World Applied Sciences Journal 17 (5): 617-621, 2012
ISSN 1818-4952

A Research Frame Work on Role of Information in Educational Supply Chain

M. Murali Krishna and K. Venkata Subbiah

Department of Mechanical Engineering, Andhra University, Visakhapatnam, Andhra Pradesh, India

Abstract: This paper addresses educational supply chain model and the role of information in educational supply chain as major constituents in the educational supply chain management for the educational organization / universities. This research model furnishes stakeholders of the educational supply chain with appropriate information to review and appraise their performance towards fulfillment of ultimate goals i.e. educational supply chain profitability.

Key words: Educational supply chain model · Information sharing aspects · Information content · Information quality

INTRODUCTION

Today, different types of information like point of sales data, inventory, forecast data and sales trends are being shared among supply chain partners quickly in manufacturing organizations. Quick response (QR), efficient consumer response (ECR), vendor managed inventory (VMI),collaborative procurement (CPR), radio frequency and identification (RFID) and collaborative planning forecasting and replenishment (CPFR) are built on the principles of information sharing, directly affects the performance of the firms [1, 2]. These developments in the real world have motivated the academic community to explore the benefits of information sharing.

Organizations such as educational institutes / universities have long recognized the critical role of supply chain management and the need to effectively manage the flow of raw materials (students), money and information across the educational supply chain. Recently advances in technology has seen a growing trend for educational organizations to create external linkages based on the sharing of information in order to gain increased visibility of their customers (parents/family) and/or suppliers (schools). Elaine M. O'Brien [3] has examined the concept of adapting industry models to higher education with specific reference to the idea of an educational supply chain, in which employers, students, university staff, schools and colleges work in collaboration to ensure that the needs of all are satisfied.

With rapid development of communication technology, the internet has become ubiquitous and instantaneously accessible. The proliferation of the internet makes it the most cost effective means of driving supply chain integration and information sharing. A web portal provides a secure, tailored way to deliver the right information to the right user at the right time [4].

Jack *et al*. [5] explored the benefits of integrating and coordinating supply chain partners have been well recognized in many industries. Haghighat [6] has discussed the two aspects of information technologies that can provide better coordination between members. These technologies facilitate information accessibility in order to accurate programming and decision making. And also eliminates hierarchies and improve customer services. In the educational organization/Universities, supply chain integration is technically challenging due to high fragmentation of the industry. Information, applications and services are loosely distributed among participants with a vide range of hardware and software capabilities. The temporary nature of constructive policies in the educational organizations often restricts the information sharing. Noroozi [7] has evaluated the three educational sections based on ten different criteria by achieving the opinion of information technology experts in the field of education.

Coyle *et al*. [8] and Simchi *et al*. [9] had identified several collaboration initiatives in improving supply chain performance. These aim at increasing efficiency and

Corresponding Author: M. Murali Krishna, Department of Mechanical Engineering, Andhra University, Visakhapatnam, Andhra Pradesh, India. Tel: +91-9329666601.

effectiveness through integration of cross - enterprise activities and processes. Collaboration may share large investments, pool risks and share resources causing growth and return on investments. Guglar and Dunning [10] and Mentzer *et al*. [11] defined supply chain collaboration as integrating all partners into one virtual network with common goals. Widen-Wulff and Ginmann, [12] had described the increasing complexity of organizations and the scale of information activities requires greater cooperation between enterprises. Organizational culture, the effect of trust, team work and reward systems etc. can also help archive a positive exchange of information. Antonio [13] has conducted an in depth case study approach to implement the philosophy of supply chain management in the current higher education environment, so as to suggest innovative management ideas in higher education management.

Conceptual Research Model: The aim of every educational supply chain should be to maximize the overall value generated. The value of an ESC generates is the difference between what the final product (graduated student) is worth to the consumer (society) and the cost the ESC incurs in filling the customer's request/need. For most commercial educational supply chains, value will be strongly correlated with ESC profitability and the difference between the revenue generated from the customers (parents) and the overall cost across the ESC. Having defined the success of an ESC in terms of educational supply chain profitability, the next logical step is to look for resources of a revenue and cost. For any ESC, there is only one source of revenue i.e. the customer (parents/family).

Consider an educational organization as a manufacturer, parents/family is the customers and graduated students are the finished products (Figure 1). The raw materials are converted into finished products i.e., wards of parents/family are converted into graduated students with quality education. The exploratory research provides educational management a new dimension to understand how supply chain management contributes to successful educational organization operations.

Information Sharing: The information sharing model in educational supply chain (Figure 2) enhances most supply chain initiatives and effective information sharing between supply chain partners.

The Three Aspects of Information Sharing Are:

- Information sharing support technology
- Information content and
- Information quality

Information Sharing Support Technology: This research focuses on educational organization's environment; information sharing support technology focuses on advanced technologies and emerging educational supply chain management (ESC) IT applications. The ESCM IT applications can be categorized into three categories based on the length of ESC planning periods. The first category is ESC execution which focuses on short term daily activities. The second category is ESC planning which focuses on medium to long term activities. The third category is ESC execution management, which bridges the first two categories as a supporting tool.

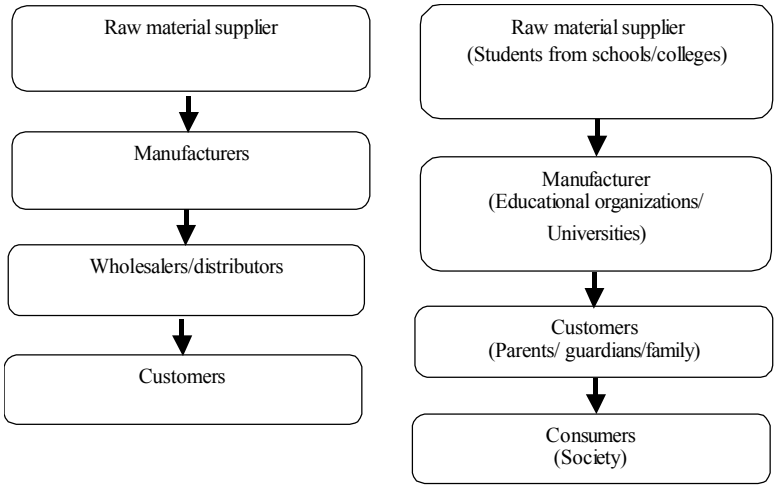

Fig. 1: The Basic Supply chain, (Chopra and Meindl [14]) Educational supply chain (ESC) model

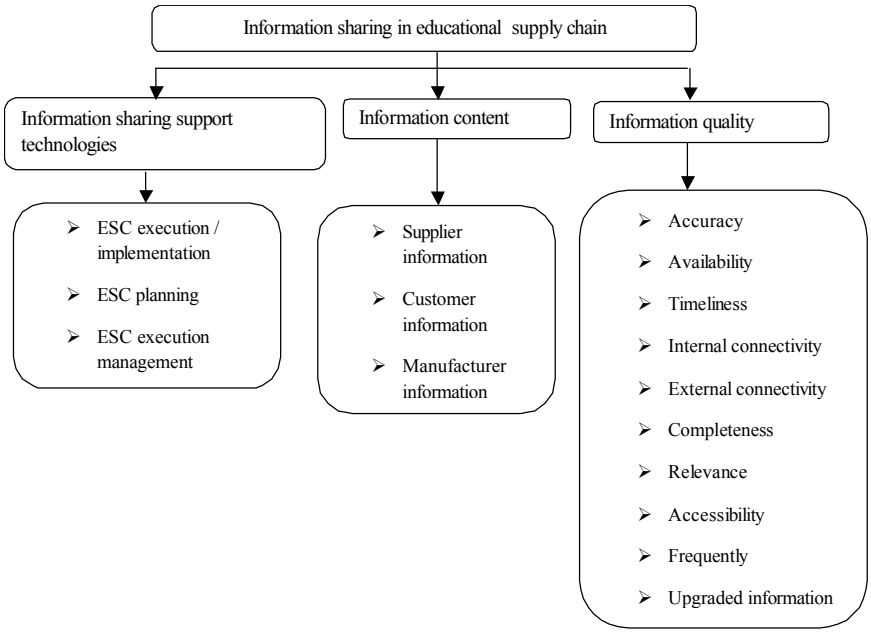

Fig. 2: Information sharing model in educational supply chain

Information Content: Many managers mistakenly concentrate their information sharing on only hardware and software, ignoring the decision making in the information sharing process [15]. High performance educational organization had a higher percentage of information exchanged via EDI with customers (parents/family) and suppliers (schools/colleges).

Information content can be classified as:

Educational supplier information

- Suppliers of the students (school/college)
- Suppliers of the faculty (other universities)
- Self funding students
- Source of fund - family
- Government and private organizations (scholarships)
- Suppliers of assets or equipment
- Suppliers of educational materials

Educational manufacturer information

- Universities/ Educational organizations

Customer information

- Graduates with desirable quality
- Family (parents, siblings, relatives etc.
- Employers of government and private organizations.

This study suggests to measure two types of information flows i.e. the information that manufacturers share with their customers and the information that customers share with their manufacturers.

Information Quality: Information quality measures the degree to which the information exchanged between educational organizations meet the needs of the organization. The information quality can be identified by the following parameters.

- Accuracy
- Availability
- Timeliness
- Internal connectivity
- External connectivity
- Completeness
- Relevance
- Accessibility and
- Frequently updated information

To measure the parameters information quality, customer information, manufacturer information, information sharing support technology, information sharing and ESC practice, the authors proposed a questionnaire to enhance ESC performance.

Q1: Assess the capability of educational organization's information system?

Q2: What is the period of time that the customer electronically provides your organization with its information?

Q3: What is the period of time that your organization electronically provides your customer with your organization's information?

Q4: What is the percentage of information that your customer provides your organization electronically format?

Q5: What is the percentage of information that your organization provides your customer electronically?

Q6: What is the percentage of investment your organization has to use information system support technologies including both hardware and software?

Effective education supply chain practices and information sharing play different roles in managing ESC. Implementing effective information sharing or effective educational supply chain practices improve ESC performance.

CONCLUSION

The outcome of information sharing is visibility which then could lead to an improved operational performance of educational supply chain. The authors investigated to shed the lights on educational supply chain components and how they may be operated to achieve the goals. This research framework depicts the role of information and its contribution to enhance the value of commercial educational supply chain. When information shared it is often possible to reorganize resources so that all relevant data is captured at the point where it can be used for decision. Training and development resources that are available within the educational supply chain are enhanced when information is shared. Sharing of information enables standardization of educational supply chain processes, improvement in the level of system integration and improvement in the quality of material and information flow. Present research work will help customers (parents/family), teacher and overall quality growth of student and hence it will also share hands in the development of nation as whole. It will also help to the educational entrepreneur to attract customers (parents) for opt their organization/institution as a carrier assurance with quality.

REFERENCES

1. Chung W.W.C. and S.W.F. Leung, 2005. Collaborative planning, forecasting and replenishment: a case study in copper clad laminate industry. Production Planning and Control, 16(6): 563-574.
2. Holweg, M., S. Disney, J. Holmstorm and J. Smaros, 2005. Supply chain collaboration: making sense of the strategy continuum. European Management J., 23(2): 170-181.
3. Elaine, M. O'Brien and Kenneth R. Deans, 1996. Educational supply chain: a tool for strategic planning in tertiary education. Marketing Intelligence and Planning, 14(2): 33-40.
4. Lee, H.S. and S. Whang, 2005. Supply chain integration over the internet. Supply chain management: models, Applications and Research Directions, 62: 3-17.
5. Jack, C.P. Cheng, Kincho H. Law, Hans Bjornsson, Albert Jones and Ram Sriram, 2010. A service oriented frame work for construction supply chain integration. Automation in Construction, 19: 245-260.
6. Haghighat, F., 2008. The impact of information technology on coordination mechanisms of supply chain. World Applied Sciences Journal, IDOSI Publications, 3(2): 74-81.
7. Noroozi, M., 2009. Considering and choosing the best applied methods of information technology in educating process by using decision making techniques. World Applied Sciences Journal, IDOSI Publications, 6(1): 28-31.
8. Coyle, J.J., E.J. Bardi and C.J. Langley Jr., 2003. The management of business logistics: A supply chain perspective. Thompson learning, OH.
9. Simchi-levi, D., P. Kaminsky and E. Simchi-levi, 2003. Designing and managing the supply chain: concepts, strategy and case studies. Mc Graw-Hill, New York.
10. Guglar P. and J. Dunning, 1993. Technology based cross-border alliances, In: Alliances R. Culpin, (Eds), multinational strategic. Howarth Press Inc., Binghampton, New York.
11. Mentzer, J.T., J. Foggin and S. Golicie, 2000. Collaboration: the enablers, impediments and benefits. Supply Chain Management Review, pp: 52-58.
12. Widen-Wulff, G. and M. Ginmann, 2004. Explaining knowledge sharing in organizations through the dimensions of social capital. J. Information Sci., 30(5): 448-458.

13. Antonio K.W. Lau, 2007. Educational supply chain management: a case study, On the Horizon, Emerald Group Publishing Limited, 15(1): 15-27.
14. Chopra, S. and P. Meindl, 2001. Supply Chain Management. Prentice Hall, NJ.
15. Davenport, T., 1994. Saving IT's soul: human centered information management. Harward Business Review, 72(2): 119-131.