

Organisational Learning and Innovation in Supply Chains

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Evidence that a company's Organisational Learning Capability (OLC) and their level of innovation performance are positively related has been the focus of numerous academic studies over recent years. Whilst a significant body of research exists that focusses on learning at company level, little research exists on how companies operating in supply chains/networks learn and innovate. The dynamics of 'power' that exist between companies in the supply chain often impede learning and the resulting innovation. However, it is critical that a truly effective collaborative and knowledge-sharing environment is created so that new ideas and innovative solutions to problems are achieved. This review looks at the issues involved in developing collaborative learning environments within supply chains.

Background

Research in the field of Organisational Learning (OL) has been well developed by both practitioners and academics over the years. The link between Organisational Learning and improved business performance is identified in the work of Azadegan and Dooley (2010) in which they posit a strong positive link between the use of OL theory and resulting supplier innovativeness and business performance. Furthermore, academics have undertaken studies to explore the dimensions of Organizational Learning Capability (OLC) and, whether these dimensions impact upon Organizational Innovativeness (OI). The results of their work have indicated that OLC significantly and positively influences innovativeness within companies (Onađa, et, al 2014).

Academic theory around learning in organisations has traditionally been divided into two theoretical areas of literature namely: Organisational Learning (OL) and, the Learning Organisation (LO) (Chiva et, al 2007). The former has focused on the learning process of an organisation and the latter on the factors that facilitate the process of becoming a Learning Organisation (Chiva, 2004). Focussing on OL, the literature around this attempts to analyse and determine whether and how a certain

process of learning is being accomplished in organisations. Advances in the area of OL show that organisations need to learn constantly through facilitating learning for all members of the company which in turn continuously transforms the company by way of its services, products and innovation which emerges from this learning process (Kumpikaite, 2008). Whilst OL has traditionally focussed upon intra-company learning, little literature exists around inter-company learning (i.e. companies connected in supply chains or supply networks) and, how learning is facilitated or developed in such structures.

Evidence

There have been a number of studies that connect Organisational Learning with innovation. Fewer studies exist that connect OL with innovation development in the supply chain. Table 1 outlines some general theory in this area.

Table 1:

Author	Methodology Applied	Key Issues Highlighted	Contribution	SC	OL	Inn
Bigliadi & Galati, 2016	Survey of 157 Italian SMEs is undertaken to identify barriers towards the adoption Open Innovation in SMEs	The study focuses upon the issue of Open Innovation specifically but highlights the critical nature of OL development as a key driver to achieve effective Open Innovation in companies	Four main barriers are identified, namely, knowledge, collaboration, organisational, and financial / strategic		✓	✓
Chapman & Corso, 2005	This work considers the growing importance of inter-company collaboration, and develops the concept of intra-company continuous improvement through to what may be termed collaborative innovation between members of an extended manufacturing enterprise (including supply chains)	Research proposes the development of continuous innovation to work alongside continuous improvement strategy to be delivered through inter-company collaborations	The authors identify that there is still a substantial lack of empirically grounded contributions and theories on the concept of continuous in an inter-organisational learning	✓	✓	
Chiva 2004.	Through secondary data analysis the author highlights fifteen factors that facilitate organizational learning. These factors are then tested on employees working within Spanish SME tile manufacturing industry to validate the secondary research findings	Four companies are analysed against the fifteen factors that facilitate Organizational Learning. From this, the combinatory factors are identified across all four companies and, differences between the factors are discussed and analysed	15 key facilitating factors of OL identified namely: experimentation, observation, risk acceptance, heterogeneity, dialogue, training, delegation, teamwork, worker improvement, leadership, learning, management structure, knowledge, humour, creativity	✓	✓	
Chiva et al, 2007.	The study proposes then validates a measurement scale that aims to capture an organisation's capability to learn, based on a comprehensive analysis of the facilitating factors for learning. SME companies in the	Data is collected from eight Spanish ceramic tile manufacturers. The survey was addressed to shop floor workers. A total of 157 valid questionnaires were obtained, Using confirmatory factor analysis, the construct measurement model was tested and the scale was validated	The organisational learning capability scale consisting of 14 items grouped into five dimensions: experimentation, risk taking, interaction with the external environment, dialogue, and participative	✓	✓	

	ceramic tile industry are used		decision making is proposed and tested			
Thomas et al, 2018	This paper investigates the relationship between organizational learning capability and innovation performance in a newly developed SME Supply Chain	A case study approach is used and the analysis of the project identified a number of key leadership and collaborative learning themes from the programme of work	The project follows companies through a structured programme of innovation training. A strong positive correlation was made between OLC and Innovation within the Supply Chain		✓	✓
Nasab M.K, 2016	Research investigates the effect of inter-organizational learning on the operation of innovation in the supply chain of Sapco company	Quantitative analysis which seeks to find a correlation between inter-company learning and supply chain innovation. Provides an effective model of research in the study	Statistical analysis validates the hypothesis that inter-company learning improves the level of supply chain innovation. However, a deeper analysis of the main causal relationships is not provided	✓	✓	✓
Opengart, 2015	Through secondary data analysis and reviews of key literatures, analysis was undertaken of collaborative SCM and OL theory to identify overlapping themes	Findings indicate multiple themes in common between collaborative SCM and the Learning Organization. Research suggests to approach SCM with the framework of the Learning Organization to encourage those principles to drive behaviour	Focused upon secondary data analysis. Author recommends empirical research should be conducted to investigate and quantify advantages of this approach/perspective. Proposes the concept of the 'learning chain'	✓	✓	
Salim and Sulaiman, 2011	Quantitative analysis of 320 manufacturing SMEs. Study considers whether OL has a positive effect on promoting innovativeness and in turn, whether this innovation supports improved company performance	The work shows that both hypotheses (OL supports innovation and, Innovation supports improved company performance) are supported and that OL is a driver of growth in manufacturing companies	Identifies possible causal relationship between OL and firm performance. Work is survey based and does not show how SMEs engage in OL and Innovation practices		✓	✓
Spicer and Sadler-Smith, 2006	Quantitative analysis of 294 small and medium manufacturing firms with five hypotheses being tested against the learning orientation scale	Study raises the potential for a causal relationship between organizational learning and performance, in which a higher order learning orientation (double loop learning) can be identified as a driver of a firm's growth and the success of its operations	Identifies the causal relationships between OL and firm performance. Identifies that higher order (<i>double loop learning</i>) was a key driver in company growth	✓	✓	

The evidence shows that little research has focussed in the area of how OL can assist companies operating in supply chains to innovate and improve overall supply chain performance. Arguments put forward state that true OL cannot be achieved in supply chains as it is impossible to obtain a truly collaborative environment where all companies in the chain are able to share information freely. Impediments often stated are around the power relationships between suppliers and customers in the chain frequently prevent close and meaningful collaborations (stealing ideas and staff, showing the true extent of business operations, savings and improvements being made through collaborative projects later used to drive further cost reductions etc).

Summary and evidence gaps

A fundamental objective of achieving effective OL in supply chains is to achieve trusted working relationships and truly effective collaboration between the companies in the chain. This in turn will help drive high quality innovation skills that are aligned to the product and process innovation needs of the overall supply chain.

Whilst the issue of supply chain integration and collaboration has been around for many years, most supply chain innovation emerges from companies developing ad-hoc approaches towards developing their processes and/or products. Furthermore, companies within traditional supply chains have little opportunity to develop product or process innovation in a co-ordinated and collaborative manner where they are afforded the opportunity to enhance the product and process and align it to their specific core competencies (Scholten. & Schilder, 2015).

Accompanying these issues and specifically within SMEs, the risk of entering a new market for companies is high, and often, even though they have novel technologies and approaches to add to these markets, companies often do not have the knowledge of the new markets or accompanying market skills to adapt to these new sectors. As such it is easier for the companies to remain in their competence zone, even if facing tougher conditions (Spekman et al, 2002). Organisations with transferrable technologies/skills/products to other sectors need a way of accelerating their knowledge of the new markets, and a 'safe' way of entering that market, whilst still maintaining their core business (Ellinger et al, 2012). In order to facilitate the process of innovation, companies need to develop Knowledge Management capabilities (Aboelmaged, 2014). Armed with these issues, it is possible to identify the importance on ensuring that companies are able to collaborate and innovate as part of a larger community of learning where innovative products are developed in a less risky environment. Pooling of key technical knowledge and skills to co-innovate in the development of new products is essential and so the development of supply chains capable of rapidly innovating whilst acquiring new skills and knowledge is key to future performance and sustainability.

Therefore, achieving effective inter-company collaboration and developing an effective learning environment where innovative ideas are developed and shared through the supply chain relies on a number of key dimensions. These dimensions can be considered as a blueprint for companies wishing to embark on similar projects. These dimensions are:

1. A specific and deep-rooted understanding of company limitations and constraints to OL and, a single-minded group approach towards overcoming these barriers and limitations (Thomas et al, 2018).
2. An open-minded team of collaborating members willing to accept and act upon advice.
3. Effective leadership shown by the senior management teams of each of the supply chain companies. Commitment to the need to develop a collaborative learning environment that creates project momentum and drives participant engagement.
4. Inclusiveness, the recognition that all personnel within the group/team make a contribution and that this can be encouraged by training together with involvement, to make these efforts more effective
5. The availability of flexible, intelligent and innovative human resources leading to increased creativity and innovation within the group.

6. The presence of excellent inter-personnel attitudes and communications leading to enhanced group dynamics and trust.
7. The application of an immersive and collaborative working environment and the empowerment of the team to self-organise.
8. The use of simple and clear design and management principles to direct the innovation activities.
9. The establishment of key leaders and effective leadership in the innovation group.
10. Adaptability in the development of new skills and capabilities together with the adoption of a customer-focused supply chain orientation. Shared learning and improved trust amongst team members.

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