
1 INTRODUCTION

1.1 OBJECTIVE OF STUDY

A look at the balance sheet of most manufacturing companies reveals that the largest financial assets are in Plant, Property and Equipment (PPE), followed closely by raw materials and finished goods inventory [Harrold, 1999]. These three balance sheet items are part of a sequence of events that buy and move raw materials, manufacture a product, store it, and sell it to the customer. This sequence is referred to as the supply chain. In the present dynamic world conditions, the ability to respond more quickly to changing market conditions (forces) than your competitors may be the difference between survival and extinction. Bringing a new product to the market, increasing customer service and optimising revenue requires a good understanding of the supply chain. It's therefore not surprising that supply chain management has become the number one strategic priority for manufacturing engineers and executives [Valdero White Paper, 2001].

Enterprise asset management is a discipline that focuses on improving the Return On Investment (ROI) and Return On Assets (ROA) of capital-intensive assets through their effective and efficient management. It is a specialist area requiring skills in the field of engineering and maintenance.

Supply chain management appears to be failing in its core mission of helping manufacturers with capital-intensive assets. The reasons? Well, the term "supply chain" is in itself a bad term as it implies linearity. The market has stopped thinking of the supply chain as a simplified series of events to buy, move, make, store, and sell. It's actually a highly complex network of related supply chains required to manufacture a finished product [Hoffman and Sarwar, 2001]. It is for this reason that the a company called DNA Enterprise Asset Management, hereafter referred to as DNA EAM has identified two main supply chains. The first supply chain supports the manufacture process and is called the Direct Supply Chain. The second supply chain supports the effective and efficient management of assets and is referred to as the Indirect Supply Chain. The seemingly unrelated discipline of enterprise asset management, it is now recognised, plays an important role within the indirect supply chain. It's a confusing, loosely integrated, set of disciplines that presently remain unconnected in full. For these reasons, the purpose of this thesis is to:

- Provide an understanding of the different supply chains for asset intensive organisations and the way they relate to one another through synergies and differences within the manufacturing environment.
- Create an integrated enterprise asset management supply chain model (EAM SC) and establish asset management as the first step in the indirect supply chain.

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- Proof that the integrated EAM SC model works, is accepted in industry and has a commercial value when structured into business model.

1.2 SCOPE OF STUDY

The disciplines of supply chain, supply chain management and enterprise asset management are specialist areas in their own right. They command respect due to the sheer volume of information available in the public domain, the knowledge, and hands-on experience required to make a success in any one of them. This study provides a brief overview of each discipline to inform and educate the reader. Selective overviews are given in support of the main themes of the direct and indirect supply chains, and the integration of asset management with the indirect supply chain.

This study focuses on the enterprise asset management supply chain and the links that make integration possible. It also seeks to strike a balance between theory, practice and commercialisation. The theory looks at the fundamentals behind integration and the changes needed in enterprise asset and supply chain management to optimise the integrated model.

The study further translates theory into a commercial value proposition through the features and benefits of integrating asset management with manufacturing, sourcing and procurement, logistics, and inventory and warehousing. A case study and a business model is presented in support of the integrated supply chain model and value proposition. The case study is presented to demonstrate the principles of the integrated model. A business application is used to demonstrate the application and commercial viability.

This study follows a high level approach to the integration of asset management and the supply chain. The purpose is not to focus on the related supply chain functions of inventory management, sourcing and procurement, production and logistics or any optimisation techniques or to document them in detail. The only exception is asset management where the author has used his discretion to document relevant information needed to support his arguments or point of view.

1.3 MOTIVATION FOR STUDY

Supply chain management is not a passing fad but rather an evolution in the operations of services. What is clear is that business is outstripping the ability of supply chain management technology to keep up [Hoffman and Sarwar, 2001]. How a manager handles his company's supply chain will determine if its products or services will make a profit in the marketplace. There is a serious lack of theoretical work, knowledge and research in the field of SCM to assist managers [Croom, Romano and Giannakis, 2000]. It is crucial that today's managers obtain a full appreciation of what supply chain management is, and how it can be implemented successfully.

A study of the literature will show that there have been few studies on the topic of the integrated EAM SC model. The review has shown that the integrated solution is recognised as the next step in which to gain further understanding and control of the supply chain. There has also been no recommendation on how to achieve integration. This study sets out to develop and document such an integrated solution to assist managers in bridging the divide between Enterprise Asset Management and the Indirect Supply Chain. There's no end to the supply chain initiative and evolution. The writer believes that within several years this study will become a baseline and perhaps a reference document as the SC fraternity accepts and takes responsibility for the widening boundaries of the supply chain domain.

1.4 OUTLINE OF CHAPTERS

The study consists of 11 chapters including references. In brief the study includes an overview, a derived integrated supply chain model, optimisation of it, features and benefits, and implementation of it. A case study and business application demonstrate the principles, value proposition, and commercial application of the integrated supply chain model. The main subjects of the chapters are:

- Chapter 1 - An introduction
- Chapter 2 - An overview of the supply chain
- Chapter 3 - An overview of enterprise asset management
- Chapter 4 - The integrated enterprise asset management supply chain (EAM SC) model
- Chapter 5 - How to optimise the EAM SC model
- Chapter 6 - A discussion on the features and benefits of the EAM SC model
- Chapter 7 - How DNA EAM implements the EAM SC model
- Chapter 8 - A case study that used the indirect supply chain to increase the return on investment of assets
- Chapter 9 - The commercial application of the integrated supply chain model in small and medium businesses
- Chapter 10 - Closure and
- Chapter 11 - References used in this study