

Supply chain performance enablers and inhibitors: the role of technology, people and supply chain structure



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Market Research

The objective of this research was to understand to what degree technology and process enable/inhibit supply chain management in an increasingly complex environment. To achieve this, 21 senior managers were interviewed from 20 organisations. The interviews were semi-structured and covered the following thematic areas:

- The role of IT in inhibiting/enabling supply chain management
- The role of IT in underpinning operational performance
- How complexity is accommodated in existing IT solutions
- How future IT systems might help adaptation within complex supply chains

Summary Findings

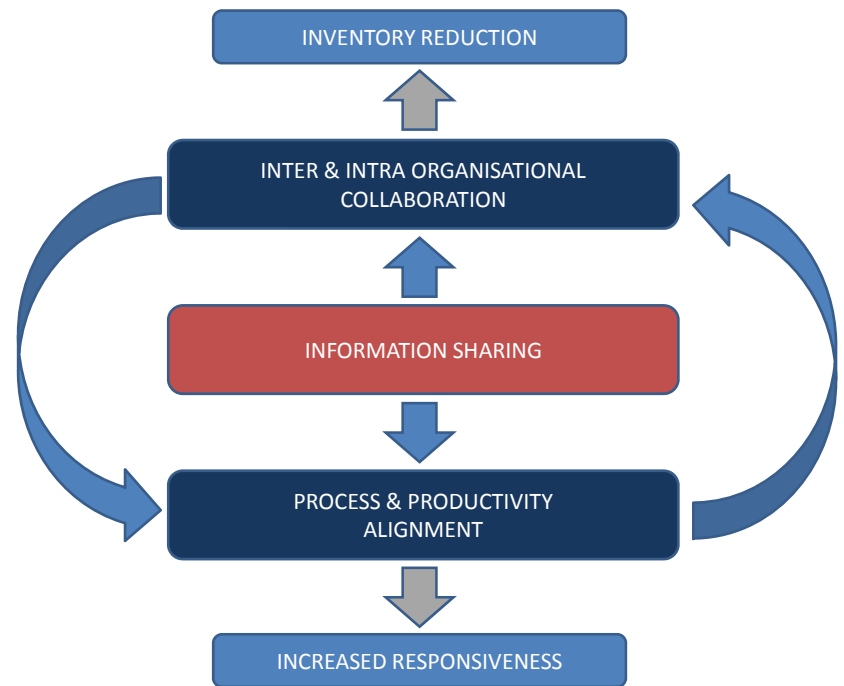
- Retailers experiencing poor visibility of demand perceive poor internal IT and systems integration as a significant barrier to performance improvement.
- Logistics service providers and wholesalers often cite issues of poor visibility in the interface with external organisations, and consequently perceive inter-organisational IT integration as a major barrier to performance improvement.
- The majority of organisations interviewed already measure work force performance, and those who do not are planning to develop the necessary capability.
- Organisational approach to complexity is polarised. Some organisations seek to develop competitive advantage through the embracing of complexity and multiple channels, whilst others choose to develop a competitive strategy focused on simplification.

This report summarises the findings from primary market research commissioned by Manhattan Associates, and presented at a series of breakfast briefings co-hosted with Martin Christopher, Emeritus Professor of Supply Chain and Marketing at Cranfield University, School of Management.

Conceptual Framework

For almost two decades supply chain theoreticians have been promoting information sharing as a means of accelerating the supply chain, increasing responsiveness and eliminating excess inventory.

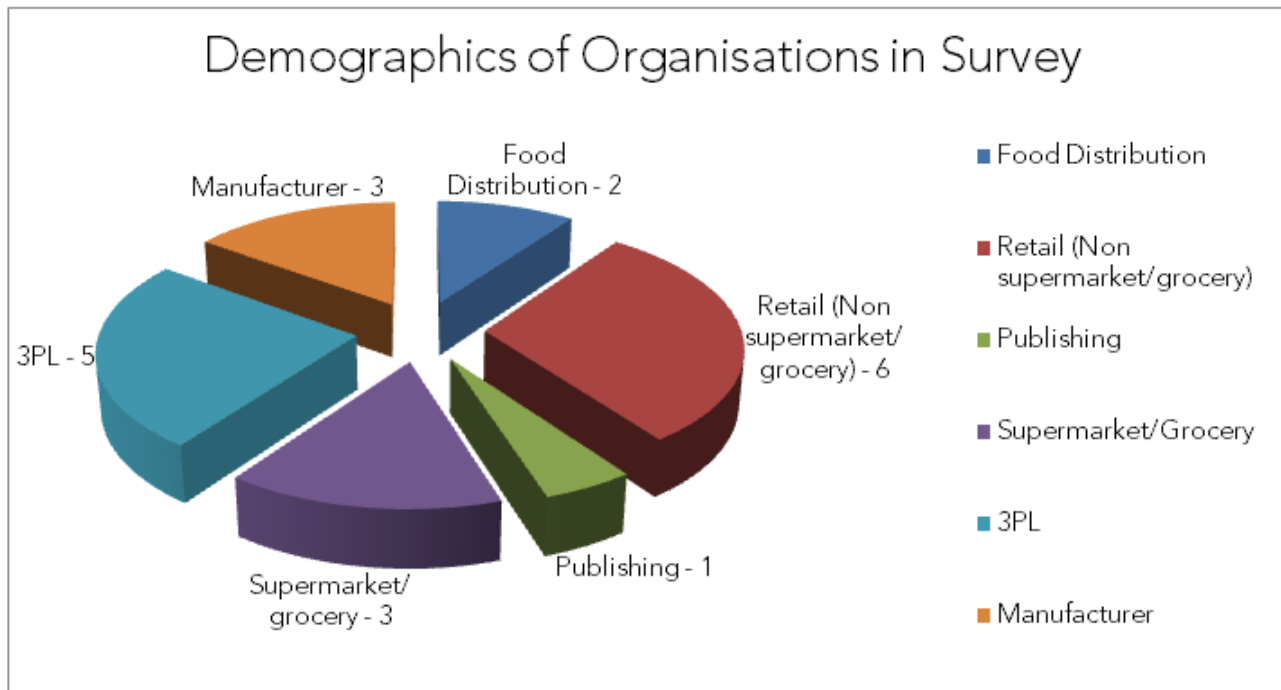
ERP systems have integrated data structures within the enterprise and to some degree extended this to include information sharing across organisational boundaries. Whilst these applications have greatly enhanced inter-organisational collaborative planning they have lacked a functional focus on process execution. Conversely, the much greater granularity of data structures required by execution systems has inhibited their planning functionality.



This research proposes to establish, within the constraints of the sample size, the current status of IT/IS as an inhibitor and/or an enabler of supply chain management.

Survey Demographics

Whilst the survey was broad (in terms of the sectors considered), its population was dominated by: retailers, third-party logistics providers (3PLs) and manufacturers.



Although not extensive the survey reflected the major elements of a consumer-based supply chain (Manufacturer, distributor, and retailer).

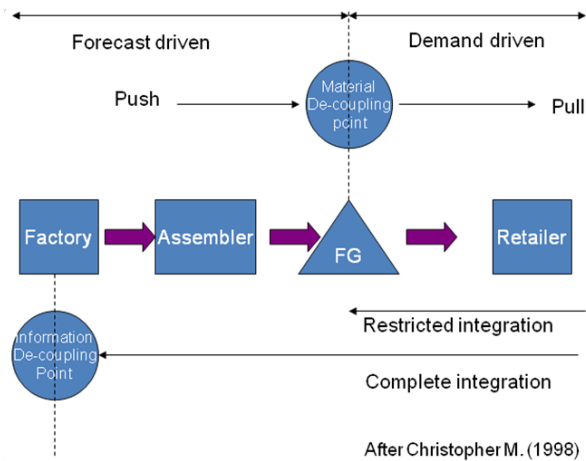
The role of technology in enabling Supply Chain Management

For many years it has been recognised that information sharing through integrated information systems, holds the key to increased visibility of demand, increased responsiveness and mitigation of risk. In combination, the benefits of integrating technology across organisational boundaries and embracing the supply chain as a whole is a key ingredient in developing competitive advantage. It is therefore somewhat surprising to find that all sectors surveyed highlighted issues of IT integration. At the leading edge retailers raised issues concerning IT integration across multitudinous systems. Upstream, distributors and manufacturers both identified difficulties with integration to external systems as a major inhibitor to information sharing across the supply chain.

Conceptually, complete information sharing (the Holy Grail of supply chain management) across the supply chain enables the identification of the material flow decoupling point. This is the point in the supply chain where strategic inventory should be held, taking into account service levels and lead times. In an ideal world with perfect information and complete information sharing there is only one decoupling point in a supply chain. It should also be noted that a de-coupling point represents the tier in a supply chain where strategic inventory should be located, and does not refer to a single location.

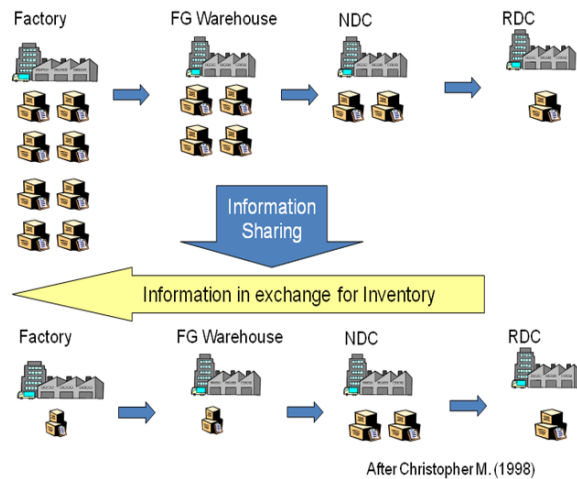
“All the different IT systems are pretty independent. There is no cross-functional visibility, things regularly get lost in translation and lost in transformation” A major retailer

“Finance may say we have X number of stock days left, but that is not right for operations, as that is the total not the number of stock days available in a particular spoke (DC). Visibility is there for finance operations, supply chain and purchasing, but the problem is how that data is used and interpreted” A distributor



Without complete information sharing the supply chain vision held by any single supply chain factor is limited, and this results in fragmented supply chain coordination and consequently multiple inventory holding locations (de-coupling points). Multiple inventory holding locations increases the total supply chain inventory, rendering it less agile as a consequence of the time it takes for a single item of inventory to flow through the entire supply chain.

By implementing supply chain visioning and information sharing platforms, the flow of materials (supply and demand) is reflected in a data rich information landscape. Importantly, this landscape becomes visible to all supply chain participants, thereby enabling greater supply chain coordination, reduction in supply chain inventory, and much increased responsiveness.



85% of the survey sample accepted that their information systems could be leveraged further to develop significant competitive advantage.

The role of IT in underpinning operational performance

***“We don’t really have a meshed IT system...We have quite distinct systems actually, nothing overarches in the two. One feeds the other to a certain extent, but you can’t have one set of questions or values, one input, the two are independent in that respect”
Director, Major Grocery Retailer.***

Every day that a piece of inventory spends in the supply chain it accumulates cost and reduces margin. Processes, underpinned by technology, are perhaps the most important factor in increasing supply chain velocity and thereby reducing the accumulated cost. Supply chain IT solutions have little impact on the time that a piece of inventory spends travelling between nodes in the supply chain, but they can have significant impact on the time that the same piece of inventory spends in inventory buffers.

Inventory buffers only ever exist as a means of compensating for uncertainty of supply or demand. The complete sharing of information across the supply chain, enabled by best of breed IT solutions, not only reduces uncertainty, but reduces (ideally to a single level) the number of inventory holding levels (and therefore locations).

It is therefore disappointing to find that 85% of those interviewed felt that their supply chain IT solutions did not access and process collected data in an efficient manner. The most frequently mentioned IT integration issues were:

- Internal/external integration of disparate systems
- The absence of IT applications that could operate across multiple channels (retail)
- The ability to integrate new business units
- The ability to access and process data at multiple levels of granularity.

In today's highly volatile environment the minimisation of the cash to cash cycle is not only a major source of competitive advantage, but may also be a key component in determining whether or not a company survives. Improvements in the cash to cash cycle are highly dependent on how efficiently an organisation uses its assets to accelerate the distribution of its products. In this context, the ability to measure supply chain velocity becomes important, and it is therefore not too surprising to find that almost 75% of those organisations surveyed claimed to measure supply chain velocity.

Putting aside for one moment the difficulties associated with information sharing and supply chain collaboration that we have already surfaced in this research, the decoupling point (the location of strategic inventory, i.e. the DC) becomes the focal point for the optimisation of distribution assets.

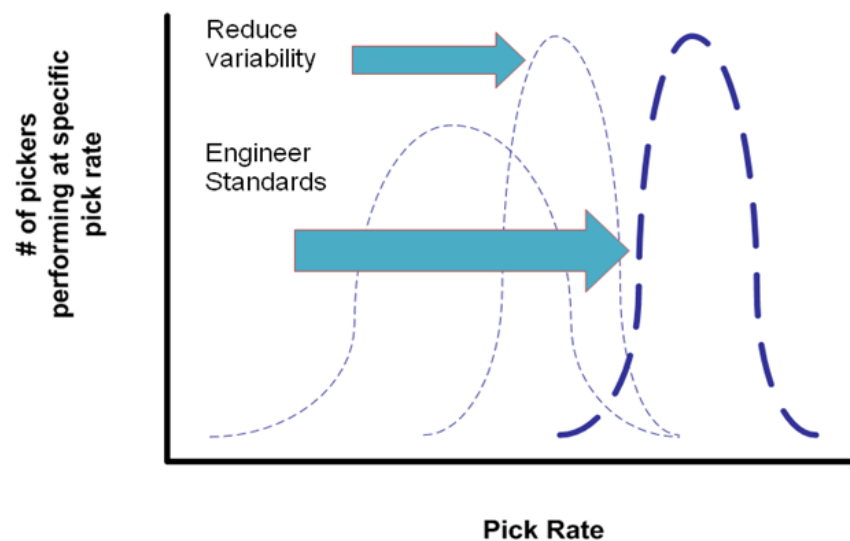
Performance and productivity measures for distribution activities therefore centre on the warehouse, and form a critical component in analysing causal factors of supply chain velocity such as inventory turns, supplier performance and cycle times.

The majority of organisations surveyed (72%) measured warehouse operational productivity, although there was a large degree of stratification across the sample. Measurements ranged from team productivity to individual productivity measurement. Furthermore, 64% of organisations surveyed also claimed to measure cost to serve, although subsequent definitions of this measurement were ambiguous.

A significant proportion of those companies that claimed to measure productivity did so without fully taking into account some of the significant variables experienced in a typical warehouse operation (i.e. order structure and product variety).

Although most of the companies surveyed measured productivity, very few understood the improvement opportunities. Whilst the management of performance variation can produce significant benefits by dragging the worst performing individuals closer to the best performing, it does not guarantee that the best performing are

actually doing the best they can. To secure this final benefit, organisations need to understand the activity at a granular level, in order that it can be improved through activity/process reengineering. This is the domain of true labour management systems and very few of the organisations surveyed enjoyed this level of performance optimisation.



Supply Chain Complexity

The emergence of the internet as a channel to market has resulted in a proliferation of retailers developing a multi-channel retailing strategy. The retailer often organises its resources into channel focused entities; this significantly increases the number of relationships to be managed, the amount of information to be processed, and the number of decisions to be made. The supply chain challenges resulting from such complexities are amplified in volatile environments, inferring that those companies who manage complexity through flexible, adaptive IT systems will be better placed to ride out any downturn.

The avoidance of supply chain inventory accumulation is reflected in the stockless supply chain, and de-coupling point conceptualisation, in that they share the objective of minimal pipeline inventory. Both strategies are in turn aligned with the concept of flow-through, which is a derivative of JIT/lean manufacturing policies. However, unlike JIT inter-organisational structures (e.g. Keiretsu ¹), most supply chains, in taking advantage of low cost labour markets, become geographically extended. The resulting extended lead times means that the anticipated patterns of demand across channels may change during the order cycle time. Unless responded to this will result in inventory being located sub-optimally, leading to inefficient use of distribution assets and consequentially poor cash to cash cycle performance.

“Sales on the internet is not something we are actively pursuing...we’re not really seeing an increase in our channels at the moment. We are trying to ensure that the new IT system is future-proofed and so is able to handle increased complexity as needed” Director, Major High Street Retailer

There are two distinct responses to Channel complexity. On the one hand, supply chains can reflect a rigid segmented flow of materials across all channels. In this case, the flow of materials follows that which was predicted in the forecast with inventory buffers in each Channel reflecting uncertainty in demand and lead times. Alternatively, organisations can choose to integrate their channels allowing them to respond dynamically to changes in demand characteristics. This approach relies heavily on an integrated information system capable of aligning channel flows with actual demand, thereby enabling the system as a whole to function with a smaller inventory buffer and rendering the supply chain much more agile.

67% of the organisations surveyed were aware of the flow-through concept (dynamic realignment of material flows with experienced demand), and of these almost half (42%) were actively pursuing IT enabled improvements.

Given the lack of intra and inter organisational IS integration it was not surprising to find no examples of companies dynamically managing flows across multiple channels.¹

¹ Keiretsu is a community of organisations, geographically close and based on principles of close cooperation and collaboration

Discussion and conclusion

Although the survey does not represent a longitudinal study of a single supply chain, the findings seem to suggest that retailers are finding it difficult to internally integrate data and information systems. It is likely, if not probable, that this lack of internal integration is the cause of the difficulties experienced by wholesalers and manufacturers in external IT/IS integration. This lack of inter and intra organisational data integration is surprising given that information sharing is the anchor for supply chain performance. Furthermore, the survey findings suggest that there is still plenty of opportunity for IT systems to deliver significant improvements in supply chain performance.

The low adoption rate of cross Channel supply chain optimisation IT continues to challenge the performance of many multichannel retailers, suggesting that the supply chain concept is still failing to secure appropriate boardroom attention.

In these cash constrained times it is perhaps not surprising to find organisations using their supply chain execution systems (e.g. warehouse management systems) to assess asset, team and individual performance. Whilst this should be applauded, there still remains significant opportunity to improve productivity at all levels within the distribution elements of the businesses surveyed. The high adoption rate of supply chain execution software, such as warehouse management systems, provides a solid foundation for further productivity improvements, underpinned by optimisation software such as labour management.

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