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Empirical Investigation of E-Supply Chain Management Experience in North American Electronic Manufacturing Services

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INTRODUCTION

The article examines the effect of E-Supply Chain Management Systems in the North American electronics manufacturing services industry. A causal and descriptive research study was conducted based on a survey applied to thirty six individuals in EMS firms in order to determine the impact of e-SCM on their key supply chain operations. Results of the research revealed that e-SCM had a positive effect in the EMS industry as these showed that the profits of the firm increased and internal communications were improved due to the implementation of e-SCM. The research also showed that e-SCMs have many technical issues such as problems with process automation and transmission of supply chain data, e-procurement effectiveness, integration with existing systems and the monitoring of inventory systems and purchasing process. Several recommendations are made to overcome these challenges including employee training and re-engineering of business processes for better system integration.

BACKGROUND

The Electronic Manufacturing Services (EMS) suppliers are used by many companies as a strategic way to reduce time to market, decrease costs, improve quality, and improve overall customer satisfaction. Many manufacturers are developing closer relationships with their suppliers by using E-Supply Chain Management Systems (e-SCM) (Valverde & Talla 2012). This business-to-business approach not only provides the lenience of exchange in information, but also allows industries such as EMS to increase the accuracy and efficiency of business transactions processing.

The main purpose of this research is to investigate the following research question: Did e-SCM impact positively efficiency, satisfaction, quality and performance of North American EMS industry? This study is of significance to the EMS industry as it would provide a different view on the positive effects of e-SCM to its supply chain.

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In the first stage of the study, a comprehensive literature review will isolate the body of knowledge available in E-business for EMS and identify any additional information gaps (Perry, 1998). Identified information gaps will be documented as open research issues (Yin, 1994).

After a literature review, the research methodology will be justified and explained. The results of the study will presented and analyzed in order to address the research objective. Finally, recommendations for improvement to the implementation of e-SCM strategies in the EMS industry will be documented.

This study is only limited to North American manufacturing industries in the EMS. This study will only conduct its research within those concerned in the industries. The outcome of this study will be from the primary data gathered from the result of the questionnaire survey and interview that will be conducted by the researcher. The conclusion and recommendation will only apply to EMS manufacturing industries that engage in e-SCM and those industries, which plan to engage in the online field sometime in the near future.

LITERATURE REVIEW

The literature review will start with an overview of the EMS industry, later the effect of Information Technology (IT) in the Supply Change Management will be examined and its impact in the EMS business model will be discussed. The literature review will end by outlining some key considerations with regards to platform security.

The Electronic Manufacturing Services (EMS) industry started over 30 years ago when companies were formed to manufacture designs created by governmental agencies such as the Department of Defense (DOD) and NASA. During the 1980s, a handful of contract manufacturing companies or *board stuffers* were formed each year. Many of these companies started with one or two Surface Mount Technology or SMT lines, accepting contracts from companies that had an overflow of work (ILO 2000, 2011).

To this end, SCM has emerged as a key competitive factor and companies such as Dell and Cisco have shown the economic power of a well-run supply chain. The pursuit of supply chain prowess has created a window of opportunity for EMS companies to move up the value-chain and beyond a simple manufacturing arm for customers.

We would argue, however, that many of the required supply-chain optimization skills are outside the realm of expertise of most high-tech companies and many of their supply-chain management results in shorter time-to-market cycles, reduced manufacturing cost, more competitive pricing power, and optimal use of capital. The competitive advantages are tied in with the essential long-term opportunity for EMS companies. Two major change agents are impacting the supply chain today. First is the Internet and second is the emergence of the EMS industry as a viable and attractive partner in supply-chain management.

The internet and IT have important effects in the modern supply chain management. The most import according to Simchi-Levi et al. (2003), the objectives of e-SCM are:

1. Providing information availability and visibility.
2. Enabling single point of contact of data.
3. Allowing decisions based on total supply chain information.
4. Enabling collaboration with supply chain partners.

Hua and Cong, 2011) define e-SCM as the management in all the processes in the entire supply chain, such as planning and forecasting, procurement, inventory, production, logistics, sales and information and