.00	62.03	14.88
7	Ability to develop individual and group barriers to market imitation	26.00	20.00	40.63	13.33
8	Ability to identify and react to market dynamics- moderate Markets versus high-velocity	3.00	37.63	45.50	13.88
9	Ability to acquire/shed resources and capabilities on demand	16.53	42.88	32.00	8.59
10	Ability to couple and decouple supply chain relationships to acquire different mix of resources and capabilities	14.33	45.38	26.30	14.00
11	Ability to attract new combinations of resources and capabilities to meet customer and market demand	11.50	22.88	52.00	13.80
12	Ability to revamp existing operational capabilities	11.00	19.45	58.68	10.88
13	Ability to revamp existing strategic directions in line with market dynamics	8.38	26.25	54.00	11.37

3.3. Supply Chain Innovation Capacity to ensure competitive advantage of supply chain.

In the minds of these respondents various organizational capabilities are more important than others for ensuring a supply chain competitive advantage through innovation capacity within the supply chain. Table 3 shows that maintaining a competitive advantage through supply chain activities is overwhelming through the development of a continuous improvement capability (82.5%) and having the ability to develop and manage new technologies (76.25%). Interestingly, 42.88% of respondents believe that ability to adapt and align to climate change and other environmental challenges as highly important considering the importance of climate change and the proposed carbon trading emissions scheme at this time.

Table3. Ensure competitive advantage through Supply Chain Innovation Capacity.

SL.No	Supply Chain Innovation Capacity to ensure competitive advantage of supply chain	Low Importance (%)	Moderate Importance (%)	High importance (%)	N/A (%)
1	Ability to realign supply chain relationships to create new capability and resources	14.63	30.75	41.63	13.00
2	Ability to create a new vision and strategic direction and manage for change	8.51	16.50	61.00	12.50
3	Ability to successfully create implement and transfer new ideas across supply chain relationships	6.25	25.00	56.25	14.00
4	Ability to harness internal and external organizational intelligence to create new markets	1.00	30.00	52.00	17.00
5	Ability to develop organizational structures and systems for changing demand	14.00	28.00	50.00	14.00
6	Ability to adapt to cultural shifts in line with new product, processor system developments	13.25	18.50	52.00	16.25
7	Ability to develop and manage new technologies	1.00	11.38	76.25	11.38
8	Ability to continuously develop and manage incremental improvements and changes top products processes and systems	2.5	5.60	82.50	9.38
9	Ability to adapt and align to climate change and other environmental challenges	13.63	33.00	42.88	12.50
10	Ability to adapt and align to political and regulatory change and challenges	11.88	23.00	53.25	11.88
11	Ability to develop and implement financial and cost-benefit solutions for changing market conditions	5.13	26.13	57.38	11.38
12	Ability to develop and implement integrated logistics solutions for changing market conditions	13.25	25.75	45.33	17.13
13	Ability to develop and implement quality and monitoring systems	10.38	10.38	67.88	10.38
14	Ability to develop and implement full tracking and trace-back systems for product	16.24	23.88	44.88	15.00

3.4. Important capabilities to create a competitive advantage

Finally, in terms of dynamic capabilities and creating a competitive advantage, while incremental innovation was critically important for competitive advantage at a firm level, this appears unsupported at the inter-organizational level of the supply chain, with only 40.3% of respondents raising this as highly important. The fact in the study that only 41% of respondents saw the ability for organizations within a supply chain to reconfigure and recreate resources and capabilities on demand as highly important. However 64% of respondents do acknowledge the role that the ability of organizations within a supply chain to innovate internal resources and capabilities plays. Another important aspect, as related earlier is the ability for individuals and groups within a supply chain to create new learning from each other (55.1%). Similarly only 52% of firms felt it was highly important to align and integrate resources and capabilities as required on demand to meet the nature of business exchange and create new product, process and systems in the supply chain. It is apparent that these respondent firms in Karnataka supply chains focus more on innovation and improvement at the firm level than in utilizing their relationships with their supply chain partners.

Table4. Important capabilities to create a competitive advantage

Sl.No.	Important capabilities to create a competitive advantage	Low Importance (%)	Moderate Importance (%)	High importance (%)	N/A (%)
1	Ability for individuals and groups within supply chains to create new learning from each other	8.0	33.1	55.1	3.8
2	Ability for organizations within a supply chain to reconfigure and recreate resources and capabilities on demand	8.0	46.50	41.00	4.5
3	Ability of organizations within a supply chain to innovate by integrating resources and capabilities as required and on demand	7.1	40.50	50.0	3.6
4	Ability of individual organizations to innovate internal resources and capabilities or the competitive advantage of the supply chain	2.0	32.1	60.3	5.6
5	Ability of a supply chain to align and realign organizational resources and capabilities to meet the nature of the business exchange	18.5	26.0	52.0	3.5
6	Develop intergroup relationships that create new product, process and systems development across the supply chain	21.0	23.0	52.0	4.0
7	Develop intergroup relationships that develop continuous product, process and systems improvements across the supply chain	11.1	45.0	40.3	3.6
8	Develop strategic practices that ensure new and continuous improvement in management and operational practices across the supply chain	10.0	36.4	49.50	4.1

4. Conclusion

Firms in a supply chain focused on a new and dynamic market that is marked with dynamism and emerging rules will need a strategic emphasis on innovativeness within firms and across the supply chain to be successful and sustainable. The findings indicate that firms still firmly focus on their own individual innovation capacity. It is recognized the potential of aligning and developing supply chain innovation capacity through supply chain relationships. At the same time, the literature advocates that supply chains that have engaged in developing effective organizational relationships, in the form of partnerships or joint efforts, can and do make advancement capacity, by sharing competencies, capabilities and resources which often occurs in a dynamic and innovative manner in response to changes in the business environment or in

response to customer demand.

In the literature, coordinating, cooperating, partnering and collaborating within supply chains are key methodology to creating supply chain relationships (Miles, R. E. and Snow, C. C., 2007) are seen as critical to survival. The firms in this study have only recognized the benefits of long term partnerships. It appears the respondents can see that strong relationships in the supply chain give rise to formal cooperation and provide some impetus to improve competitive advantage especially through continuous improvement and innovation practices. However, weakly aligned supply chains fails, if allocating resources and transpositioning abilities and skills, are not highly important to developing a supply chain's capacity to innovate in response to rapid changes in the market.

Particularly of interest is the ability of the supply chain partners to adapt, incorporate and adjust new aptitudes, assets and useful abilities to match the prerequisites of an evolving environment (Teece, D. J. *et al.*, 1997) in a dynamic manner. These discoveries despite the fact that not generalisable and restricted through the small sample and scale of the study still give great data to further research to figure out whether the discoveries apply to other supply chains in different environment.

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