

A Case Study in an Engineering Company: Evaluation of Performances

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Abstract

Lane Engineering (LE) is an engineering firm whose main line of business is production and precise engineering. The main purpose of this study was to make a strategic analysis of LE. The study adopted and enhanced a case study which was conducted as part of a project work in Near East University in 2017. The company materials were collected by the Ph.D. student coauthor from the available public and private information sources of the company. The analysis of the study incorporated the use of the Balanced score card which is essential to determine the performance of an organization and the drivers for future performance. The Value chain was also used for the study to assess value added by separate activities in their organisation to increase competitive advantage. Also, respective suggestions other conceptual and academic issues that can be related with technology and innovation management in reality, as in the following order.

Keywords: Lane engineering, Balanced scorecard, Value chain analysis, Technology and innovation management.

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**TECHNOLOGICAL MANAGEMENT: A CASE STUDY OF LANE ENGINEERING
(LE PVT LTD)**

ABSTRACT

Lane Engineering (LE) is an engineering firm whose main line of business is production and precise engineering. The main purpose of this study was to make a strategic analysis of LE. The study adopted and enhanced a case study which was conducted as part of a project work in Near East University in 2017. The company materials were collected by the Ph.D. student coauthor from the available public and private information sources of the company. The analysis of the study incorporated the use of the Balanced score card which is essential to determine the performance of an organization and the drivers for future performance. The Value chain was also used for the study to assess value added by separate activities in their organisation to increase competitive advantage. Also, respective suggestions other conceptual and academic issues that can be related with technology and innovation management in reality, as in the following order.

Keywords: Lane Engineering, Balance score card, Value Chain, Technology and Innovation Management

1.0 Introduction and Background Information

Lane Engineering is an engineering firm. The LE organizational structure is highly formalized, with a very bureaucratic reporting system which is time consuming and to a certain extent retards change at LE. Communication channels are highly centralized, with the General Manager solely responsible for any change in strategy, policy and procedure. Although LE has a strategic plan in place, its weaknesses are on implementation and follow-up issues. With the appointment of a new General Manager recently, however, LE experienced a change in the way things are done. He ensured full participation and involvement of all key staff through fortnightly Business Development Seminars where the corporate strategy was discussed and progress reviewed. Communication at LE is through reports (marketing plan), memos, and meetings. These Business Development Seminars also included seminars on good communication skills, handling difficult customers, conflict resolution and report writing. In general, LE's distinct capabilities are mainly in its human resources. The General Manager is highly qualified. The Engineering Manager has 40 years' experience in the engineering field. LE also boasts of having 5 qualified artisans as part of its managerial team.

This paper aims to make strategic analysis of LE, as an interesting case of an engineering firm, adapting and improving a case study conducted as part of a project work in Near East University in 2017. The company materials were collected by the Ph.D. student coauthor from the available public

and private information sources of the company. The analysis and respective suggestions are based on Balanced Scorecard, Value Chain and other conceptual and academic issues that can be related with technology and innovation management in reality, as in the following order.

2.1 The Balanced Scorecard Analysis

With global international attractiveness, companies pursue approaches that aid the analysis of its results in its various departments. Most organizations like “Ford Motors, General Electric etc. succeed to stay ahead of competition because they have employed the Balanced score card which help organizations swiftly execute strategy by transforming the vision and strategy into a set of effective goals that can push behavior, and therefore, performance (Rillo, 2005 ,pg.171). According to Kaplan and Norton (1992, pg.72), the balanced scorecard is defined a satisfactory means to choose a balanced set of gauges and intentions that exhibit the strategic vision of the organization, assisting organizations to meet their stakeholders’ anticipations, to express and convey strategic objectives and to appraise their execution. The Balanced Score Card should have ultimately procedures and goals imitated from a specific business strategy (Kaplan & Norton (2001). In particular it should have four components which are described below Shukri and Ramli (2015, pg.205). 1. Financial goals- defining what financial goals a company have that will impact on the organization, 2. Customer goals- what things are important to our customers whom will in turn impact our financial standing. 3. Internal Process Goals- what business methods are we utilizing in order to meet customer needs and shareholders that will impact on our financial standing. 4. Learning and Growth-What skills, culture, capabilities are needed for company to carry out its processes that would satisfy customers and therefore have a positive impact on finances. Figure 1 indicates the Balanced Score Card approach of LE.

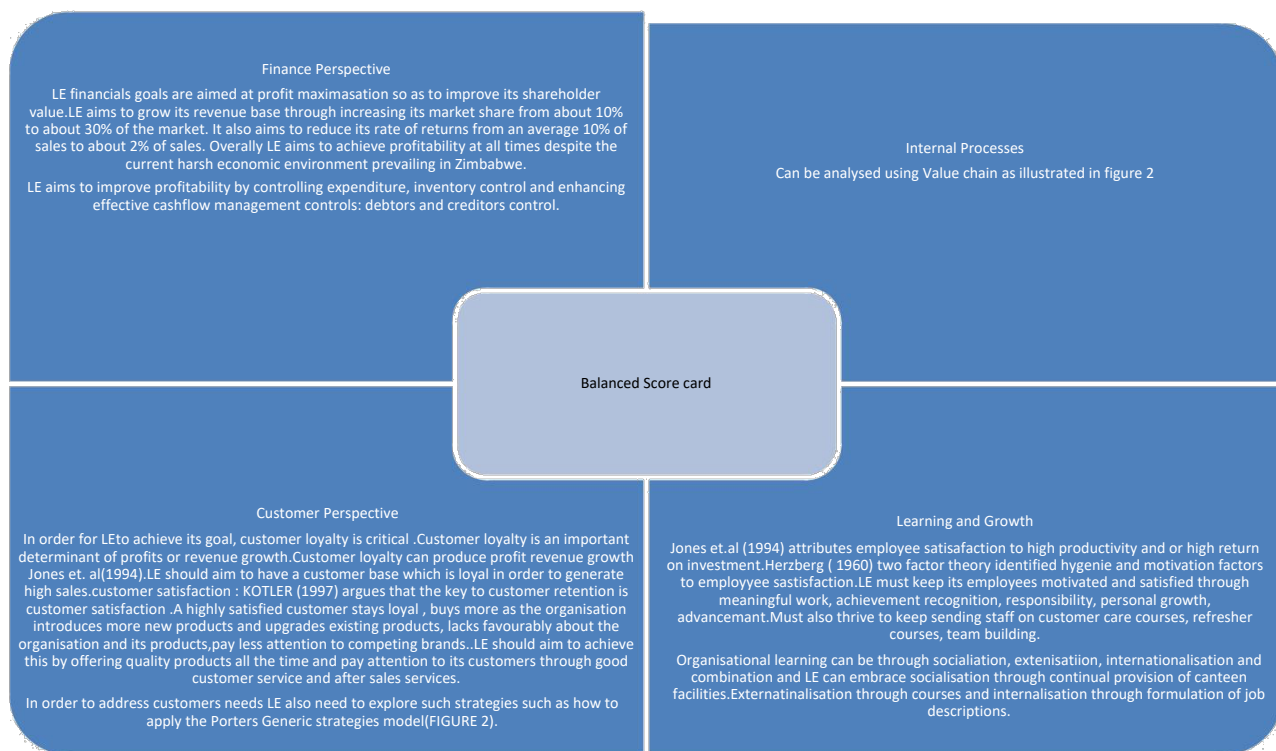


Figure 1. The Implementation of Balanced Score Card by LE

2.2 Value Chain Analysis

Porter (1985) developed the Value chain Analysis as a tool to assess the value added by separate activities in their organisation to increase competitive advantage. He advises that an understanding of the strategic capability must start with an identification of value activities within the value chain.

The margin is the excess the customer is prepared to pay over the cost of obtaining resource inputs and providing value activities. The researcher seeks to determine if LE's costing structure is comprehensive enough to take into account all the relevant costs and incorporate an adequate margin to maximise profit or revenue growth.

Primary activities are directly related to production, sales, marketing and delivery of service. LE should aim at producing quality products by reducing the rate of return as well as quality service delivery in the form of good customer care. This should give it a competitive edge over its rivals and therefore realize growth

Inbound Logistics involves receiving, handling and storing inputs to the production system. Although LE maintains a proper inventory system, there is a high level of pilferage within the factory that could be attributed to a weak inventory control system. High pilferages can ultimately result in huge losses for LE thereby hindering any prospects for growth.

Operations convert raw materials into final products. Although production for LE is scheduled in the form of route cards, the absence of a proper planning schedule affects the efficiency of its operations. In addition, LE relies on old outdated machinery, which is often subject to breakdowns.

Machinery breakdowns are often a result of the absence of a proper planned maintenance schedule. Operations are often interrupted by unanticipated machinery breakdowns, which results in high levels of downtime, high labour costs and a poor quality product. Production should be properly scheduled to ensure minimization of downtime.

Outbound logistics must be properly planned and products inspected for quality to minimize returns. Products at LE often leave despatch without being properly checked for quality. This is due to the absence of a quality control section, whose role is often undertaken by supervisors not trained in quality control.

Marketing and Sales inform customers about LE's product profile, persuading them to buy, and enabling them to do so through advertising, promotion and public relations. This is where LE is the weakest. LE does not have a technical sales representative to sell its products as result sales are basically repeat sales from customers who have been loyal to it for the past 30 years.

After Sales Service involves giving advice to LE customers. LE does not offer after sales services to its customers unless the customer specifically requests for the service.

Support Activities are in the form of human resources, technology, and infrastructure functions to support the primary activities. By virtue of its size LE does not have a separate Human Resources function. Issues relating to recruitment, rewards and performance are dealt with at departmental levels. Personnel not well versed in human resources issues therefore open LE to labor litigation issues as a result of improper handling of labor issues.

Procurement is the acquisition of resource inputs to the primary activities like raw materials and consumables. LE should procure quality raw materials and consumables in order not to compromise on quality of the finished product.

Technology Development is product designs, improving processes and resource utilization (Phaal, Farrukh & Probert, 2003, pg.8). Sawhney, Walcott and Arroniz (2006, pg.77) indicated that in order to lure customers and generate income, companies need to invest into product innovation that is designing new products and services which are valuable to customers. For instance, Procter and Gambler developed a Spin Brush," which became the world's outstanding electric toothbrush in 2002. It was also valued by customers because of its adaptability, handiness and economical. LE main line of business is production and mechanical engineering specializing in production of engineers vices, woodworking machinery, maize seed graders, belt fasteners, pig drinker nozzles and machining work. LE could innovate through diversifying into new lines of business like targeting heavy vehicle companies and construction companies in view of servicing their drums, clutches and gears. Additionally, LE could also innovate into design and production of new products like garden tools for urban gardeners which they don't currently cater.

LE plant and equipment is old and unreliable. This compromise on quality and increases labor and repair costs due to constant downtime. This adversely impacts on the efficiency of LE. Hence it is recommended for LE to adopt to modern technology to improve its operation processes and profits. LE before adopting to the modern technology should take into consideration if the enhancement of product quality by new technology would indeed obtain market share and also pay attention to the effects from the competitors' reactions towards the adoption of the new technology (Huang, Hgueh & Zheng, 2013, pg.5). LE's computer system is not linked meaning it has a standalone accounting system which is not linked to its production and or operations system. Neither does LE have a website or a blog in which it advertises its products.

Medeiros (2017) alluded that technology is constantly evolving thus altering the way businesses function and the way they offer their services therefore firms need to be cognizant of the part played by technology and innovation in order for them to achieve their goals. He recommended what he termed "technology-enabled efficiency (standardization, modularization and automation of common design activities). Sawhney et al. (2006, pg.78) agrees with Medeiros (2017) by mentioning that processes for LE can be innovated to improve efficiency and quality. LE can be innovative by investing in a automated system like the AutoCAD which is computerized and highly mechanized system to control its lathe machines. LE main challenge in implementing this modernized and automated system in its engineering production line is lack of capital since this is capital intense, but should look at into this investment in the long run because the resultant effect will be greater efficiency and a reduction in the rate of returns which currently stands at 5% to industry recommended 1 to 2% rate of return. LE will increase productivity and or profitability and also reduce production turnaround time greatly.

Medeiros (2017) also cites technology enabled services with examples of linking built assets and digitalization. LE operates in a third world country where digitalization has not been fully accepted. However in the long run LE needs to innovate towards digitalization, though it is capital intensive.

2.3 Technological and Innovation Strategies

Other suggestions for strategic technology and innovation management in LE are provided below:

Buyer Personas Redfearn (2016) in what he termed Buyer personas preproposes that engineering firms needs to do a profiling exercise for their buyers and or the industry in which they operate, whereby a research is then done to determine the customer needs and requirements. LE have to a certain extend divided its customer base into industrial customers and farmers and as such knows its

customers' needs. However LE can improve productivity and profitability by enhancing this by buttressing Buyer Persona concept through customer interviews in order to determine any gaps in their customers' needs and fill the gaps.

Engineering Blog Crescenzi (2017) also proposes that engineering firms should consider coming up with an Engineering Blog whose essence, will be to address customer concerns and complaints. The Blog will then be updated regularly with latest updates. LE could copy from this concept because at the moment it does not have such a technological innovation in place and creating a blog is easy and does not require financing.

Online Discussion Forum Da Cunha and Orlikowski (2006, pg.135) state that advances in technology has facilitated the use of online discussion forums such teleconferencing , use of emails and “whatsapp” group which simplifies decision making in that in cases where management are away on business decisions can be made online and avoid delays. It is instant wherever they are be it on business or on vacation. Technology advancement has removed bureaucratic decision making processes where documents have to be circulated from one office to another. LE created a management whatsapp forum where decisions and queries are solved by management without having to meet physically. The use of emails is highly used at LE for decision making for example, if there is a decision to be made on capital expenditure quotations are just posted on the whatsapp group and managers can just make recommendations and decisions made there.

Email Marketing According to Muller, Flores, Agrebi & Chandon (2008, pg.469) email marketing is a simple way of advertising a firms products through channeling out emails in the form of newsletters to current and potential customers. This is a cheap advertising tool whereby customers are updated on a company's product profile using emails. It also helps the firm easily access a wider market especially those who infrequently use social media. LE could copy this and implement since it is a cheaper and easier way of marketing.

Sponsored Content This is more like collaboration where a firm can partner with another firm in order to mix your products in their publication. Firms may manipulate social media channels for advertising purpose, e.g. catalogue products on video and share on WhatsApp, Facebook or other social media sites (Castronovo & Huang, 2012, pg.120). This is a very visual and captivating way of attracting customers which LE could adapt cheaply and easily. Over and above LE could create a website and posts videos showcasing their products.

Chatbox Similar to other media sites, a Chatbox can be used to relay bid data results and company benefits for customers' information. Information like performance trading can be accessed and progress and daily reports. Chatbox helps firms develop customer service, efficiently responds to the needs of the customers and also reinforces relationships with customers (Moran & Gossieaux, 2010, pg. 235). LE could also utilize this cheap and easy way of communicating with its customers, thus encourage feedback and improvement on customer care.

Finally, **Human Resource and Knowledge Management** is crucial for the success and growth of LE. The retention of skilled labour through effective use of human resources and remuneration thereof will result in productivity which translates to revenue or profit growth. Nonaka and Takeuchi (1995) says organizations should be able to convert implicit knowledge into explicit knowledge, so that knowledge acquired by individuals becomes organizational knowledge shared among colleagues, and explicit knowledge is converted into implicit knowledge by individuals. They described this as a knowledge conversion cycle. Although LE staff has implicit knowledge it is not being effectively utilized for the growth of LE therefore it needs to copy from Nonaka and Takeuchi (1995) and come up with strategies to disseminate individual knowledge for the benefit of the organization.

While feedback was provided to LE, as the result of the initial case study on which this academic work has been based, authors hope these analysis and suggestions be also useful for other engineering firms in the world.

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