Lean Management Approach at University Library in Malaysia: A New Insight

Nur Hafidzoh Asyiqin Ahmad, Abd Rahim Romle, Akmal Ahlami Md Rozai,
Safarina Mohd Rodzi, Helmie Sheha Che Azemi and Subki Ahmad

School of Government, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

Abstract: Reduction of budget to the higher education from 2016 budget effect the progress of education planning and academic libraries was one of the organizations that faced the problem. Libraries have to find other mechanism to stabilize the financial problems without abandon the main objective to satisfied the customer and fulfill their needs. Although, Lean is usually seen as being manufacturing concept and application, many of the tools and technique were originally developed in service organization and the philosophy that can be applied to an entire company as long as the overall goal remains the same, to increase customer value while eliminating waste. The five lean principles, value, value stream, flow, pull and perfection effective when applied to library process and procedures. Based on the lean principle and technique that can be used in the libraries, it helps the organization to balance the financial and mission and objective. The aim of this paper is mainly seeks to identify the lean management approach at the academic libraries and analyze the technique that can be use.

Key words: Academic library · Lean management · Quality

INTRODUCTION

Higher education is created on the knowledge of humankind and it will spread the importance of the intellectual content of library collection. Libraries are no longer simply storehouses of information but rather transmitters of information in competitive marketplace [1].

Libraries now days have to face constant change. Budget reduction, new request from the users, the need to develop strategies, upcoming mergers and relocation, new tasks resulting in the digital library, personnel development, demographic change and quality management are just a few challenge for the libraries [2]. Collection and services are the cornerstones of academic libraries operation and there has been a strong movement for the libraries to improve the service quality. If the services and collection do not measure up to expectations or keep pace with changing user preferences or needs, then repeat user cannot be ensured [3].

Nowadays, the libraries service environment has become very competitive and requires library organization to continually develop the effectiveness and value. The provision of a service to customer and quality of relationship with them is, then often central to efficient and effective operations within the organization and accordingly customer service delivered by other parts of the organization [4].

The increased complexity of resource management in the digital age is coupled with an increasing need for information professionals to be financially astute. Considering the current state of the economy, the academic libraries face the reductions in funding from the parent organization. After a decade of growth in budgets and services, librarians now expect a sustained period of cuts. The scale of the cuts means that libraries must rethink the kinds and levels of service that they have been provided to serve better without affect the customer needs. In global competition, customers are more demanding. Libraries have to react effectively and faster to delivering goods and services to the customer at improved quality and lower prices. Many organization in today's world have faced a similar 'do more with less' challenge.

Consequently, Lean becomes popular as said as a new trend that applied by many business leaders in their organization [5]. The concept of Lean conveys the philosophy of "removal of waste", thus adding value to the process, either it was profit or non-profit organization.

Corresponding Author: Nur Hafidzoh Asyiqin Ahmad, School Of Government, Universiti Utara Malaysia,
06010 Sintok, Kedah, Malaysia. Tel: +60126544025.

Fundamental to lean is the conversion of waste into customer defined value [6]. Lean can be applied in other business as well like academic universities [7]. This approach will improve performance with minimal cost.

Lean Management is a production practice that considers the expenditure of resources for any goal other than the creation of value for the customer to be wasteful and thus target for elimination [8]. The concept are rooted in the Toyota Production System (TPS) pioneered by Taiichi Ohno and Shigeo Shingo in post-World War II Japan. The term Lean originated after the 1990 book The Machine That Change the World referred to TPS [6].

Justification of the Study: The library as we know it today rests on the triumph of the early twentieth-century progressive movement and the notion that the government should play a role in people's lives and livelihoods [9]. Resource management is the most important variable in the management of higher education in general [10]. Smaller materials budgets and the postponement of technology purchases will mean fewer options for library user to find information in either paper or electronic format [6]. Effective financial management should be created to avoid uncertainty or waste financial resources, budget and budgeting [11].

As an academic libraries, financial funding is a need to fulfill the continuous learning such as electronic journal, books and other material. Organization should play the roles to identified other resources and reduce an necessary process but maintain the quality of the services. All non-profit organization, including libraries, must maximize customer value to remain relevant by focusing on the customer's perceived benefits minus their perceived costs or liabilities for using the organization's products or services [12].

Objective: This study will mainly seeks to achieve two research objectives:

- To identify the Lean management approach at the academic libraries
- To analyze the Lean management technique that can be used at the academic libraries

Lean Management: Lean, also referred to as Lean Management, Lean Manufacturing, Lean Enterprise or Lean Production, is a powerful set of tools and techniques that many companies choose to implement and sustain as a way to increasing the efficiency of production and the

overall customer value while at the same time eliminating waste that does not add value for the organization [13]. The concept of Lean Management can be traced as far back in history as the industrial revolution when machine, having shorter through put times replaced humans [14].

According to Petterson [15] there is considerable variation in the scientific and grey literature on Lean, the concept is described as either a philosophy, a toolbox, a strategic goal or a change process. Some of researcher agree that Lean is similar to the concept of Total Quality Management (TQM) and Six Sigma the other management concept and practice to improve the performance and quality [16]. Based on Bicheno [17], Lean is more than a set of tools and gain more philosophical approach to Lean. General principles, such as 'customer focus' or 'just in time' can have multiple meanings, even within the same organization [18][19]. The concept of Lean incorporates organizational goals which are in regard of improvement of customer orientation [20].

Application of Lean methods are a series of scientific, objective techniques that cause work tasks in a process to be performed with a minimum of non-value adding activities, resulting in greatly reduced wait time, queue time, move time, administrative time and other delays or activities to satisfy customer requirements [14]. The studies of management scope evaluating lean management suggest that their indices for lean management are under various factor, so through measuring their intensity and weaknesses, potential accomplishment of the management will be assesses in varied organization [21]. Lean exist at two level, having both strategic and operational dimension either philosophical or practical orientation [22]. The lean management system consists of the discipline daily practices and tools to establish and maintain a persistent, intensive focus on process [23].

According to Smiths and Hawkins [24], Lean is a comprehensive package that includes reducing inventory, standardizing work routines, improving processes, empowering workers to make decisions about quality, soliciting worker ideas, proofing for mistakes, applying just-in-time delivery and using a Lean supply chain.

Furthermore, the experimentation with Lean in libraries was believe began early in the 21st century, publications on the applications of Lean in libraries began to appear only in the last decade [20]. Case studies of Lean implementation was published or presented in conference and articles either from public or academic libraries with various type of operation from circulation process, technical process, it resource, book shelving

management, acquisition, cataloguing and workstation. The Lean management approach was used at the British Library by Head of Document Supply and Customer Service and y Appleyard who is former Toyota Manager and replicate the lean process to the libraries. He transform the organization to the main goal and objectives to delivering services that meet the customer needs.

The application of Toyota concept on'seven waste' was helped the libraries to redefined the performance metric and set achievable targets based on historical performance data. 'Quick Kaizen' was used to set the performance measure showing the improvement and the quick reflect from the staff that they are empowered to do [25]. In 2006, University of St Andrews adopted Lean to their universities with three main goals from culture change, effectiveness and efficiency.

Moreover, the implementation of lean was start on 2010 with two library project with the cataloging and re-shelving books and it show the tremendous result regarding the whole process [26]. The University of Aberdeen Library and Historic Collections used the lean approach for their acquisition, cataloging and processing of print materials. As in the business world, the application of Lean principles in libraries is typically initiated top-down, sometimes originating from the parent organization and sometimes from the library leadership [27]. Human force plays a main role in an organization to boost the goals, considering human resources and its arrangement as one of the managerial priorities and planning for academic library administrators is highly recommended [21]. Process mapping and continuous improvement was successfully proven produce dramatic performance improvement in shelving turnaround time at The University of Chicago's Joseph Regenstein Library [28]. To meet fiscally constrained times, University of California launched their initiative across the university called "Working Smarter" which has create many projects and envision ten distinct campuses using one efficient administrative framework. For the library project, additional collaboration from acquisition and accounting department was recommended to solve and issue for assessing the automated triage of bibliographic records and invoice. Many useful process evolution lean tools including cross functional "swim lane" maps, cause and effect diagrams and variety of method for identifying waste and assessing customer satisfaction. At the end of the project, it was successfully collaboration regarding analysed the unnecessary process and campus accounting can clarified their audits requirement of

ensuring that the item ordered was the item received and the process will be more effective for librarian at acquisition [29]. Another case studies that using Lean in their libraries is from South Dakota State University in handling lost book and book weeding. For the lost book case, the library can manage reduce time in lost status. Besides that, assets recovered more quickly, less non value added activity resulting in less faculty and staff effort and saved resources.

The application of Lean also demonstrated several outcomes when the patron can immediately request materials through Interlibrary Loan (ILL) if it is not on shelf at that time, backlog of 550 lost item has been reduced by 55% and regular monthly biling procedure for lost book was finally in place in compliance with a South Dakota Board of Regents policy. Lean approach was used in weeding and the team was analyzed the process changed with several changes [30]. In 1995, University of South Australia Library, Australia undertook a restructure of the Distance Education Library Service (DELS) and the centralization of the Interlibrary Loan (ILL) Service to establish the Flexible Delivery Service (FDS) in need to standardize performance and procedures across the service and improves turnaround times. The librarian was used principles of kaizen and lean manufacturing to reassure the deliver more efficient and affective service to their clients [31]. Lean Six Sigma framework and tools was used at The Ohio State University Libraries to provide an infrastructure for supporting change and using DMAIC framework and associated quality management tools to improve the OSU Libraries' email reference service [32].

Muda, Mura, Muri: *Muda* is the Japanese term, which mean 'waste'. Waste means any activity that accumulates resources but creates no value out of them [33]. There are two types of wastes: obvious wastes and hidden wastes. Typically, seven wastes have been identified in Lean management: waiting, transportation, over-production, inventory, movement, over-processing and re-work [13]. It is important to uncover and eliminate the latter since they are usually bigger. Taiichi Ohno of Toyota has identified seven types of muda based on the TPS Overproduction, Processing, Motion, Inventory, Transportation, Delays and Defect.

Mura is unevenness in an operation; for example, a gyrating schedule not caused by end-consumer demand but rather by the production system, or an uneven work pace in an operation causing operators to hurry and then wait. *Muri* is eliminating unevenness or irregularities in the production process [33].

Bicheno and Holweg [17] redefined the seven waste from the manufacturing to the service operation as follow. Duplication, Unclear communication, Unnecessary Movement, Incorrect inventory, Opportunity lost to retain or win customers, Delay on the part of customers waiting for service and Error. According to Huber [20] there was four categories of waste or 'Muda' that can be recognized from the libraries management and process. People Waste: Refers to the category of waste that occurs when universities fail to capitalize fully on the knowledge, skills and abilities of employees and workgroups. Process Waste: Refers to the cluster of wastes that occurs due to shortcomings in the design or implementation of university process, Information Waste: Refers to the category of wastes that occurs when available information is deficient for supporting university processes and Asset Waste: Refers to the cluster of wastes that occurs when the university does not use its resources (human, facilities and materials) in the most effective manner.

Lean Principles: Lean can be used in system not just in manufacturing [17]. According to Taiichi Ohno, the Toyota Executive who create the Toyota Production System (TPS), continuous improvement and respect for people was the foundation to the lean principles [33]. Lean principles are fundamentally customer value driven, which makes them appropriated for many manufacturing and situation [34] The five Lean principles were developed by Womack and Jones in their book 'The Machine that Changed the World' (1991), lean principles are fundamentally customer value driven, which makes them appropriate for many manufacturing and distribution situations [6]. The five basic principles of lean management are generally knowledge [5][33].

- Value- Defined by the end customer and providing the customer with the right product or service;
- Value Stream- Identifying all activities on the value stream of each product family, eliminating as much as possible those waste generating activities.
- Flow - Seamless movement through a series of value creating steps.Flow requires much preparation activity but the most important thing is vision [17] [33].
- Pull - Short term response to the customer's rate of demand and not over producing and only acting only to satisfy customer needs..
- Perfection -Perfection is continuously improving the value, value stream, flow and pull in operation [6][17][33].

Methodology and Tools: A methodology according to Hellsten and Klefsjo [35], "consists of number of activities performed in a certain way". Many companies start off their Lean journey by viewing Lean as a set of 'tools' to implement. Sometimes the tools are even implemented individually. This may be beneficial for a while but will not suffice on the long run. Real Lean is behaviour-driven. Behaviour is built by establishing principles such as pulling the Andon chord when a problem occurs but always doing this, always expecting this and always supporting this [17]. Variety of approach can be use reducing or eliminating waste in the libraries, depends on the purpose and the suitable environment to the process.

Kaizen: Continuous improvement involving everyone in the organization from top management, to managers then to supervisors and to workers and emphasizes that the process is the target [33].

Kanban: Represents a pull signal that is related to a handling unit of a specific item (ohno) and it can be applied material and product flown (bicheno). *Kanban* and Andonn can be use managing physical materials inventory, applied to libraries offer improvement to existing material workflows [33].

5S: Intended organize the workplace, to keep it neat, clean, maintain standardized condition and maintain the discipline that is needed to do a good job at the libraries(Ohno) and positively working in organized workplace with five dicipline *Seiri, Seiton, Seiso, Seiketsu* and *Shitsuke.* [17][33].

Value Stream Mapping: Value Stream Mapping is a visual improvement tool, that involves the creation of maps to show the Current State, Future State, Ideal State and Action Plan of a company [33].

- Poka-Yoke is-Eliminate product defects by preventing, correcting, or drawing attention to human errors as they occur [33].

CONCLUSION

In recent years, the Lean approach has been applied in variety of organization either profit or non-profit in manufacturing or other services. Now days, academic libraries, need to be ahead of other information service providers to ensure their existence and to deliver their service provided. Changing needs of the users,

the information professionals are supposed to equip with the concept and Lean Management was an approach to perceive the quality and at the same time will reduce cost process. Lean implementation will give improvement to the customer, quality and efficiency, staff morale, internal communication and cooperation and will give a cost saving by reduce the unused process that affect the whole flow.

The university library in Malaysia will get to achieve the core strategic trust that was drawn up for the year 2014 -2018 by The National Library of Malaysia (NLM) strategic plan for develop knowledge society and to enhance the delivery of quality information resources through library services. The lean management approach will strengthen the development of libraries and the library profession to the customer and will be a world class leader in library development.

REFERENCES

1. Ashcroft, L., 2002. Issues in developing, managing and marketing electronic journal collections. Collection Building, 21(4): 147-154.

2. Deuren, Petra, 2013. Leadership in Academic and Public Libraries: A time of change. UK: Oxford Chandos.

3. Hernon, Peter, Danuta A. Nitecki and Ellen Altman, 1999. Service quality and customer satisfaction: An assessment and future directions. The Journal of Academic Librarianship, 25(1): 9-17.

4. Sue Robert and Jennifer Rowley, 2004. Managing Information Service. London: Fecet Publishing.

5. Howell, Gregory, A., 1999. What is Lean Construction The Institute of Structural Engineering, London, 1999.

6. Womack, James P. and Daniel T. Jones, 2003. Lean Thinking: Banish Waste and Create Wealth in Your Corporation. New York: Free Press.

7. Bala, K., 2007. Lean Thinking: Its Evolution from manufacturing and Multiple Applications. In E. Mrudula (Eds.), Lean Management: Concept and Industry Perspectives, pp: 3-13. India: The Icfai University Press.

8. Alireza Anvari, Yusof Ismail and Seyed Mohammad Hossein Hojjati, 2011. A Study on Total Quality Management and Lean Manufacturing: Through Lean Thinking Approach. World Applied Science Journal, 12(9): 1585-1596.

9. Cyphers, Christopher, J., 2002. The National Civic Federation and the Making of a New Liberalism. Westport: Greenword Publishing.

10. Demekaa, U., 2013. Budget Preparation, Approval and Implementation in Polytechnic Libraries. Presented paper at Delta State University, Abraka.

11. Emojorho, D., 2004. Budget and budgeting in selected Nigerian university libraries. The Bottom Line: Managing Library Finances, 17(3): 219-223.

12. Kai Yang, 2005. Design for Six Sigma for Service. New York: McGraw-Hill.

13. Drew, J., B. McCullum and S. Roggenhofer, 2004. Journey to Lean: Making Operational Change Stick.. Virgina: Palgrave MacMillan.

14. Hobbs, D.P., 2003. Lean Manufacturing Implementation: A Complete Execution Manual for Any Size Manufacturer. Florida: J. Ross Publishing, Incorporated.

15. Petterson, J., 2009. Defining Lean Production: Some Conceptual and Practical Issues. The TQM Journal, 21: 127-142.

16. Dahlgaard, J. and S.M. Dahlgaard-Park, 2006. Lean production, six sigma quality, TQM and company culture. The TQM Magazine, 18: 263-281.

17. Bicheno, J. and M. Holweg, 2009. The Lean Toolbox: The essential guide to lean transformation. 4thed. Buckingham: PICSIE Books.

18. Alvesson, M. and S. Svenings, 2008. Changing Organizational Culture: Cultural Change Work in Progress. London: Routledge.

19. Langstrand, J., 2012. Exploring organizational translation: a case study of changes toward Lean Production, Linköping, Department of Management and Engineering, Linköping University.

20. Hubber, John J., 2011. Lean Library Management: Eleven Strategies for Reducing Costs and Improving Customer Services. New York: Neal Schuman Publisher.

21. Safiyeh Tahmasebu Limooni, *et al.*, 2014. Lean Management model in Academic libraries of Iran. Bulletin of Environmnet, Pharmacology and Life Sciences, 3(3): 242-249.

22. Hines, P., M. Holweg and N. Rich, 2004. Learning to evolve: A review of contemporary lean thinking. International Journal of Operations and Production Management, 24(10): 994-1011.

23. Mann, David W., 2005. Creating a lean culture: tools to sustain lean convensions. New York: Productivity Press.

24. Smith, R. and B. Hawkins, 2004. Lean maintenance: reduce costs, improve quality, and increase market share. NY: Elsevier.

25. Applying lean to libraries, 2014. Retrieved http://www.northofenglandexcellence.co.uk/news/applying-lean-to-libraries/137

26. Heidi Fraser, Krauss, 2010. Using Lean in the Library, Northern Library Consortium Conference on Oktober, University of St Andrews,UK.

27. Armstrong-Viner, Robin, 2010. Lean Kaizen: Empowering the Team in Interesting Times. Catalogue and Index 161.

28. Kress, Nancy J., 2008. Lean Thinking in Libraries: A Case Study on Improving Shelving Turnaround. Journal of Access Services, 5(1-2): 159-172.

29. Lisa Spagnolo, 2011. Give a Little Bit: Using Lean Tools to Create Efficiences in Acquisition and Beyond. Paper presented at the Proceedings of the Charleston Library Conference, Purdee University Library, pp: 482-487.

30. Melissa Clark, Mary Kraljic and Susan Sutthill, 2014. November 7. Libraries in Lean Times: Increasing Efficiemcy, Improving Services and Cutting Red Tape. Paper presented at Brick and Click Libraries Conference Proceedings. Northwest Missouri State University Maryville, MO.

31. Christine, Cother, 2009. From big change to no change: discovering lean through action. Proceedings of the IATUL Conferences, Paper 11. Retrieved from http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1879.

32. Sarah, Anne Murphy, 2009. Leveraging Lean Six Sigma to Culture, Nurture and Sustain Assessment and Change in the Academic Library Enviroment. Academic Library Environment,College and Research Libraries. 215-226, DOI: 10.5860/crl.70.3.215.

33. Ohno, T., 1988. Toyota production system: Beyond large-scale production. Portland: Productivity Press.

34. McCurry, L. and R.T. McIvor, 2001. Agile manufacturing: 21st century strategy fo manufacturing on the periphery? Conference Proceedings, Irish Academy of Management Conference, University of Ulster, September.