

Use of Information & Communication Technology Applications in Supply Chain Management: The Case of Small and Medium Scale Manufacturing Enterprises in Sri Lanka

Jayani I. Sudusinghe

University of Moratuwa, Sri Lanka

Nishal A. Samarasekera

University of Moratuwa, Sri Lanka

1. Introduction

Small and Medium scale Enterprises (SMEs) in Sri Lanka play a major role in the Sri Lankan economy. As per the Sri Lankan government statistics, around 80% of businesses come under the category of SMEs and contribute to over 50% of the Sri Lankan Gross Domestic Production (GDP). These SMEs belong to different sectors such as agriculture, manufacturing, construction and services. In the manufacturing sector, 96% of industrial units are SMEs.

With the use of proper supply chain management (SCM), manufacturing SMEs can survive market conditions and compete even with large scale manufacturing companies. Use of Information and Communication Technology (ICT) applications help companies to execute the SCM strategy more effectively. However, the use of ICT applications in the SCM among manufacturing SMEs is an area which needs attention in the Sri Lankan context. Suitable ICT applications can transform the traditional SCM function to gain a distinct edge over competitors. Therefore, this research identifies to which extent manufacturing SMEs are currently using ICT applications in the SCM and, furthermore, explores the main reasons for the lack of ICT application usage in SCM, providing suggestions to improve this situation.

2. Research Methodology

The data collection segment of this research was done by conducting a survey questionnaire consisting of fifteen questions. The survey was done on a sample size of thirty-two manufacturing SMEs in Sri Lanka. As there was no specific definition of manufacturing SMEs in Sri Lanka, any company producing a tangible product with an annual turnover less than Rupees 600 million and employing less than fifty people were considered as manufacturing SMEs. This definition was formed based on two definitions given by the Central Bank of Sri Lanka (2012) and the

Department of Small Industries in Sri Lanka (2002). The collected data were analysed using descriptive statistical testing and hypothetical testing methods. Furthermore, an extensive literature survey was carried out to support the findings from the survey.

3. Findings

As per the research findings, 74% of the manufacturing SMEs currently use non-ICT related methods to communicate with people within the organisation. 88% of manufacturing SMEs use face-to-face meetings for internal communication purposes, while the use of telephone and written documents are 78% and 69% respectively. Electronic mail (e-mail) is used only by 53% of the companies for internal communication purposes. Video conferencing and intranet use is very rare in these SMEs. When it comes to communication with external parties, almost all the companies use telephones. But e-mail is used by 78% of companies as an ICT related external communication mode compared to all other traditional modes.

When it comes to the availability of SCM functions in manufacturing SMEs, reverse logistics is not available in 25% of the SMEs, making it the least available function of all SCM functions. The second least available function is inbound transportation which is not available in 16% of all SMEs. Furthermore, a majority of the SCM functions such as demand planning, procurement, material handling and warehouse management, order management, manufacturing, customer relationship management, and sales and marketing are based on a mix of both paper and appropriate ICT applications. Especially, the logistics related functions are mainly based on paper work. When the overall SCM function is considered, 49% of the manufacturing SMEs are more paper-based than ICT application-based, while only 25% of the companies are more ICT application-based. When it comes to online banking, 69% of the manufacturing SMEs use online banking facilities but their usage frequency is not consistent. 66% of the manufacturing SMEs maintain a website for their company, but only 3% of companies use it for electronic commerce (e-commerce) purposes. Although 47% of the manufacturing SMEs are not using any type of social media for e-commerce purposes, 50% of the manufacturing SMEs manage an official Facebook page as the most popular social media channel.

High maintenance costs associated with the ICT applications is a major reason for manufacturing SMEs to use less ICT applications in the SCM function since most of the available ICT applications are sophisticated. As these SMEs are recruiting skilled labour, they do not incur high training costs in implementing ICT applications. With the high computer literacy level of the top management, implementation of ICT applications cannot be a major difficulty leading to the lack

of use of ICT applications. Due to the low prices of ICT products, the implementation of ICT applications in SCM cannot be a barrier for these organisations.

In order to improve the use of ICT in SCM, customised ICT applications which are suitable for use in SMEs need to be introduced. Furthermore, steps should be taken to improve the SCM domain knowledge in the manufacturing SMEs, while making them realise the importance and benefits that can be achieved in their organisations by using ICT applications in the SCM functions. As SMEs are focusing on recruiting skilled workers rather than training them further, the government needs to provide better knowledge and training to these possible employees beforehand through vocational trainings, etc. With the proper drive from the top management, implementation of ICT can be done even by outsourcing the ICT services to an affordable service provider.

4. Conclusion

In conclusion, the use of ICT applications in the SCM of manufacturing SMEs is inadequate. Therefore, Sri Lankan manufacturing SMEs are more into traditional paper-based SCM. Furthermore, improving the knowledge of good practices in SCM is an area that needs to be paid attention in order to improve the use of ICT applications in manufacturing SMEs. With the support of the Government and other relevant stakeholders, improvements to SCM in manufacturing SMEs can be achieved upon selecting the use of suitable ICT applications.

Keywords: *Small & Medium scale Manufacturing Enterprises, Information & Communication Technology, Supply Chain Management, Sri Lanka*