Evaluate relationship between management accounting and control practices in lean system

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ABSTRACT: As firms progress in their implementation of lean manufacturing, many are recognizing the need for a supportive management accounting and control system. This research provides some of the first empirical evidence of the use of management accounting and control practices in a lean manufacturing environment. It appears that as the implementation of a lean manufacturing strategy intensifies, the organization simplifies its internal accounting reporting system, eliminates inventory tracking and overhead allocation, and increases its use of value stream costing. We also find that the presence of top management support for change in production strategies motivates firms to the extent of lean manufacturing increases. In sum, our study contributes to the accounting literature by providing insights on the working of package of management accounting and control practices in a lean manufacturing environment looks like and help keep our research relevant.

Keywords: congruence model, lean accounting, management accounting, management accounting practices, value stream costing

INTRODUCTION

Lean manufacturing is often regarded as the most important strategy for manufacturing firms desiring to achieve world-class performance (Rinehart et al., 1997). As firms progress in their implementation of lean manufacturing, many are recognizing the need for a supportive management accounting and control systems. Yet, accounting research has been slow to recognize the importance of aligning management accounting and control practices with a lean manufacturing strategy (Castellano & Burrows, 2011). This study addresses this limitation by investigating whether and how management accounting practices and controls are used in support of lean manufacturing. Manufacturing firms have responded to the highly competitive market of the past two decades by implementation such practices as quality circles, statistical process control, theory of constraints, just-in-time inventory management (JIT), total quality management (TQM), six sigma, and total preventive maintenance (TPM) (boroojerdi, 2004). The essence of the lean manufacturing strategy is that all business processes and functions integrate into a unified, coherent system whose single purpose is to continue to provide better value to customer (Grasso, 2005). However, there is little empirical evidence that sheds insights on the integration of management accounting and control practices with a lean manufacturing strategy. Using a quantitative case study, Kennedy and widener conclude that management accounting and control practices change in support of a lean manufacturing strategy (Kennedy, widener, 2008). The aim of this study is to build on the Kennedy and widener (2008) study and provide a deeper empirical understanding of the management accounting and control practices used by a cross-section of manufacturing firms to support their lean manufacturing strategy.

The next section discusses and clarifies our representation of lean manufacturing and lean accounting and investigates the past research of the current issue. In third part we introduce the congruence model to gain the integration in lean organization, and on the basis of this model, we examine management accounting and control practices. After that we study the relationship between management accounting and control practices and the last section will discuss the results.

Literature Review

Lean manufacturing

The term "lean production" was first coined by Womack and Jones (1991) in their seminal book, The Machine that Change the World. However, the origin of the lean strategy is generally attributed to Toyota, whose production system was originally referred to as just-in-time (JIT). Since that time, the term has evolved
into a much broader operational strategy. Shah and Ward (2003) offer the following definition of lean production:

Lean production is a multi-dimensional approach that encompasses a wide variety of management practices, including just-in-time, quality systems, work teams, cellular manufacturing, supplier management, etc. in an integrated system. The core thrust of lean production is that these practices can work synergistically to create a streamlined, high quality system that produces finished products at the pace of customer demand with little or no waste (Shah Ward, 2003).

A lean manufacturing strategy examines value from the customer’s perspective and then redesigns the production processes to enhance that value (Womack Jones; 2003; Hajiha, 2004). Systems are designed to minimize waste and produce quality products first-time through (Kennedy, Maskell, 2006). Lean manufacturing is a pull strategy, producing only to customer demand. Firms in this environment recognize into cells and value streams (Womack Jones, 2003), that allow them to focus on the value generated by products or product families across all functions.

**Management Accounting**

Chenhall (2003) clarifies four distinct terms that are occasionally used interchangeably. Management accounting (MA) refers to a collection of practices such as budgeting or product costing while management accounting systems (MAS) refers to the systematic use of MA to achieve some goal. He further distinguishes management control systems (MCS) as a broader concept that includes MAS and such controls as personnel and clan controls. Finally, organizational control (OC) is broader still and includes the controls built into activities and processes.

In the following we discuss management accounting and control practices in the past researches in the current issue.

Efficiencies result when the characteristics of the people are congruent with the work of the organization (Nadler Tushman, 1980). As employees acquire the characteristics necessary to make timely, effective decisions, they are more motivated to be empowered and achieve organizational goals. Prior research has shown that the implementation of TQM, JIT and world-class manufacturing is related to empowered teams (Cua Schroeder, 2001). Structural alignment and fit, and achievement of organizational goals are much easier to accomplish when employees are empowered.

In a lean manufacturing environment, visual controls are integral to facilitating effective work activities (Cunningham Fiume, 2003). Visual transformations can make complex information simple by providing shop-floor workers with current, easy-to-use performance measurements that communicate real time results. Using qualitative data, Kennedy and widener (2008) conclude that a lean manufacturing strategy is related to a visual performance measurement system comprised of operational measures critical to the achievement of lean strategic objectives.

In a lean environment, accountants are encouraged to interact with shop-floor personnel to better understand their information in a more simplified form. Fullerton and McWatters (2001) empirically show that firms adopting higher levels of lean manufacturing are more likely to have simplified their accounting system. One major objective of lean manufacturing is to increase the contribution of the value streams (Hajiha, 2007). Based on personal experiences, Solomon and Fullerton (2007) argue that value stream costing improves the communication and decision making process in lean organizations and save money through significantly reduced transaction tracking. In their longitudinal case study, Ahlstrom and Karlsson (1996) demonstrate that refocusing the management accounting system on value streams is beneficial to a lean manufacturing strategy. In a dynamic environment, top leadership must be an enthusiastic and active agent of change to motivate and reassure workers of the appropriateness of new techniques. Studies investigating TQM and JIT affirm the importance of top management commitment for achieving success in implementing advanced manufacturing technologies (Kennedy Maskell, 2006; Garcia et al., 2012). Kaynak (2003) summarizes this argument by stating: “It is management that provides the resources necessary for training employees in the use of new principles and tools, and creates a work environment conducive to employee involvement in the process of change.

**Congruence Model**

To investigate the integration of a lean manufacturing strategy into and throughout the entire organization, we draw on contingency theory. The essence of contingency theory is that organizations must adapt their structure to contingencies such as the environment, organizational size, and business strategy if the organization is to perform well. It is important, although difficult, to identify the specific aspects of the environment and accounting system to study.

Congruence, defined as “the degree to which the needs, demands, goals, objectives, and structures of one component are consistent with those of the other” (Nadler Tushman, 1997). Congruence concept is the researcher’s attempt to understand the laws of organizational relationships (Fry-Smith, 1987). The congruence model holds that internal consistency among components of people, work, the formal environment and the
informal environment is critical to achieving organizational fit. The model assumes that the components must be in alignment; thus, changing one influences the other. In the congruence model, the formal environment includes an organization's structures, processes, methods, and procedures developed to help people achieve strategic alignment (Hajiha, 2007; NadlerTushman, 1997). While the informal environment consist of unwritten and unformalized practices and processes that are embedded in the beliefs and values of the organization. In sum, the congruence model suggests that in order to fully understand hoe firms perform, one must understand the critical transformation process through which people, working within the context of both formal and informal arrangement, convert input into output (Fry Smith, 1987). The congruence model argues that efficiencies result when the characteristics of the people are congruent with the work of the organization. In sum, employees who believe they have the necessary skills and knowledge to be empowered in their actions and decision making will enable congruence between people and work in a lean pull environment (Wyman, 2003). So the implementation of a lean manufacturing strategy is positively related to employee empowerment. The congruence model argues that a firm's formal organization provides employees with a means to structure and coordinate their work activities in order to achieve the firm's strategic objectives. So we conclude that the implementation of a lean manufacturing strategy is positively related to the use of a simplified strategic reporting system. One major objective of lean manufacturing is to increase the contribution of the value stream. VSC sheds insight on managing production bottlenecks and capacity, which are critical issues to the flow and pull so vital to lean production (Hajiha, 2007). The implementation of lean manufacturing strategy is positively related to the use of value stream costing. Nadler and Tushman (1980) point out that the behavior of management is a critical component of the informal environment because it significantly influences the transformation process of the congruence model. Thus, in the presence (absence) of top management support for change in production strategies, the effects of a lean manufacturing initiative on the firm's management accounting and control practices are likely to be larger (smaller).

**Relationship between Management Accounting and Control Practices**

Consist with Nadler and Tushman (1980), we argue that congruence requires people to be aligned with the formal practices must be congruent with one another. Thus, we expect there to be relations among empowerment, visual performance measurement, simplified strategic reporting and value stream costing. Value stream costing, a simplified strategic reporting system, and visual performance management information articulate a firm's commitment to lean strategies and create a formal system that provides the information to help achieve those lean objectives. Value stream costing is a more straightforward accounting system that
conveys the continuous improvement and reduction of waste principles embodied in lean. It attempts to capture actual costs with minimal allocations, consistent with simplified MAS that provide strategic information. Strategic operating measures are portrayed visually for the value stream, simplifying shop-floor information and aiding in the empowerment of employees to make decisions and take actions congruent with a lean strategy. Together, these practices serve to motivate creative innovation congruent with the firm’s strategy of lean manufacturing.

CONCLUSION

This research provides some of the first empirical evidence of the use of management accounting and control practices in a lean manufacturing environment. It appears that as the implementation of a lean manufacturing strategy intensifies, the organization simplifies its internal accounting reporting system, and increases its use of VSC. We also find that the presence of top management support for change in production strategies motivates firms to reduce their emphasis the extent of lean manufacturing increases. The result also show that all of the management accounting and control practices are either directly related to one another. In sum, our study contributes to the accounting literature by providing insights on the working of the package of management accounting and control practices in a lean manufacturing environment, and what congruence in this environment looks like. These are important theory and practice insights that move our knowledge of management accounting forward and help keep our research relevant.

REFERENCES

Borojedi P. 1983. If you want lean, you can transform your accounting system. Knowledge audit journal, 14, 4-8
Hajhaha Z. 2007. Value stream costing, new approach to lean accounting, Knowledge audit journal, 24, 52-63
Solomon JM, Fullerton R. 2007. Accounting for world class operations Fort Wayne, IN: WCM Associates