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An Analysis of Realization of Supply Chain Systems Execution

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ABSTRACT: Supply Chain becomes very vital to any business that has high complexity in the business and has fast pace and very dynamically changing customer requirements. Since enterprises have realized that in the last decade or so, there are investing in their IT systems to bring the complexity into simplicity in managing their business processes. Being Supply Chain Systems (SCS) is one of the key elements in today's Supply Chain industry, it helps the businesses greatly in managing the inventory and providing visibility to all the business partners in the Supply chain. This research article explains the benefits realized by a Supply Chain organization in executing the SCS in their Supply Chain industry in an attempt to leverage this expertise to this industry. This article also details the latest developments in the SCS execution arena and how this SCS is helping their Supply Chain businesses by conducting a case study in a leading 3PL provider.

I. SUPPLY CHAIN

Supply Chain is a concept at an enterprise level to manage all the business entities in a single framework to provide better visibility of any business function to any stake holder at any time. There are many business functions or processes within the Supply Chain and it is the business or enterprise level decision to determine in choosing the modules or functions that need to be on the Supply Chain as it provides the greater flexibility. And, there are leaders now in the market in the IT applications in providing the seamless service to their customers on their Supply Chain portfolio.



Fig 1. The major entities in a Supply Chain

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The Supply chain concept itself is very broad and is applicable to any industry though it had evolved from the manufacturing field. Organizations have lately started understanding each of them in detail and applying them cautiously. And, when the business needs to manage their processes in the IT systems, the Supply Chain Systems (SCS) comes into picture.

II. SUPPLY CHAIN SYSTEM (SCS)

Supply Chain System (SCS) is a computer application system developed to manage the inventory at the Distribution Center and fulfill the customer requirements better, faster and cheaper thus providing the Operational benefits and better customer service. SCS can be categorized such as Tier-1, 2 and 3 depends upon the capabilities of the product and executing the right SCS would offer greater benefits to this business.

SCS benefits the Logistics business in many different ways and some of the key are; Reducing Operating Expenses, Increasing Inventory Visibility, Increased Security and importantly Increased Customer service and the business partners' relationship.

And, when a business model involves managing multiple parts or items, different locations and a number of business partners, the role of SCS in the Logistics business becomes very vital due to the nature of the business complexity and to manage the customers' expectations.

When it comes to SCSExecutions, there are many facets to it starting from standalone execution, integration and configuration etc and some of the key facets are attempted to be detailed out in this article.

A methodical approach in SCSExecution

Based on the case study conducted in this company on the SCSExecution area, it is seen that the company uses waterfall methodology as shown below. Each phase has its own activities and dependencies on others which are being completed as expected and also being monitored very closely.



Fig 2. Phases in SCSExecutions

The activities that are being performed on each of the phase are listed out below and managing these activities closely by all the stakeholders ensures the successful SCSExecutions, as per the study.

1. Initiate:
 - To kick off the project
 - To identify the stakeholders

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2. Plan:
 - Understanding the customer / business requirements
 - Designing the Supply chain processes & flows
 - Designing the IT solutions
3. Execute:
 - Configuration of IT SCS solutions
 - Development of EDI interfaces, Reporting, customer compliance requirements if any
 - Unit testing, Customer testing, Operations testing and Production Smoke testing
 - Migration of SCS and other IT solutions into Production system
4. Monitor:
 - Ensuring that the Production system is performing as expected
 - Fixing the production issues if any and engage the support group at go-live period
5. Hand-Off:
 - Preparing the project documentation and handing this off to the support group
 - Train the support group on the IT SCS solutions and processes
6. Close:
 - Close the project and Dissolve the project team
 - Establish the learnings from the execution

III. EDI INTEGRATION ON SCS EXECUTIONS

As pointed out earlier, Supply Chain System (SCS) is a computer application which is used to manage the customer inventory as per business and customer requirements. And, the successful integration of SCS with the Customer Host system or any other external systems has become very crucial for the Logistics and Supply Chain Providers to gain competitive advantage.

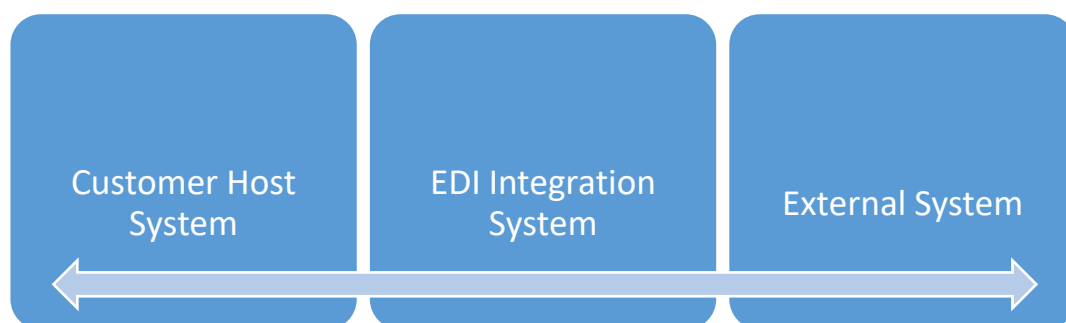


Fig 3. Systems Integration model

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EDI integration is helping enterprises to integrate the customer Host systems and/or any other external systems as needed for the seamless and real time data communication between them. But, there are some key factors that are contributing to the successful EDI integration on the SCSEXECUTIONS and they are listed below;

- [1] Maintaining the EDI standards –
 - There are standards in EDI in specific to an EDI format and version that all the parties agree to use. X12 standard is one of the commonly used format and version used in the industry and predominantly used in this enterprise too as part of the standardization being used in the EDI.
- [2] Ability to exchange the necessary/required data –
 - All the parties involved, the Customer, any other external parties and the Logistics service provider, are being able to use some latest technologies to cope-up with the very dynamic market condition and behavior.
 - Mode of communication such as AS2, FTP etc have been agreed upon based on the system capacity / capability on both sides.
- [3] Business Partners and their Service levels –
 - Identifying all the business partners involved for the electronic data exchange.
 - Determining the frequency and timings of the data exchange amongst all the partners.
- [4] System performance –
 - The EDI system should be capable of handling the volume and performance that is expected for the business.
 - System should be able to support the business with no or very minimal interruption.
- [5] System Expertise (EDI, SCSEXECUTIONS at different levels) -
 - It is very crucial to have the right expertise at all levels while designing and developing these interfaces, not only from EDI perspective but also from SCS / Host system and business perspective.

IV. A STUDY ON SCSEXECUTION

A case study has been conducted in a leading third party logistics and supply chain provider to understand the impact of SCSEXECUTIONS on their business. And, as per this provider, a specific distribution facility has been selected for this research as this facility is almost a Million Sq.Ft facility serving one of their leading fashion customers with Tier-1 SCS being executed and being the SCS is integrated with multiple external systems.

These results are based on the real-time project experiences and learnings, documentations and interviews with various operational leads at the specific site chosen for this research. This facility is serving domestic customers in the US, primarily Retail business for about 85% and 15% for eCom customers.

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- Systems Integration
 - This facility is using the latest integration technology API (Application Programming Interface) where SCS is integrated with the external system for effective and seamless communication.
 - Based on the analysis, it is found that there is an improvement of 32% in response in EDI volume transactions compared to the previously used legacy Integration technologies.
- SCS Templates
 - The company has been building and rolling out the industry specific template for their business for faster execution cycles. And, the necessary features will be added as add-ons to the template and deployed accordingly.
 - This facility had executed the SCS template that was built for the fashion sector and this has reduced the execution period by 21% compared against the same size deployment that did not have the SCS template. All the other infrastructure capabilities remain the same between those two projects.
- Pick-To-Light
 - Pick-To-Light is seen as a great benefit in the current and future state at this provider's executions.
 - This company at this facility is seen 27% improvements in speed and accuracy in picking after the Pick-T-Light has been executed.
 - Due to high investments needed for such technology deployments, the contract was signed with the customer for 7 years Supply chain service with this provider.
- Flexibility
 - The Tier-1 SCS that the company has been executing offers great flexibility in using the specific modules that they need to implement and use. This SCS product has multiple domains and modules and this company is choosing and deploying it only based on the customer requirements.
 - This provides the cost savings of about 29% in the execution cost for the company compared with the other SCS products that had executed previously.
- Yard Manager
 - The company has been using Yard Manager Module within the SCS that offers great benefits in managing the Trailers across the organization with no manual entry or tracking.
 - This provides the time savings of about 31% for the necessary resources in the company compared with the traditional manual work.
- Execution Life Cycle
 - The company has seen the decrease in the total execution life cycle period for about 9% due to the fact that it takes away the SCS product Evaluation process outside of the actual execution timeline.

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V. CONCLUSION

It is clearly seen from this research that there are some key benefits have been realized by the company by executing the Supply Chain Systems (SCS) thru an established Methodical approach and also thru seamless EDI integrations. This research study is expected to benefit the other supply chain service providers to understand them and evaluate them for their future SCS executions. Despite of having fast evolving technologies and methodologies available for the industry, it is necessary for the service provider to understand, evaluate and execute the right one for their business model to gain the competitive advantage in the market. This research can be extended to some of the other factors in SCS executions and also to extend this to multi-tier SCS solutions and with its different business solutions to understand the impact of SCS executions on the Supply Chain business to have the broader expertise.

REFERENCES

- [1] C.Nagarajan and M.Madheswaran - 'Stability Analysis of Series Parallel Resonant Converter with Fuzzy Logic Controller Using State Space Techniques'- *Electric Power Components and Systems*, Vol.39 (8), pp.780-793, May 2011
- [2] E Geetha, C Nagarajan, "Induction Motor Fault Detection and Classification Using Current Signature Analysis Technique", 2018 Conference on Emerging Devices and Smart Systems (ICEDSS), 2nd and 3rd March 2018, organized by mahendra Engineering College, Mallasamudram, PP. 48-52,2018
- [3] C. Nagarajan, M.Madheswaran and D.Ramasubramanian- 'Development of DSP based Robust Control Method for General Resonant Converter Topologies using Transfer Function Model'- *Acta Electrotechnica et Informatica Journal* , Vol.13 (2), pp.18-31, April-June.2013
- [4] Bipra Gorai, Jana RK, Premchand (2003) Characteristics and utilisation of copper slag - a review. *Resources, Conservation and Recycling* 39, 299/313.
- [5] Caijun Shi, Jueshi Qian (2000) High performance cementing materials from industrial slags — a review, *Resources, Conservation and Recycling* 29, 195– 207.
- [6] Shi C, Krivenko PV, Roy D, (2006), *Alkali-activated Cements and Concretes*. Taylor & Francis, Abingdon, UK.
- [7] Mithun BM, Narasimhan MC, (2015), Performance of alkali activated slag concrete mixes incorporating copper slag as fine aggregate, 1-8.
- [8] DOI:<http://dx.doi.org/10.1016/j.jclepro.2015.06.026>.
- [9] Caijun Shi, Christian Meyer, Ali Behnood, (2008), Utilization of copper slag in cement and concrete, *Resources, Conservation and Recycling* 52, 1115–1120.
- [10] Ambily PS, Umarani C, Ravisankar K, Prabhat Ranjan Prem, Bharatkumar BH, Nagesh
- [11] R. Iyer, (2015), Studies on ultra high performance concrete incorporating copper slag as fine aggregate, *Construction and Building Materials* 77, 233–240.
- [12] Ayano T, Kuramoto O, Sakata K, (2000) Concrete with copper slag as fine aggregate. *J Soc Mater Sci Jpn*, 49, 1097–102.