Managing Distribution Logistics Using Enterprise Systems

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Abstract

To meet the shipping deadlines of dynamic product demands efficiently, the operations and shipping systems in an enterprise must be nimble and responsive enough to satisfy customers. Organizations have implemented enterprise systems (ESs) to integrate their supply chain processes such as customer order receipt, logistics planning, manufacturing, and dispatch of products. This paper investigates how manufacturing organizations manage their distribution logistics function and implement strategies using an ES and its information. Three case studies are conducted in manufacturing companies that have implemented ESs to examine how these systems support the management practices and strategies in shipping out operations. Findings suggest that ES tools aid information flow for tracking shipment orders, optimization of product packaging, and achieving on-time deliveries. Though firms are sometimes constrained in materials and availability of physical products for dispatch, the underlying ES technology provides the analytical and knowledge-leveraging support to spur the distribution logistics processes efficiently.

Keywords Enterprise system, enterprise resource planning, knowledge management, distribution logistics, dispatch, shipping.

1 Introduction

The operations of any organization are mostly driven based on customer requirements. It is the customers who decide what they want, how, and when they want it (Folinas et al. 2012). For this reason, the operations and shipping systems in an enterprise must be responsive and nimble enough to meet the dynamic customer demands efficiently. Customer loyalty and competitive advantage can only be sustained if an organization's customer service provides the satisfaction to customers in terms of meeting shipping deadlines (Bolumole et al. 2007). This can be achieved through the use of enterprise system (ES) technology, also called enterprise resource planning system, which integrates customer order processes with logistics planning, manufacturing, and eventually dispatch of products. For managing operations, an enterprise must be able to transform data quickly and precisely to share information with stakeholders. Relevant knowledge is created through use of ESs that can enable timely fulfilling of customer orders to achieve advantage in the competitive marketplace.

In the last two decades, many organizations have implemented ES technology to enhance operational efficiencies and integrate business processes in supply chain management for increasing organizational effectiveness (Davenport 2000). ESs are business management systems that comprise a series of modules with different sets of capabilities incorporated into a central repository to provide a comprehensive view of the overall enterprise's operations (Rai et al. 2010). An ES is an enterprise-wide set of management tools with different levels of adaptability, enabling businesses to achieve high levels of productivity and customer service underpinning effective e-commerce (Nofal et al. 2013). ESs represent different business processes in the supply chain operations reference (SCOR) model which include plan, source, make, deliver, and return to cohesively put related tasks together and optimally utilize organizational resources. Functionally, ESs assist in processes such as customer order intake, planning of production, parts warehousing to finally goods dispatch based on customer requirements.

Evaluation of the kind of benefits that organizations might expect in managing their value chain from the use of ESs and the level to which firms have actually achieved anticipated benefits after adoption is an area being proactively pursued through research (Peiris et al. 2015; Su et al. 2010; Yang et al. 2009). Limited studies have been conducted to evaluate the impact of ESs in enhancing performance in distribution logistics, in particular, shipping operations of manufacturing companies (Ketikidis et al. 2008). This paper addresses this gap and investigates how firms utilize ESs to bring a more value-based view of operational dispatch processes of finished goods. A strategic alignment model (SAM) (Neubert et al. 2011) has illustrated the alignment between governance-focused business and IT strategy, and process-oriented IT infrastructure and organization in a supply chain environment. This intra and inter-organizational model promotes a business and IT strategy framework which is dependent on the level of fitness between strategy and functional domains for realizing supply chain performance in a company. Three case studies are conducted in a New Zealand (NZ) context – two in large firms and one in medium-sized manufacturing firm that have implemented ESs – to evaluate the utilization of ES technology in managing supply chain distribution logistics processes and strategies. Thus our research objective is: *how manufacturing organizations manage distribution logistics and implement dispatch strategies using an ES and its information.* The paper maps the strategic alignment of ESs in a distribution logistics context to a theoretical framework and identifies the benefits that occur as a result. Whilst the contribution of this paper is to determine the impact of ESs on dispatch and shipping out management practices, a NZ perspective with insights from both large and medium-sized hi-tech organizations is adopted. The depth of knowledge thus captured from organizational ES users in the two enterprise sectors are explicitly explained in this paper, which is a distinctive contribution.

The paper is organized as follows. This section has posed the research objective and introduced the intent of this study. The next two sections discuss related reviews in ES literature and the SAM framework's context to this study. The fourth section explains the research methodology. The research findings are presented in the fifth section. The sixth section presents the case description and findings, and evaluates the results. The seventh section answers the research objective and discusses the resulting implications in managing distribution logistics through ESs. Finally, the study conclusions are offered with future research directions.

2 Enterprise Systems and Knowledge Management

A successfully integrated ES can enhance operational efficiencies by supporting a firm's business processes as well as creating competitive advantages through innovative practices (Chen et al. 2009). ESs can improve organizational efficiencies by providing real time information, data sharing and collaboration, automation, and business process integration (Ragowsky et al. 2008). This is, in particular, vital for supply chain operations in managing in-bound and out-bound shipping operations (Peiris et al. 2015). Other ES benefits achieved by manufacturing organizations include IT strategy alignment, improved business processes, more effective operations, cycle time reduction, increased productivity, cost reduction and improved inventory management and logistics (Yang et al. 2004). However, there are some limitations or barriers for realizing ES benefits such as lack of training, change management and discipline in maintaining data quality as well as poor reporting procedures (Hawking et al. 2004).

A major source of competitive advantage lies in the ability of an organization to integrate with its suppliers and customers. This level of integration in the supply chain can be potentially achieved through ESs (Mostaghel et al. 2012). However, according to Koh and Gunasekran (2006), ESs alone cannot be relied upon for efficiencies in supply chain management. Other systems such as an intelligence-based knowledge management (KM) system assist in capturing and providing tacit (intangible) data and explicit (tangible) data to achieve accurate information flows. Based on this premise, KM is used in conjunction with ESs to reduce data uncertainties in a manufacturing supply chain (Ketikidis et al. 2008; Koh et al. 2006). KM provides ability for selectively capturing, archiving, and accessing work-related knowledge and decision making from managers and employees. It helps in creating a collaborative work environment, encourages information distribution and saves on duplicating effort, thus reducing cost and time spent (Berkman 2005). Organizations have primarily utilized IT infrastructure to improve their major value creating and transaction-oriented business processes, such as order intake process, order execution process, and Web-based logistics. ESs offer the capability to provide such integration and access to organizational data for corporate use through a consolidated system platform. Businesses are now realizing that making relevant corporate information accessible to approved users at all times through business process integration is a key factor for success (Poon et al. 2006). However, this alone does not achieve the required organizational success. Alignment of information systems and business strategies is vital for firms to be competitive (Neubert et al. 2011). Firms are realizing the use of information for strategic decision making such as through management accounting or performance monitoring practices that drive businesses towards achieving overall success (Scapens et al. 2010).

3 Relationship between Strategy and Functional Infrastructure

Neubert *et al.* (2011) provide an effectual extension of Hendorson and Venkataraman's (1993) strategic alignment model (SAM) which illustrates the functional integration between governance-focused business strategy and IT strategy, and process-oriented IT infrastructure and organizational infrastructure (Figure 1).

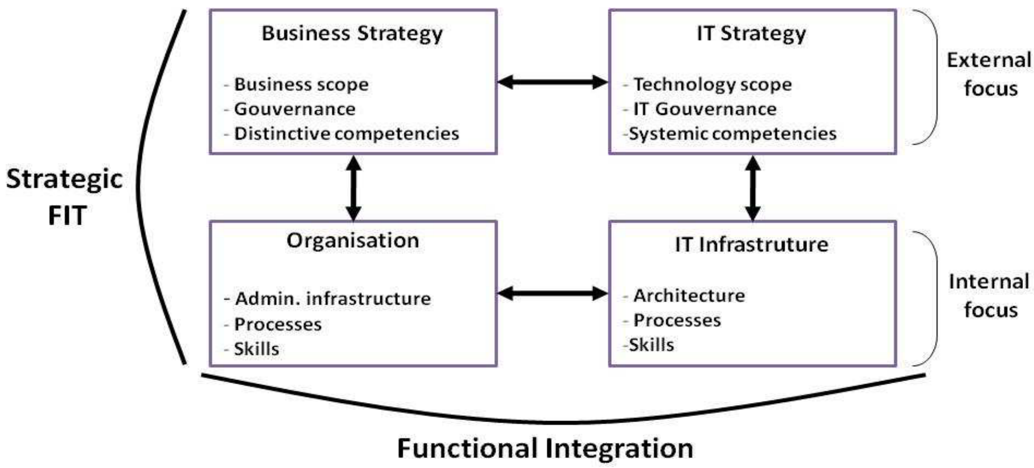

Figure 1: Strategic Alignment Model (Neubert et al. 2011)

In this model, strategy in business and technology has an external focus whilst the infrastructure in technology and organization are internally focused. The model proposes that the supply chain performance of a company is contingent on the strategic alignment between the external and internal focus, which is dependent on the fitness between strategy and functional domains (organization and IT infrastructure). Furthermore, such alignment is seen as a process of continuous improvement to achieve supply chain optimization over time. Neubert *et al.* used this framework to investigate inter-organisational alignment in terms of how companies managing supply chains, adapt their organisations and information systems while implementing IT-driven innovation. Findings emphasized that within the SAM framework, there is "not a single strategic alignment but a combination of intra and inter-organizational strategic alignments" between supply chain partners (2011, p. 29). The dynamic interactions between different types of alignment in the supply chain can lead to on-going improvements in the strategic alignment as an outcome. The suitability of the intra-organizational alignment can impact the inter-organizational alignments of supply chain partners globally. In the model, the business strategy depicts the direction and scope for business which relates to the IT strategy, its scope, governance and functional competencies. This identifies the IT infrastructure needed and its relationship with the overall organization, which has an impact in satisfying the business needs and strategy.

Keyes (2006, p. 242) suggests that organizations should construct a KM framework based upon their choice of organizational abstractions such as "balanced set of measures, benchmarking, target-setting, matrices, hierarchies, flow diagrams, and even management systems". The right option depends on the teams' ability to evaluate functional relationships, related benefits and costs, and then to measure the impact of these abstractions on each other to achieve business objectives.

4 Research Methodology

This study investigates the utilization of enterprise systems in the logistics distribution processes, focusing in the dispatch operations of manufacturing firms. This process is perceived as a series of activities that commence with setting of goods dispatch and delivery objectives, and conclude with an evaluation of achievements. The stages include demand-orientated delivery order execution based on shipping due dates through application-focused IS support (e.g., delivery order pick lists, invoicing and shipping documentation) as well as supply-orientated technology support (e.g., deployment of ES technology). Semi-structured interviews were conducted using a qualitative research methodology for data collection from key respondents in three manufacturing organizations (two large and one medium-sized firm) that have implemented an ES. Using the purposeful sampling strategy, the cases were selected (Patton 2002) with a predetermined criterion. The firms must belong to the manufacturing sector in a similar industry and should have implemented ES for at least three years to be in the mature phase of ES implementation. Focusing on firms in the same industrial segment (in this case manufacturing) and in the same industry class (in this case electronics) constrained variation due to differences among the firms. Additionally, selecting firms in the manufacturing sector is significant because the characteristics of manufacturing organizations within the environmental, organizational, and technological context especially motivates ES adoption (Raymond et al. 2007).

Fifteen face-to-face semi-structured interviews between 1 and 2 hours each took place at the three organizations. The respondents comprised 9 participants (3 from each company) to include the operations manager, IT manager and warehouse manager. Follow-up interviews were held with the managers from each firm to clarify any issues that needed further discussion such as review of any changes to the earlier situation. In the interview, questions were asked to gain insights on how ES and its data are utilized in the logistics distribution function to make knowledgeable decisions and execute strategies in dispatch operations for shipping out of products. Neubert et al.'s holistic model (Figure 1) provided the methodological guidance into the conduct of the study.

5 Case Description

Aevon, Bevon, and Cevon (pseudonyms) are well established hi-tech manufacturing companies based in Auckland, NZ and specialize in the design, manufacture, and supply of high performance electronic products. The three companies are market leaders of high quality products in their business segment within global markets. They have similar organization structures with headquarters in NZ, design, development, and manufacturing based in Auckland, procurement of parts from Asia, and sales and distribution centers across the globe. These companies were chosen due to their similar nature of design, manufacturing, and global supply operations in the hi-tech electronics industry. Bevon and Cevon are large firms with employee strength of about 750 each and Aevon, a medium-sized company with about 100 employees.

All three companies are in the mature phase of realizing benefits from their ES investment. Aevon has implemented SyteLine ES version 7 (SL7) since 2004, as part of the business strategy, to improve the operational efficiencies and information flow in the company. The SL7 modules implemented were finance, manufacturing (including purchasing, planning, warehousing, production), and sales. Subsequently, more modules were added including CRM, and a field service module called FS-Plus to include more functionality in 2007. Bevon implemented mySAP ES in 2004 to improve data availability and functional integration within the company. mySAP is a software system comprising

SAP R/3 4.7 which provides functions for corporate services, operations, human resource management, financials, analytics, and self-services. The system had substantial functionality that Bevon was not necessarily going to use straightaway but they thought would be useful later as the company grew. Cevon implemented ES SyteLine 7 in their NZ factory as well as rolled out the platform to all its regions and subsidiaries around the globe for improving process efficiencies and collaboration. The modules implemented were finance, sales and distribution, production planning, materials management, and production management and have been live since 2007. The implementation resulted in visibility needed to achieve information flow and operational efficiencies.

6 Case Findings

In this section, the ES implementation, as well as aspects of organizational dispatch operations of the three cases are revealed. Practitioner insights are explained using interview transcripts as to how corporates manage distribution logistics and implement dispatch strategies using an ES and its information in a NZ business context. Key findings are shared next.

6.1 Aevon

One of the main complexities that befell in the distribution and logistics function at Aevon was when demand variations occurred. The operations and supply chain (O&SC) manager explained that it was common for customers to frequently change requirements which had an impact on flow of materials and shipment plans. A major contribution of Syteline has been in promptly assessing the demand variations as and when they occurred, re-planning the material flow, and optimising the value chain. In the shipping area, Aevon is using FedEx as their shipping company. FedEx provides a door-to-door service, picking up goods from Aevon's warehouse and delivering them to the customer's address. FedEx has supplied a software application that Aevon runs through a utility in SyteLine which is developed using application programming interface (API) to other partner systems. The operations and supply chain (O&SC) manager explained this process and its benefit. *"This utility exports our shipment data into the FedEx application and provides us the ability to get our database transmission. With this process our dispatch achieves much better speed in terms of passing the shipment information to the customers for tracking consignments. This was one of the key objectives set by the management team for achieving."* Aevon now plans to extend this further by having their shipping and tracking information in their customer relationship management (CRM) module so that their distributors can see the shipment status along with their order placement. These process changes have improved Aevon's shipping function to a large extent. SyteLine also provides the facility by which the details of dispatches can be e-mailed/e-faxed automatically by Aevon to the regions and customers. This has reduced the time and cost Aevon used to incur in collating information such as consignment and serial number details in separate spreadsheets and sending those spreadsheets to the customers. Some of the SyteLine queries and reports regularly used by the dispatch personnel are serial numbers query, warehouse query, item serial number report, due for shipping and ship to report, and consolidated invoicing.

6.2 Bevon

The earlier sudden demand changes by customers reduced as a result of real-time visibility and sharing of information through the integrated SAP system. Similarly, the requirement forecasts throughout the supply chain improved. This resulted in improved customer and supplier relationships and more streamlined supplies since Bevon was able to be more flexible and could respond better to change orders now in the manufacturing environment. Bevon has been able to synchronize prices and improve collaboration with customers with fast access to sales and invoice information. There has been a significant reduction in earlier disputes on invoices relating to prices and terms of business with improved communication. This has resulted in major behavioral changes within customers achieving new levels of trust in business relations. The shipping and dispatch processes have become streamlined with the integrated information after the introduction of SAP. The operations manager noted *"the dispatch staff now understand the shipping priorities and have the visibility on the goods available for shipping. They can proactively plan and execute the picking and shipping function as opposed to earlier having to wait for products to come in and then finding out where these were to ship. Although we are sometimes constrained in the availability of materials and physical products for dispatch, ES provides the analytical support to maximize value in the dispatch process".* The dispatch team now optimizes the product packaging with weight/volume considerations and consolidates destinations. This has improved the manpower utilization as well as achieved cost savings in the dispatch area that the company has been looking for. This has also made the management with freight forwarders easier as all the information and documentation is timely available for the shipping companies to arrange consignment pick-ups. The customer invoicing process has improved with the elimination of earlier errors such as mismatch in the physical dispatch quantity or serial numbers in the invoice data, bringing accuracy in the shipment and invoicing process. The communication of the shipment information to the customers has become a very simple process providing the speed and visibility that the customers wanted.

The most important process change implemented at Bevon is the integration of finance with the rest of the business. This was a major requirement of the company and one of the basic reasons for implementation of SAP. This change has enabled Bevon to have sales and customer-related data in a single database which could be drilled down to the transaction level. *"With the integration of company's financials, Auckland warehouse stocks, subsidiary stocks, and the receivables information, we now have an instant overall view of the real exceptions such as receivables exceeding a month's stock"*. The system has built-in alarms on stock piling, depletion, and provides aging information at the distribution center warehouses. Bevon staff can now track inventory within the various company stock locations such as inwards goods, distribution warehouses, and packaging through the SAP system. The raw material inventory is tracked by lot numbers and finished goods by serial numbers. After the goods are dispatched to the customer, the in-transit movement of the finished goods is tracked by serial numbers until the goods reach the final destination. "*With such controls in place, the accuracy of stock and visibility to all stakeholders has improved dramatically. In case of any shipment errors the transactions are traced back to explore and resolve any discrepancies. We have also established the process of regular cycle counts in the warehouse to improve the accuracy of on-hand stock.* The above controls through SAP, have led to improving inventory reliability and traceability in the warehouse.

6.3 Cevon

The dispatch process involves a picking list detailing orders expected to be shipped in the coming week. This is followed by the manual picking of products. The O&SC manager explained that the main process step is the customer order shipping. "*Here a very large number of serial numbers are involved. This was a tedious process with a lot of mismatch in the serial number processing earlier. After SL7, this process has become smooth with automated serial number control resolving the earlier mismatch issues."* SL7 incorporated any changes to order quantities or cancellations to provide the latest pick list. After the shipping is confirmed, the packing slip is generated by SL7. Other reports also generated include: (1) cover sheet (includes volume, weight, and number of cartons, which is e-mailed to the freight forwarder); (2) custom documents (which describe the contents of each box in the shipment); (3) shipping instruction documents (which contains all the consigner/consignee and freight information); and (4) documents based on regional requirements. The O&SC manager clarified that the delivery orders functionality in SL7 has combined the earlier disparate dispatch information such as bill-of-lading, consignment note, and customer order with its related documentation into one integrated delivery order system. This has helped the dispatch team to combine several customer orders into one shipment and produce delivery orders for freight forwarders with all the relevant information together, which has reduced costs and improved efficiency.

The O&SC manager further explained that there are a number of sub-processes that were not recorded prior to putting in this process. Earlier, the dispatch staff used to create separate spreadsheets for providing shipment information and details. The manual spreadsheets and databases together became another system that the dispatch staff had to maintain. There was also the chance of potential fraudulent behavior since the dispatch staff could send products using this external system out of the door. The delivery order functionality in SL7 has automated this process. During a Dun's audit [review by the Dun & Bradstreet auditors] to meet the SOX requirements, it was projected bringing all of this into SyteLine and eliminate the other systems that were being maintained in parallel, and the costs associated with them. Now, with the use of the delivery order functionality, Cevon has brought all of those disparate systems into a single system with better traceability for any future audit needs. *"If there is any concern of fraudulent activity such as a customer ringing up and complaining that they have not received full quantity, then that information is straightaway available from SyteLine. The information can be shared by 135 users rather than depend on any external system that could be manipulated and only shared by very few people. So, the data is retained, it is secure, it is available to many people."* Cevon believes that this will become better as they develop the process further and would be easier for the users as well. Cevon benefits from these systems since the new processes are more effective, easier to maintain, and better in terms of compliances. *"This is certainly a more efficient way of doing a logistics function", was the response from the O&SC manager.*

7 Discussion

Findings from the three cases reveal the management of distribution logistics and dispatch strategies using ESs and its information in NZ manufacturing organizations. Distribution logistics results are better achieved when the operational goals are clearly defined by the company management. In the three firms, the goals were aligned to the overall business strategy "where is the business going and why". All of the three companies had visibility into "what is required" since the availability of goods and dispatch priorities were streamlined through their ES. As regards "how it can be delivered", the companies could proactively plan and execute the picking and shipping function using their ES tools. The management with freight forwarders had become easier as all the information and documentation was made available timely for the shipping companies to arrange consignment pick-ups. Both, Bevon and Cevon reported optimization in their product packaging, manpower utilization, consolidation of destinations, which led to realization of substantial cost savings. Furthermore, they also achieved accuracy in their shipment and invoicing processes including improved delivery dates which enhanced relationships with their customers. Aevon could achieve better speed in passing of shipment information to their customers and tracking of consignments. Cevon enhanced integration with their disparate systems which not only helped in automating their dispatch process, but also improved process security. Although these firms were sometimes constrained with demand variations and availability of materials, the ES technology offered the support to maximize value in distribution logistics processes by increasing agility of the company to respond to such variations. In a world where enterprise software is becoming increasingly cloud-based, companies will be able to leverage performance advantages, for example by integrating more closely with their customers ordering and receiving processes. All three companies had ES support aligned to their dispatch function needs although, in case of Aevon the support was superior with integration to their freight forwarder's delivery system through an add-on software application. With this process Aveon's dispatch achieved better speed in terms of passing shipment information to their customers for tracking consignments. Furthermore, Aevon has a strategy to extend their delivery functionality in their CRM module to include their shipping and tracking information, so that their distributors can see the shipment status along with their order placement. These process changes will not only improve Aevon's shipping function but also lead to better speed, visibility and services to customers. These findings are consistent with the modified Neubert et al.'s (2011) model (Figure 2) that illustrates the association between logistics strategy in business and its related IT strategy and functional infrastructure.

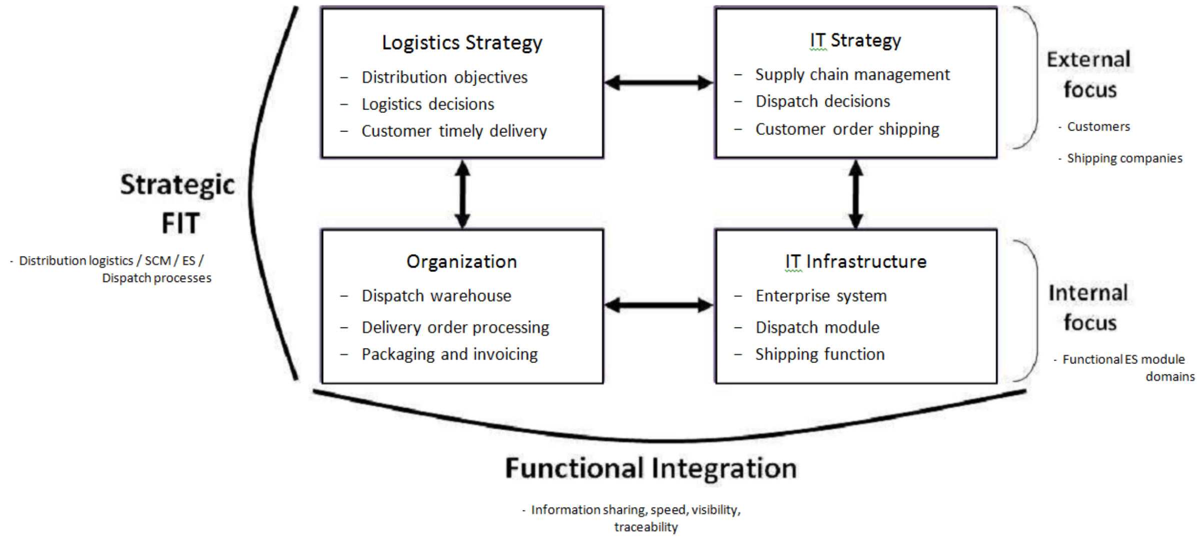

Figure 2: Strategic Alignment Model for Distribution Logistics, adapted from Neubert et al. (2011).

The adapted model for distribution logistics exhibits the importance of achieving strategic fitness and functional integration through alignment between logistics strategy, IT strategy, IT infrastructure and organization. From the study findings, the logistics strategy comprises a clear set of distribution objectives along with decision making capability to realize timely delivery goals. An emphasis on determination of clear goals is an important factor for ES implementation success (Plant et al. 2006). These objectives lead to deployment of relevant IT strategy that supports supply chain management processes enabling establishment of dispatch decisions to achieve customer order shipping goals. The IT infrastructure comprises tools such as ES technology that facilitates the implementation of the dispatch module that includes the shipping function. These tools in conjunction with the organizational infrastructure such as the dispatch warehouse that conducts operational functions such as order processing, packaging and invoicing, support the realization of logistics goals. The supply chain performance of the three companies was contingent on the fitment and strategic alignment between their business strategies and functional domains with both, an external as well as internal focus. The process of continuous improvement in the dynamic intra and inter-organizational alignment such as through on-going responses to demand variations achieved supply chain optimization over time, which is consistent with Neubert *et al.* (2011).

In answering the research question, how manufacturing organizations manage distribution logistics and implement dispatch strategies using an ES and its information in a NZ business context, the use of various ES functionalities and knowledge-based processes by the three firms emerged from this study. Organizations extract and analyze ES data, and apply human judgment and experience for executing shipments and deciding actions. The information is made available by the use of standard business analytics and ES reporting tools within the system. Organizations also use add-on applications integrated with their ESs as a method for automating processes and sharing information with stakeholders. These processes lead to providing transparency in distribution logistics and making strategic decisions that help in achieving the overall business objectives. An inter-case analysis of the ES benefits in distribution logistics from the three companies is presented in Table 1. Benefits such as response to demand variations, process improvements, automation and cost savings, inventory tracking and improved collaboration align with past literature (e.g., Ragowsky et al. 2008; Yang et al. 2004). Additionally, limitations in poor reporting procedures (Hawking et al. 2004) are overcome through the use of ES reporting tools in distribution logistics, as found in this study.

ES Benefits in Distribution Logistics	**Aevon**	**Bevon**	**Cevon**
Response to demand variations	SyteLine promptly assesses demand variations, re-plans material flow, and optimizes value chain	Earlier sudden demand changes reduced as a result of visibility and flexibility to change orders increased	SL7 incorporated any changes to order quantities or cancellations to provide the latest pick list
Use of reporting tools	Some SyteLine queries and reports regularly used are serial numbers query, warehouse query, item serial number report, due for shipping and ship to report, dispatch and invoicing reports.	Exceptions reporting such as “receivables exceeding a month’s stock”. SyteLine has built-in alarms on stock piling, depletion, and provides aging information at the distribution center warehouses	Pick list generation, cover sheet with product details, custom documents with content details of each box, shipping instructions, and documents based on regional requirements
Process improvements	Shipping function is improved via inter-, intra-integration with better visibility and tracking of information	Staff can proactively plan and execute the shipping function with streamlining of processes	New processes are efficient, easy to maintain, and better in terms of compliances
Automation, optimization, time and cost savings	Efficient shipping processes with automated information transmission to customers	Automated processes with built-in alarms, optimization of product packaging, and better manpower utilization	Automated serial number control and delivery order functionality
Tracking inventory	Dispatch achieves much better speed in terms of passing the shipment information to the customers for tracking consignments	Inventory is tracked by lot numbers and serial numbers. In case of any shipment errors the transactions are traced back to resolve discrepancies	With the delivery order function, all of the disparate systems are brought into a single system to provide better traceability
Improved collaboration	Integration with partners through FedEx application add-on using API	Price synchronization and fast access to sales and invoice information improved collaboration	Better information sharing has reduced customer complaints and improved relationships

Table 1. Cross-case Analysis of ES Benefits in Distribution Logistics

8 Conclusion

This study provides insights into the various ES practices organizations adopt for managing distribution logistics and dispatch processes. These processes include customer order shipping, invoicing, and processing of delivery orders. Organizations use ESs to streamline operations, share information, and realize strategic benefits. Managing distribution logistics can help improve product supply performance and build a company's return-on-investment; however, the use of such processes is limited to mature and sophisticated enterprises with a high level of strategic planning. For example, in this study Aevon had a strategy to extend their delivery functionality in their CRM module to allow distributors to see their shipment status and track orders. The reasons for firms to use less knowledge-leveraging processes in operations could be attributed to their organizational size and its related resource constraints, ES maturity, and the top management vision and style of managing the organization.

The study emphasizes that results in distribution logistics are better achieved when the operational goals are clearly defined by the management team and are aligned to the overall business strategy. All the three companies had ES support aligned to their dispatch function needs. These firms had created visibility on the dispatch requirements and availability of goods leading to efficient logistics planning. They could proactively execute their picking and shipping function accurately. The management with freight forwarders and customers had become easier as all of the information and documentation was made available timely through the ES reporting tools and business analytics for the shipping companies to arrange consignment pick-ups. The use of add-on applications integrated with ESs assisted in automating shipping processes and sharing of information with stakeholders. These processes led to providing transparency in distribution logistics and making strategic decisions that helped in achieving the overall business objectives. Any demand variations were effectively managed through real-time responses. Such dynamic and on-going intra and inter-organizational alignment achieved supply chain optimization over a period of time.

These findings are consistent with the revised Neubert et al.'s (2011) model (Figure 2), which demonstrates the importance of a clear logistics strategy aligned with the shipping and delivery objectives that underpin the dispatch requirements supported by deployment of ES tools and organizational infrastructure, which leads towards realization of goals. Therefore, a major contribution of this research is in the mapping of strategic alignment of ESs in a distribution logistics context using a theoretical framework with the identification of benefits. The paper provides significance in determining the impact of ESs on shipping out management practices and their drivers for success. Insights from ES practitioners from both large and medium-sized hi-tech organizations are discussed, which is a distinctive contribution.

Results from this study can be generalized to a larger population of global companies since the findings mostly conform across the three cases. However, the findings from this research are limited by the small sample size of three cases and the participants interviewed within these cases. Therefore, a larger sample of cases for empirical research is recommended in the future which could be applied to different organizational size and industry segments. It is also suggested that the revised Neubert et al.'s model be empirically tested with a larger sample as a future research direction.

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