

The Library Supply Chain Model: A Brief Review

A. K. Mahbubul Hye^{#1}, Engku M. Nazri^{*2}, Nurakmal Ahmad Mustaffa^{#3}
 #* *Institute of Strategic Industrial Decision Modeling, School of Quantitative Sciences,
 Universiti Utara Malaysia, Malaysia.*

¹thofa8@yahoo1.com

³ nurakmal@uum.edu.my

²enazri@uum.edu.my

Abstract- The focus of this paper is to review previous works on library supply chain model towards recommendations for a framework on how to construct a library supply chain model. Thus, the aspects that relate to the objective of how to model the library supply chain were reviewed. These include all the important literature to support the required information for the library supply chain model such as the members/entities of a library supply chain model, the structural dimensions of a library chain network, and the different types of process links across a library supply chain. Finally, we also described several specific studies involving specific entities inside the library supply chain. This study aims to do critical review of library's management and library supply chain. This study also highlights the functions and components that needs to enhance the library supply chain management. Finally, we analysis the library supply chain models to do excellent library management facility.

Keywords— Supply chain, University Library, Modelling, Framework

1. Introduction

Supply Chain is a set of entities (e.g. organizations or individuals) directly involved in the supply and distribution flows of goods, services, finances, and information from a source to a destination (customer) [1]. It is very much an extended concept of an organisation which adds value to its products or services and delivers them to its customers [2]. Supply chain concept helps organizations to compete in the dynamic global market [3]. The goal of supply chain is to integrate activities across and within organizations for providing the customer value [4]. Research in supply chain is required for numerous reasons, i.e., producing value results, enlightening processes, growing profits, better outsourcing, enhancing customer satisfaction, growing rank of E-commerce, increasing globalization, and dealing with the difficulty of supply chains [1], [5].

Naturally, supply chains may consist of manufacturers or service providers receiving inputs from tiers of suppliers, processing these inputs, and delivering them to layers of customers [6]. However, most research studies on supply chain are for manufacturing industries [7], [8], [10], [63]. There are also some researchers which directed their works toward the service industries [64], [11], [12], [13]. Some of the examples are:

- The structure of third-party payment services, which includes three basic structural components that are e-banks, third party payment companies and e-commerce websites [14].
- The tourism supply chain which includes tourists, tour operators, and service suppliers and health-care supply chain consisting of patients, health-care centers, and relevant suppliers [15]. The human resource service supply chain that includes consultants, administrative service providers, and technology enablers and the education supply chain with the members consisting of suppliers (education and research suppliers), service provider (universities), and customers (education customers and research customers) [16].
- Producer services supply chain structure with three basic components which are the direct service contractors, the indirect service providers, and the service demanders [17].

Another service provider is libraries. Libraries today are learning to do more with less, prompting them to consider new ways of managing work. For instance, library scarce resources in many cases call for radical solutions that can include a restructuring of the conventional vertical organization of the library. Library success and viability also depend on management's ability to co-ordinate the network of relationships and processes that link the library's internal and external supply chain

members with an aim to provide the desired services to the library members. Like profit-making enterprises, the key to a library's sustainable effectiveness lies in delivering high quality products, services and information which satisfy library members [18]. Management needs to understand what library users require, as well as the processes in transforming information content into valued information resources and associated services. Over the past twenty years, supply chain research and practice have provided a successful set of tools for organizations seeking to reduce costs while improving quality and service [19]. These tools perhaps can be applied for the management of libraries.

2. Methodology used for the review

In this section we describe the detail design that we used to review the articles and analysis them.

3. Literature on library supply chain

Libraries can be seen as warehouses for information and when the information world changes, so must the libraries [20]. To date, only a few papers were found to be relevant to the library supply chain as shown in Table 1.

Table 1. Studies on library-related supply chain

| Authors | What is being studied (Library supply chain model or management or analysis) |
|-------------------------------|--|
| Cornish [21] | Described information flow supply chain through libraries. |
| Ball & Wright [22], Ball [23] | Described the primary library supply chain processes. |
| Katsirikou [24] | Proposed a library supply chain model. |
| Wathen [25] | Described interlibrary loan function by considering academic library supply chain. |
| Kress and Wisner [19] | Designed the Lied library supply chain framework. |

3.1 Types of library

Early libraries were often part of religious institutions [62]. Many private libraries and royal libraries also existed in ancient times. However, libraries are now divided into four major types as shown in Table 2 [62]:

Table 2. Types of library

| Type of library | Patrons with service privileges |
|-----------------|---|
| Academic | Students, faculty, non-academic and administrative staff, alumni; General public often pay for a fee for borrowing privileges |
| Public | All residents of the community; Residents |

| | |
|---------|---|
| | of other communities may have to pay a fee to borrow materials |
| School | Students, teachers, administration, staff; Some schools also allow parents, students from other schools and the general public to borrow |
| Special | Most often only employees of the company or institution; Some government libraries or libraries in social services agencies or societies lend to the general public |

In addition, there is an emerging fifth type of library, the "virtual" or "electronic library". This type of library is not yet "officially" included in this list of libraries.

We have found researcher that elaborate information flow of library supply chain through libraries. Apart from that another research did not mention any type for library when a library supply chain model [24]. Although, the study did not mention any library type when they described the primary library supply chain processes, they however used academic or university library type to make comparison or give example for describing the library supply chain process [22], [23]. Recent study described interlibrary loan function by considering an academic library supply chain [21]. Finally, we designed the Lied library supply chain framework which is clearly an academic type of library [19].

3.2 Modelling the library supply chain

The supply chain model construction is unique for different organizations. However, the three primary structural aspects of an organization's supply chain network structure are [26]:

- the members of the supply chain;
- the structural dimensions of the network;
- the different types of process links across the supply chain.

3.2.1 The members/entities of a library supply chain model

The members or the entities of a library supply chain model were represented by different writers in different format. Some of the important representations of them are given below.

The other author explained about three main groups in a university library supply chain framework [19]. The groups are:

- Library customers such as campus users, distance users, public users, and recourse sharing partners.
- Library suppliers such as purchased content collection suppliers, free content collection suppliers, and operation suppliers.
- The library operational and functional systems such as collections, technical services, information technology, and user services.

Prior to the work proposed a Consortia model which is a network of libraries [19], [24]. The knowledge network supply chain model consists of the followings:

- Knowledge resources such as publishers and database providers, digital media and research providers.
- The libraries' knowledge content and systems.
- The libraries' members who then acted as wholesalers.
- The library users.

In another study, the supply network of interlibrary loan function was considered as having four members of library supply chain [25]:

- Library vendors.
- Suppliers.
- Publishers.
- Library users.

Earlier research considered only three members for the information flow supply chain [21]:

- Publishers.
- Libraries.
- Users of the library/ Public.

To determine the network structure, it is necessary to identify those organizations that are the members of the supply chain. Including all types of members may cause the total network to become highly complex, since it may explode in the number of members added from tier to tier [27]. To integrate and manage all process links with all members across the supply chain would, in most cases, be counterproductive, if not impossible. The key is to sort out some basis for determining which members are critical to the success of the libraries and the supply chain, and thus should be allocated managerial attention and resources.

From the above discussion of the members of a library supply chain model, the Lied Library supply chain framework covers most of the members/entities that a library should consist (i.e. campus users, distance users, public users, recourse sharing partners, purchased content collection suppliers, free content collection suppliers, operation suppliers and the focus organization library) while others only cover a few members or entities that a library supply chain should consist [21], [24], [25].

3.2.2 *The structural dimensions of the library chain network*

Three structural dimensions of the network are vital when describing, analyzing, and managing the supply chain. These dimensions are the horizontal structure, the vertical structure, and the horizontal position of the focal organization within the end points of the supply chain [26]. The horizontal structure refers to the number of tiers across the supply chain (e.g. Figure 1). The supply chain may be long, with numerous tiers, or short, with few tiers. On the other hand, the vertical structure refers to the number of suppliers/customers represented within each tier in Figure 1.

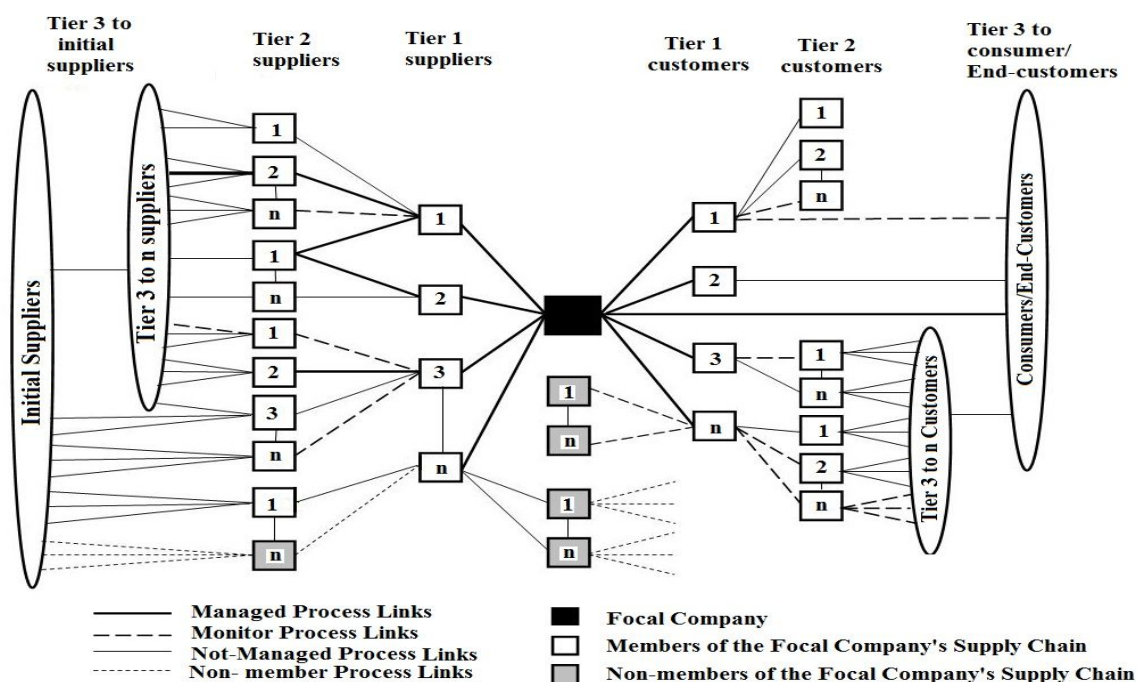


Figure 1. Types of Inter-Organization Business Process Links [26].

Organizations can have a narrow vertical structure, with few organizations at each tier, or a wide vertical structure with many suppliers and/or customers at each tier.

The third structural dimension is the organization's horizontal position within the supply chain. An organization can be positioned at or near the initial source of supply, be at or near to the ultimate customer, or somewhere between these end points of the supply chain. Moreover, different combinations of these structural variables were found. In one example, a narrow and long network structure on the supplier side was combined with a wide and short structure on the customer side [28]. Increasing or reducing the number of suppliers and/or customers affects the structure of the supply chain. For example, as some organizations move from multiple to single source suppliers, the supply chain may become narrower. Outsourcing logistics, manufacturing, marketing or product development activities is another example of decision making that may change the supply chain structure. It may increase the length and width of the supply chain, and likewise influence the horizontal position of the focal organization in the supply chain network [26].

Supply chains that have too many Tier 1 customers/suppliers strain resources in terms of how many processes links the focal company can integrate and closely manage beyond Tier 1. In general, companies with immediately wide vertical structures actively managed only a few Tier 2 customers or suppliers [30], [29]. Some of the organizations have transferred servicing small customers to distributors and moving to the small customers further down the supply chain from the focal company/ organizations [31], [1]. This principle is known as functional spin-off and can be applied to the focal organization's network of suppliers [60].

The supply chains look different from each organization's perspective, since management of each company sees its organization as the focal company/organization, and views membership and network structure differently. However, because each firm is a member of the other's supply chain, it is important for management of each firm to understand their interrelated roles and perspectives. The integration and management of business processes across company/organization boundaries will be successful only if it makes sense from each organization's perspective [27]. As a result, the structure of the library chain network was also described in different dimensions. For example,

gave a horizontal structure of the supply chain in the Lied Library supply chain description [19]. They go through the description of Tier 1

horizontally from suppliers to library and from library to customer, as illustrated in Figure 2.

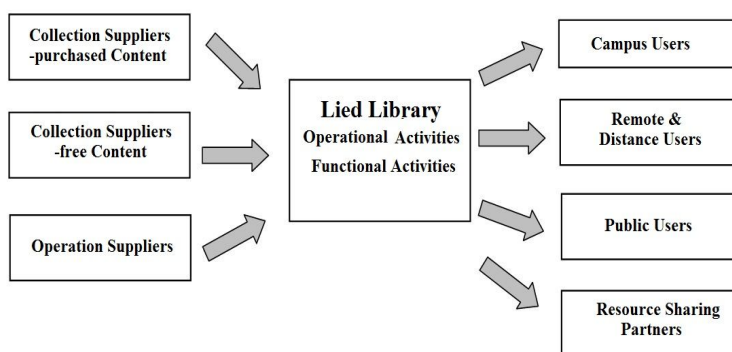


Figure 2. Lied library supply chain [19].

Beside another research expressed the need for libraries and intellectual property owners to work together to improve information flow to meet the needs of users [21]. In addition, they did not explain clearly about the horizontal or vertical way of information flow supply chain. Meanwhile, the study also referred to the information supply chain, describing the primary library supply chain processes as creation, publication, aggregation, access and use. They also did not mention about the

horizontal or vertical flow but their explanation of step by step supply chain indicates the normal horizontal structure of library supply chain. In another library supply chain model, described important factors of interlibrary loan by using supply network and improving efficiency of the library, as illustrated in Figure 3 [25].

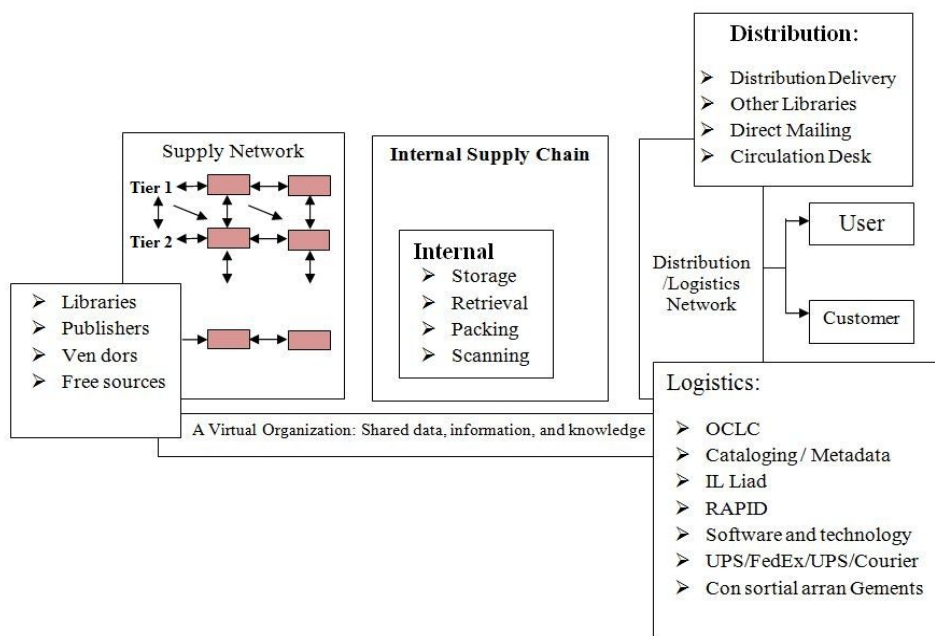


Figure 3. Interlibrary loan network [25]

Interlibrary loan process is done by the group of libraries. So, this could be the example of vertical process of academic library supply chain.

However, believed that the supply chain different dimensions structure view can be a good way to

design or construct supply chain framework as illustrated in figure 4 [32]. Their proposed framework graphically presents the different components of supply chain and the relationship between them. Their framework, as shown in

Figure 4 has a number of distinctive features that promote its use in research and practice:

- It provides a simple graphical demonstration of supply chain
- It is easy to use
- It focuses on explaining the relationship between components in the field.

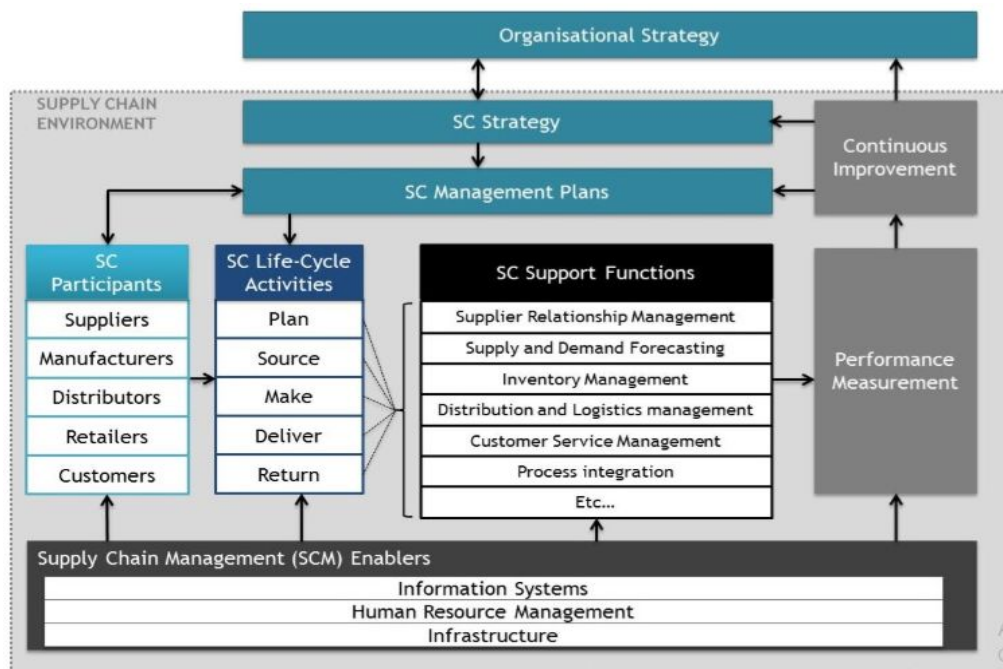


Figure 4. Proposed supply chain management framework [32]

Moreover, their framework is proposed to be used as an explanatory tool and reference guide. The framework and additional discussion can aid the enlightenment of supply chain to those new in the field and also serves as a reference guide to present practitioners and researchers in the field. By separating supply chain into diverse components, outlining the components, and presenting the relationships between them, their framework helps users to make sense of a difficult phenomenon.

3.2.3 The different types of process links across the library supply chain

Success in supply chain requires a change from managing individual functions to integrating activities into key supply chain processes. In many major corporations/organizations, management has reached the conclusion that optimizing the process flows cannot be accomplished without implementing a process approach to the business [33]. Integrating and managing all business process links throughout the entire supply chain is likely not appropriate. Since the drivers for integration are situational and different from process link to process link, the levels of integration should vary from link to link, and over time. Some links are

more critical than others [34]. Consequently, the task of allocating scarce resources among the different process links across the supply chain becomes crucial. Different business processes have different looking supply chain network structures. For example, a focal company/organization may involve only supplier A but not supplier B in its output development and commercialization process, but the demand management process is linked to both suppliers. Management will choose to integrate and manage different supply chain links with the business processes that offer both organizations the potential for improved performance [65].

Success in the supply chain requires a change from managing individual functions to integrating activities into key supply chain processes [65]. The basic functional areas play a vital role to understand the process link of any particular supply chain. In general, the supply chain structures for an academic library may be constructed based on information on Lied Library supply chain framework as shown in Table 3.

Table 3. Suppliers and customers category based on Lied Library supply chain framework.

| | | |
|-----------------------------|---|---|
| Suppliers of library | Primary suppliers/ content suppliers | Authors, publishers, serials subscription agents, database vendors, government documents, gifts, free digital collections. |
| | Operation suppliers | Online public access catalogs (OPAC), discovery platforms search interface and also janitorial, maintenance, shipping services. |
| | Office supplies | Equipment, furniture. |
| Customers of library | Core customers | University students and faculty. |
| | Remote and distance users | Campus community, other university users those are partner of the university and limited privileges to the general public. |

Library supply chain consists of processes which link the many library customers back up the supply chain to the various library suppliers [19]. These processes are the creation of information resources, building the collections, providing access to the collections via the catalogue and website, and finally delivery of information resources and services to library customers. Referring to Figure 5, the Lied Library's supply chain has three broad categories. The supply chain shown in the figure starts with the collection suppliers, who create information content, and the operation suppliers who provide products and services necessary for the library enterprise. The core of the supply chain is the library itself, where content is organized, stored and managed. The final entities of the supply chain are the users and the resource-sharing partners, who will ultimately make use of the content.

4. Theoretical Framework

There are seven theoretical processes of service supply chain which involves entities and functions of supply chain. These seven processes are [35]:

- Demand management – Managing and balancing customer demand by keeping up-to-date demand information.
- Capacity and resource management – Management capacity and resources of service, these resources are organized effectively and efficiently operate at optimum capacity.

- Customer relationship management – Maintaining and developing long-term customer relationships by developing customer information continuously and trying to understand what customers want.
- Supplier relationship management – A process where customers and suppliers develop and maintain a close and long-term relationship as partners. SRM composes of five key components, including coordination, cooperation, commitment, information-sharing and feedback.
- Order process management - Organizing response for orders processed from customers. The scope of order process management includes getting orders until delivering service to customers.
- Service performance management – Management services systems, all of which should be considered when managing, measuring, modifying and rewarding service performance to improve organizational performance in order to achieve corporate strategic aims and promote its mission and values.
- Information and technology management - Adoption of technologies to support and collaborate within supply chain to improve service supply chain operations for achieving competitive advantage in their businesses.

Here we list and briefly describe some of the studies related to library supply chain on each of the seven processes.

4.1 Selected Studies on Demand Management for Library

A model for determining library collection to use by incorporating prediction of future demand and cost analysis to assist collection development librarians determine whether remote storage is the most economically reasonable way to address the space problem in libraries [36]. However, another study described a research project which aims to develop a conceptual approach to the demand of the library collection in the digital world [31]. Three specific issues emerging have been discussed, including the challenges of developing and managing collections to meet the needs of new interdisciplinary subjects, locating and identifying the needs of new types of user community and the continuing challenges posed by the emergence of new web-based formats.

4.2 Selected Studies on Capacity and Resource Management for Library

Contemporary study discussed about the concept of capacity building, impact of competency, roadmap for capacity building, and gave some major ideas about the importance of web-based services to ensure excellence in libraries [38]. In another aspect, budget allocation for resource purchase for libraries is also one of the key issues being studied [39], [40]. The budget allocation factors and the proposed techniques and models to solve the budget allocation problem were discussed [41], [42], [43], [44], [45], [47], [46], [49].

4.3 Selected Studies on Customer Relationship Management for Library

A surveyed the potential implementation of customer relationship management systems in university libraries [50]. They made it through by introducing the customer relationship management concept to university libraries, the implementation tools of these systems, and the level of the libraries' tendency to accept them. A case study with the purpose of discovering the possible barriers when a customer relationship management (CRM) implementing plan was initiated in the library context and exploring its efficiency and effectiveness after implementation [51]. Wang's study aimed at collecting initial perceptions and getting suggestions for a template to use in future development and implementation.

4.4 Selected Studies on Supplier Relationship Management for Library

By illustrated about managing the library/supplier relationship which should be a part of any system designed to increase the efficiency of the library [52]. They proposed a business partnering model which provides a new approach for managing supplier relationship by focusing on the following points:

- Continuous improvement,
- Long-term relationships based on overall value rather than just the base price of the service, and

- Mutual goals which ultimately benefit the library's customer most of all.

Librarians and vendors who provide worth service to their corresponding customers can raise the process of business partnering by discussing the service dimensions identified and supportive upon a strategy to continuously progress service quality within both organizations [53]. In another application, presented about "Transforming the Library/Vendor Relationship" [54]. They described about the various views on the library/vendor relationship. The presenters reviewed the details why libraries partner with vendors, the benefits of and best tools for collaboration, and the different types of library/vendor relationships.

4.5 Selected Studies on Order Process Management for Library

The suggested the creation of a web-based system for providing library and information facilities as well as managing processes behind the library services [55]. It has helped to base library services and actions on realities, not on assumptions: a fact that will become more and more important in the future, when the ever-growing needs of our demanding patrons must be met with limited resources. Meanwhile, "The Process Library Checklist" also suggested an easy to use and secured website, especially for order process management of library [61].

4.6 Selected Studies on Service Performance Management for Library

The authors also explored performance assessment models in academic libraries and showcased the practical involvements at the Covenant University Library [56]. They also illustrated how academic libraries should overcome constraints and absorb the culture of performance assessment that involves a continuous and periodic process of fine-tuning critical management and functional processes, either reactively or proactively through deliberately designed parameters. They later constructed a model called Lib-PERFQUAL which comprises all the indicators necessary for libraries to maintain continuous relevance and achieve utmost

efficiency. Prior to that, discussed performance management of university library professionals that was based on the primary data collected from 188 library professionals through a pre-tested, designed, inclusive questionnaire [57]. The key topics were identification and definition of important performance areas, role clarity and direction, performance feedback and potential appraisal, and job rotation as a powerful tool to develop and unleash employee's potential.

4.7 Selected Studies on Information and Technology Management for Library

This study described about information and technology management issues for all libraries (public, academic, research and special) to change tools and develop the digital services [58]. They mostly focused on Indian library problems. Developments in information communication technology (ICT) have enabled libraries to deliver access to all. Yet the Library and Information Services (LIS) sector has not kept pace with the paradigmatic changes taking place in society. There are only a few libraries which are using the state-of-the-art technologies to disseminate knowledge to their respective user community. The explicitly described the impact of the new information technology on the development of the curriculum of the Department of Library and Information Science, Comenius University, Slovakia [59]. It was asserted that information technology is an integral part of most subjects taught at the university. Consequently, The European Community helped with the hardware and software to create electronic documents as well as to evaluate different software systems for creating hypermedia.

5. Conclusion and recommendation

Supply chain model and framework are vastly used in modern world to make organizations' operations more effective and cost efficient. However, research works done on the library supply chain is still lacking. Supply chain research could be an important tool to make the library a cost-effective organization. From this review we were able to find out about the entities of a library supply chain model which are the basic components needed to design a library supply chain model. Moreover, the structural dimensions of a

library supply chain model and different types of process link were also identified. In other words, this review resulted in a roadmap that can help to construct a complete general supply chain model for a library and to analyze the performance of key entities within the university library supply chain towards improving its functions and services. The objectives of this research are:

- This study aims to do critical review of library's management and library supply chain. This study also highlights the functions and components.
- This study also highlights the functions and components that needs to enhance the library supply chain management.
- Finally, we analysis the library supply chain models to do excellent library management facility.

Based on this brief review, a few conclusions can be derived. Firstly, Lied's Library supply chain model could be used as a starting supply-chain template as it includes most of the relations of the library supply chain [19]. The horizontal structure of the Lied Library supply chain however covers only components in Tier 1. In addition, Kress and Wisner did not properly include the interlibrary loan system in their framework, although the service was mentioned in their study report. On the other hand, the interlibrary loan by using supply network to improve the efficiency of the library [25]. However, it was presented as a vertical process of academic library supply chain. Thus, the combination of the horizontal and vertical structure could be used to construct the basic library supply-chain framework.

Secondly, in order to finalize the process flow for a library supply chain, following data or information to be gathered:

- The management for library entities and functions.
- The flow of funds through the operations of library.
- The library stakeholders' satisfaction measurement.
- The decision process currently made by the library management team on the purchasing of new library resources such as books, journals or e-documents.
- The library resource suppliers.
- The relevant data should be collected from the top-level management, employees, and

members of the library through self-administered questionnaire and in-depth interview.

Thirdly, specific entity that should be included inside the library supply chain model as example like allocating budget for resource by taking information of library supply need, proper distribution of funds system, customer satisfaction parameter etc.

To conclude, an efficient and comprehensive model for library supply chain would formulate a roadmap to ensure a quality service for the library users and the stakeholders. An organized methodology that initiates a considerate process for all relevant stakeholders within a library can perhaps help towards increased understanding of overcoming potential drawbacks of the library.

References

- [1] Govindaraju, B., Jeyasingam, J., Habib, M. M., Letchmana, U., & Ratnam, S. (2019). "An Empirical Study on Supply Chain Management Performance Measurement through AHP", *International Journal of Supply Chain Management (IJSCM)*, Vol. 8, No. 1, February 2019, ISSN: 2050-7399 (Online), 2051-3771.
- [2] Pathik, B., & Habib, M. M. (2019). "Educational Supply Chain Management: ITESCM Model and Its Implications", [Accepted], Cambridge Scholars Publishing, UK, July 2019.
- [3] Miraz, M. H., Majumder, M., Chowdhury, A.H., & Habib., M.M. (2018). "Use A Study on Sustainable Supply Chain Governance for Successful Investment", *The International Supply Chain Technology Journal (ISCT)*, Vol. 4, No. 6, June 2018, ISSN: 2380-1204 (Online), 2380-5730 (Print), DOI#:10.20545/isctj.v4i06.167
- [4] Miraz, M.H., Ferdoush., S. & Habib, M.M. (2017). *Assessing SCM: A Procedure Based on a Theoretical Model*", The 2017 International Conference on Business and Management (ICBM), Bangladesh, September 2017, ISBN: 978-984-34-2360-3.
- [5] Rose-Wiles, L. (2013). *Are print books dead? An investigation of book circulation at a mid-sized academic library*. *Technical Services Quarterly*, 30(2), 129–152
- [6] Kress, N., & Wisner, J. (2012). A supply chain model for library quality and service improvement. *Journal of Operations and Supply Chain Management*, 5(2), 40–53.
- [7] Wang, Zheng (John) (2013). *Co-curation: New strategies, roles, services, and opportunities for libraries in the post-web era and the digital media context*. *Libri*, 63(2). (print).
- [8] Sarrafzadeh, M., Martin, B., & Hazeri, A. (2010). Knowledge management and its potential applicability for libraries. *Library Management*, 31(3), 198–212. <http://dx.doi.org/10.1108/01435121011027363>.
- [9] Breeding, M., 2012. *New library collections, new technologies: new workflows*. *Comput. Lib. 32 (5)*, 23–25. Breeding, M., 2013. *Mining data for library decision support*. *Comput. Lib. 33 (5)*, 23–25.
- [10] Breeding, M., 2014. *Key resources in the field of library automation*. Retrieved May 31, 2014, from *Library Technology Guides* website: <http://www.librarytechnology.org/>.
- [11] Breeding, M., 2015a. *Library systems report*. Retrieved from <http://americanlibrariesmagazine.org/2015/05/01/library-systems-report/>. Breeding, M., 2015b. *Product sales [Fact sheet]*. Retrieved August 31, 2015, from *Library Technology Guide* website: <http://www.librarytechnology.org/product-salesstatistics.pl>.
- [12] Burke, J., 2012. *Web-scale management solution*. Retrieved April 24, 2014, from *Serials Solutions' a ProQuest business website*: <http://www.serialssolutions.com/en/services/intota>.
- [13] Dula, M., Jacobsen, L., Ferguson, T., Ross, R., 2012. *Implementing a new cloud computing library management service*. *Comput. Lib. 32 (1)*, 6–40.
- [14] Enis, M., 2014. *Technology: serials solutions debuts intota assessment*. *Libr. J. 139 (1)*, 1.
- [15] Fu, P., Fitzgerald, M., 2013. *A comparative analysis of the effect of the integrated library system on staffing models in academic libraries*. *Inf. Technol Lib. 32 (3)*, 47–58.

- [16] Wang, Y., Dawes, T.A., 2012. The next generation integrated library system: a promise fulfilled. *Inf. Technol. Lib.* 31 (3), 76–84.
- [17] Wilson, K., 2012. Introducing the next generation of library management systems. *Serials Rev.* 2, 110.
- [18] Yang, S.Q., 2013. From integrated library systems to library management services: time for change? *Library Hi Tech News* 30 (2), 1–8. <http://dx.doi.org/10.1108/LHTN-02-2013-0006>.
- [19] Tripathi, Harish & Hans Raj. Library management software. In *Knowledge Management-Issues and Strategies*, edited by P. Visakhi; V.K. Bharti; K.Veeraneyulu; K.P. Singh; Hans Raj & C.S. Viswanath. Udai Publishers, New Delhi, 2010. pp.119-37
- [20] Filson, C. K. (2018). Comparative study of collection management practices of academic libraries. *Library Management*, 39(1/2), 66–77. <https://doi.org/10.1108/lm-12-2016-0096>.
- [21] Cornish, Graham. "Librarians: peacemakers in the new electronic world." *Library Management* 17, no. 4 (1996): 30-33.
- [22] Ball, David, and Susan Wright. "Procuring electronic information: new business models in the context of the supply chain." *Library Consortium Management: An International Journal* 2, no. 7 (2000): 145-159.
- [23] Ball, David. "What's the "big deal", and why is it a bad deal for universities?." *Interlending & Document Supply* 32, no. 2 (2004): 117-125.
- [24] Husain, S., & Nazim, M. (2013). Concepts of knowledge management among library & information science professionals. *International Journal of Information Dissemination and Technology*, 3(4), 264–269.
- [25] Wathen, Adam. "Delivering the Goods: Understanding the Academic Library Supply Chain." In *Charleston Library Conference*. Kansas State University, p. 457. 2009.
- [26] Lambert, Douglas M., Martha C. Cooper, and Janus D. Pagh. "Supply chain management: implementation issues and research opportunities." *The international journal of logistics management* 9, no. 2 (1998): 1-20.
- [27] Cooper, Martha C., Douglas M. Lambert, and Janus D. Pagh. "Supply chain management: more than a new name for logistics." *The international journal of logistics management* 8, no. 1 (1997): 1-14.
- [28] Lambert, Douglas M. "The supply chain management and logistics controversy." In *Handbook of logistics and supply-chain management*, pp. 99-126. Emerald Group Publishing Limited, 2008.
- [29] Lambert, Douglas M. "Supply chain management: what does it involve." *Supply Chain and Logistics Journal* 4, no. 4 (2001): 1-25.
- [30] Lambert, Douglas M., and Martha C. Cooper. "Issues in supply chain management." *Industrial marketing management* 29, no. 1 (2000): 65-83.
- [31] Benjamin, Robert, and Rolf Wigand. "Electronic markets and virtual value chains on the information superhighway." *Sloan management review* 36, no. 2 (1995): 62-73.
- [32] Du Toit, Deirdre, and Pieter-Jan Vlok. "Supply chain management: A framework of understanding." *South African Journal of Industrial Engineering* 25, no. 3 (2014): 25-38.
- [33] Lambert, Douglas M., Larry C. Guinipero, and Gary J. Ridenhower. "Supply chain management: A key to achieving business excellence in the 21st century." Unpublished manuscript, as reported in Lambert, DM, Stock, J. R, and Ellram, LM: *Fundamentals of Logistics Management*. Irwin/McGraw-Hill, Boston, Massachusetts (1998).
- [34] Håkansson, Håkan, and Ivan Snehota. "The burden of relationships or who's next." In *IMP Conference (11th)*, vol. 11. IMP, 1995.
- [35] Ellram, Lisa M., Wendy L. Tate, and Corey Billington. "Understanding and managing the services supply chain." *Journal of Supply Chain Management* 40, no. 3 (2004): 17-32.
- [36] Lee, Hur-Li. "The Library Space Problem, Future Demand, and Collection Control." *Library Resources and Technical Services* 37, no. 2 (1993): 147-66.
- [37] Roberts, Angharad. "New subjects, new communities, new formats: the library collection in the digital world." In *Something's Gotta Give: Charleston Conference Proceedings, 2011*, no. 31, pp. 181-190. Against the Grain Press, 2012.
- [38] Tiwari, K. (2013). An increasing influence of knowledge management for library and information science (LIS) professionals.

- International Journal of Information Library & Society, 2(2), 38–45.
- [39] Krolak, Lisa. "The role of libraries in the creation of literate environments." *International Journal of Adult and Lifelong Education* 4, no. 1/4 (2006): 5.
- [40] Thomson, Thomas M. "Management by objectives." *The Pfeiffer Library* 20, no. 2 (1998): 317.
- [41] Crotts, Joe. "Subject usage and funding of library monographs." *College & Research Libraries* 60, no. 3 (1999): 261-273.
- [42] Wise, Kenneth, and D. E. Perushek. "Goal programming as a solution technique for the acquisitions allocation problem." *Library & Information Science Research* 22, no. 2 (2000): 165-183.
- [43] Wise, Kenneth, and D. E. Perushek. "Linear goal programming for academic library acquisitions allocations." *Library Acquisitions: Practice & Theory* 20, no. 3 (1996): 311-327.
- [44] Promis, Patricia. "Developing a databased budget allocation strategy: The University of Arizona Library experience." *Collection Building* 15, no. 3 (1996): 5-9.
- [45] Arora, Anish, and Diego Klabjan. "A model for budget allocation in multi-unit libraries." *Library collections, Acquisitions, and Technical Services* 26, no. 4 (2002): 423-438.
- [46] Wardiah. Budget allocation using mathematical models: a case study at UiTM Perlis Library. "Unpublished master's thesis, Universiti Utara Malaysia". 2005.
- [47] Islam, M. A., Agarwal, N. K., & Ikeda, M. (2015a). Conceptualizing value co-creation for service innovation in academic libraries. *Business Information Review*, 32(1), 45–52. <http://dx.doi.org/10.1177/0266382115573155>
- [48] Sudarsan, P. K. "A resource allocation model for university libraries in India." *The Bottom Line* 19, no. 3 (2006): 103-110.
- [49] Abu, Engku Muhammad Nazri Bin Engku, Bakar1 Syariza Abdul Rahman, and Noorezatty Mohd Yusop. "Modelling of budget allocation for university library." *Journal of Statistical Modeling and Analytics* Vol 2, no. 2 (2011): 1-8.
- [50] Fouad, Nehal, and Najah Al-Goblan. "Using customer relationship management systems at university libraries: A comparative study between Saudi Arabia and Egypt." *IFLA journal* 43, no. 2 (2017): 158-170.
- [51] Wang, Mei-Yu. "Introducing CRM into an academic library." *Library Management* 28, no. 6/7 (2007): 281-291.
- [52] Islam, M. A., Agarwal, N. K., & Ikeda, M. (2015a). Conceptualizing value co-creation for service innovation in academic libraries. *Business Information Review*, 32(1), 45–52.
- [53] Parasuraman, Anantharathan, Valarie A. Zeithaml, and Leonard L. Berry. "A conceptual model of service quality and its implications for future research." *the Journal of Marketing* (1985): 41-50.
- [54] Farrell, Maggie, Barbara Kaweck, and Rick Branham. "Collaboration, Communication, and Partnerships for Effective Organizational Transformation." (2017).
- [55] Juntunen, Arja, Tuulevi Ovaska, Jarmo Saarti, and Liisa Salmi. "Managing library processes: collecting data and providing tailored services to end-users." *Library management* 26, no. 8/9 (2005): 487-493.
- [56] Iroaganachi, Mercy A., and Christopher Nkiko. "Performance assessment model for academic libraries: the Covenant University Library example." *Annals of Library and Information Studies* 63 (2016): 7-15.
- [57] Mallaiah, T. Y. "Performance management and job satisfaction of university library professionals in Karnataka: A study." *DESIDOC Journal of Library & Information Technology* 28, no. 6 (2008).
- [58] Singh, D. K., and Mohammad Nazim. "Impact of information technology and role of libraries in the age of information and knowledge societies." (2008).
- [59] Makulova, Sona. "The impact of New Information Technology on the Library and Information Science Curriculum development at the Comenius University, Slovakia." Comenius University. Obtido de <http://web.simmons.edu/~chen/nit/NIT2793>: 93-211. (1992).
- [60] Stern, L.W. and A.I., El-Ansary. *Marketing Channels*, 4th ed, Prentice Hall, Englewood Cliffs, NJ, 1992.
- [61] Fagan, Brad. "The Process Library Checklist: Integrate Your Team with Your Process Software." *Triaster Blog*. <https://blog.triaster.co.uk/blog/how-to-launch->

- your-process-library (accessed December 1, 2018).
- [62] Living in the library world. "Introduction to Libraries: Basic library functions." <http://livinginthelibraryworld.blogspot.com/2008/11/introduction-to-libraries-basic-library.html> (accessed December 4, 2018).
- [63] Wisner, J.D. and Tan, K.C., "Supply chain management and its impact on purchasing", *Journal of Supply Chain Management*, Vol.36 No.4, 2000, pp. 33-42.
- [64] Zhang, Rongyao, Rongqiu Chen, and Yin Zhang. "The conceptual model of the service supply chain research based on business processes." In *Management and Service Science, 2009. MASS'09. International Science, 2009. MASS'09. International Conference on*, pp. 1-4. IEEE, 2009.
- [65] Lambert, Douglas M., Martha C. Cooper, and Janus D. Pagh. "Supply chain management: implementation issues and research opportunities." *The international journal of logistics management* 9, no. 2 (1998): 1-20.