Journal of Cases on Information Technology
Volume 20 • Issue 1 • January-March 2018

An Evaluation of Lean IT Efficiency in Organization Using Fuzzy Approach

Sajjad Shokouhyar, Department of Information Technology, Shahid Beheshti University, Tehran, Islamic Republic of Iran
Solmaz Hosein Shobeiri, Department of Information Technology, Shahid Beheshti University, Tehran, Islamic Republic of Iran
Nasim Atabak, Shahid Beheshti University, Tehran, Islamic Republic of Iran

ABSTRACT

This article describes how nowadays due to the importance of information technology in organizations, it is necessary to examine the efficiency of IT used in the organization. Given the importance of IT in organizations, waste identification in such context and its elimination can have a significant effect on production quality optimization, service provision and IT management. Accordingly, the concept of lean IT was introduced in 2007 which mainly aims to make IT more efficient in organization as much as possible. The current study aims to examine lean IT level in organization. Therefore, first the criteria and sub-criteria of lean IT were determined by experts; after identifying their hierarchical structure, a questionnaire was given to the experts in IT department in two companies. In the next stage, another questionnaire was designed which included importance and status of criteria in the organizations from the viewpoint of the experts. Based on the obtained results, two criteria including "error prevention or hash" and "wait time/delay removal" obtained the highest priority.

KEYWORDS

Fuzzy Decision Making, Fuzzy Screening, Lean IT, Waste of Information Systems

INTRODUCTION

Without the shadow of doubt, in the world today, IT in organizations has brought about profound improvements in both office and information systems. Based on research carried out, there is a positive correlation between investments in IT with output of human resource. IT helps organizations increase diversity of products, improve quality and customer satisfaction. Also, it facilitates the administrative processes, increases the output of human resources as well as the speed and the quality of managements' decision making (Ganapathy et al., 2008). In addition, IT helps organizations to get rid of paper work. The extent of IT application is not limited only to operational units, rather it involves organizational structure as well (Katz, 1993). Due to high importance of IT in organizations, there is a considerable need to examine the efficiency of IT used in organizations. In this regard, it is vital to quantify the amount of IT, otherwise its management be impossible. The essence of IT, however, as an infrastructure prevents its exact measurement (IT encompasses both intangible qualitative and quantitative nature). Therefore, measurement techniques, which are often statistical, are used to measure organizational performance in terms of perceived impact of information technology (Torkzadeh & Doll, 1999).

DOI: 10.4018/JCIT.2018010101

Notably, only a small portion of the effort and time spent in each organization creates a practical value for the end-user. Therefore, by mapping the value process, one discovers that only about 5-50% of the activities are actually valuable; thus, losses in this context are costly to an organization contributing to losses of organization resources. Given the importance of IT in organizations, identification of losses in such context and their removal can have a significant impact on production quality optimization, service provision, and IT management. Accordingly, the concept of lean IT, whose central concern is elimination of waste in organization, was introduced in 2007.

Organizations aim to be agile to present solutions to customer needs and increase customer responsiveness (Gunasekaran, 1998). Greater agility also leads to overall superior performance of the organization (Setia et al., 2008). In some cases, agility is influenced by slower business intelligence and reduced efficiency, thereby bringing in waste (Prouty,2008). Lean practices can serve as means to be agile and they map the value stream to identify and remove non-value-added activities (Womack and Jones,1996) in the workflow to accelerate the execution. The first step in lean is to put the customers in the foreground. Having skilled teams to address their requirements and the active involvement of the customers is emphasized. Moreover, managerial and technical capabilities influence the agility and the leanness (Tallon, 2008).

Lean, if executed correctly, is about improving the efficiency (Pope, 2008). Lean management is a holistic approach about people, projects and processes. Activities in the project life cycle make the project's value stream (Andersson et al., 2006).

One of the most important advantages of lean IT implementation is the reduced organizational costs in the realm of IT. As shown in Figure 1, the cost of IT in traditional companies is about three time more than companies implementing lean IT, therefore, lean IT is a crucial factor in organizations (Bell et al,2011).

Lean IT engages people by using a framework of Lean principles, systems, and tools to integrate, align, and synchronize the IT organization with the business to provide quality information and effective information systems and ultimately enabling and sustaining the continuous improvement and innovation of processes. As lean production or lean manufacturing is widely used in all industries, lean principles are also increasing in IT context and are invaluable to increase efficiency. The main aim of Lean IT is to eliminate waste (non-value adding activities for customers) to provide efficient IT in organizations and to improve quality; however, in this case, organization efficiency and alignment of IT systems with organization's future needs should constantly be taken into consideration. Notably, previous research reveals that implementation of Lean IT in organizations encounter many challenges including: resistance to change, scattered IT departments, and visualization of value process which should be overcome by organizations. In summary, Lean IT consists of 5 key principles which should

Figure 1. Traditional IT cost and lean IT cost