

Do Enterprise systems enable Supply Chain Integration ?

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Overview

- ERP systems and supply chain
- Characteristics of ERP systems (from literature review)
- Challenges (from literature review)
- Research framework and methodology
- Findings
- Conclusions & future research



ERPs and SCM

- ERPs now in most of the large organizations and slowly expanding into SMEs (Forrester research 2005)
- Organizations eager to leverage all this integrated information into competitive advantage and ROI (not seen so far) (Shank & Seddon 2002, Forrester research 2005, Power 2005)
- Complement each other: (Davenport & Brook 2005, Burca 2005,)
 - ERP aim to achieve internal integration while SCM facilitate integration across the enterprise
 - ERP focuses on transactions while SCM offers intelligent decision support (Holsapple & Sena 2005, Power 2005)
 - ERP stores data about all events in source, making, deliver and return processes and act as integrators, SCM uses that info..
- Options: (Tarn et al 2002, Kellea & Akbulut 2005, Archer 2006)
 - Implementation of ERP and SCM systems (most popular)
 - Custom-built application integration
 - Implementing full ERP with SCM capability



Characteristics of ERP systems

- Technical integration – adaptability, modularity and portability
- Flexibility – before the implementation
- Organizational integration – between data, processes and between hierarchical levels & functions
- Standardized business processes - but not after configuration
- Transversality (process-oriented view): depends on imp.
- Best practices – universal applicability questionable
- Homogenization – unique data referential & uniformity of HCI
- Informational role – real-time visibility, availability & processing capability



Some challenges (1)

- Extent of internal integration - limits the benefits of visibility, accessibility and processing capability of information, transversality and flexibility (Davenport et al 2004, Rowe et al 2005, Markus 2001, Uwizeyemungu & Raymond 2002)
- Limited decision support capability – a major weakness of ERP systems necessitating ‘bolt-ons’ for SCM, CRM, PLM, BI tools etc. (Holsapple & Sena 2005, Stanek et al 2004, Forrester Research 2005)
- Integrated architecture in most of the ERP systems – not conducive to a dynamic supply chain context (Bradberry et al 2005, Markus 2001)
- Lack of standardised approaches to information sharing and process management – modern tools and standards making info integration easier (Davenport 2005, Davenport & Brooks 2004, Moitra & Ganesh 2005, Power 2005)



Some challenges (2)

- Data reliability and controls – risky with ERP systems because of their dependency on programmed controls, elimination of control and supervisory roles, and single point data entry (Seethamraju 2004, Koh et al 2006, O'leary 2000, Koch 2001, Hanseth 2001, Granlund & Malmi 2002, Sia et al 2002)
- Differences in technology investments between partners & unwillingness to share (Tarn et al 2002, Archer 2006, Koh et al 2006, Power 2005)
- Problems with the continuing usage of legacy systems and correct functioning of ERP systems (Norris 2001, Kellea & Akulut 2005, Davenport & Brooks 2004, Markus & Tanis 2000, Willcocks & Lester 2002)



Research significance & methodology

- Research significance:
 - Inadequate work on how firms are extending and exploiting capabilities of ES beyond their enterprise (Cumbie et al 2005, Bruggess & Houghton 2005, Akkermans et al 2003)
 - Majority of studies were quantitative & on implementations (Akkermans et al 2003, Esteves & Paster 2001, Al-Mashari 2003)
- Research questions:
 - How do ERP systems facilitate SC integration?
 - What are the limitations of ERP systems in achieving such improvements in supply chain integration ?
- Methodology:
 - Interpretive case study (a manufacturing organization)
 - Semi-structured in-depth interviews
 - Implemented SAP R/3 and its SCM extension (2002 and 2003/4)



Findings (1)

- Insufficient integration - Organizational coverage
 - Limited interconnection between hierarchical levels in the organisation
 - Good horizontal integration – by implementing all the four important modules (SD, FI/CO, MM and PP)
 - Inter-organizational integration is very limited – SCM extension used just for demand forecasting (on a fortnightly basis and not real-time)
- Insufficient integration - depth or extent of integration
 - Limited access to data for ‘economic’ reasons and ‘managerial’ reasons
 - Excellent integration for presentation, execution and access for managerial staff
 - Excellent integration of communication – the way info is exchanged, processed & tracked



Findings (2)

- Standardized & best practice processes –
 - No discernable benefits yet on bottom line
 - Prepared the organization better for future supply chain integration (with SAP in every partner organization)
 - No real benefits of best practice, just standardization
- Lack of flexibility – Locking in internal processes compromises ability to achieve SC efficiencies (by redesigning inter-enterprise processes)
- Change management implications – changes in power and organizational structures & change fatigue limiting ability to change SC processes
- Powerful partners – sceptical to go ahead on their own
- Lack of decision support capability particularly in the context of SCM and improvement of SC efficiencies



Conclusions & future research

- ERP systems, in present form, play a very modest role
- Not just connecting a series of processes
- Supply chain integration is complex and challenging, and depends on several other factors:
 - Nature and type of industry
 - Extent of trust & cooperation between partners
 - Efficiency & effectiveness of technology interfaces
 - The real need for ‘SC’ integration ?
- Open, component based ERPs with Web services standards in future **MAY** facilitate better interfacing and help in achieving easier & cost effective SC integration
- Future research – More case studies, in different industry sectors and SMEs

