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# Improvement of outsourcing by employing Lean Philosophy

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**Abstract**

**Purpose:** Presents lean outsourcing model and application on a small UK-based manufacturing company that has been outsourcing part of its activities.

**Design/methodology/approach**: The proposed approach comprised two parts. The former is the outsourcing activities within small and medium sized manufacturing companies. The later is the use of lean philosophy for continuous improvement of outsourcing.

**Findings**: The lean outsourcing model enables the outsourcing managers in improving outsourcing without any additional aid / expenditure.

**Research limitations/implications**: The model is developed based on the information acquired from small and medium sized real manufacturing companies.

**Originality/value**: The lean outsourcing model is a novel approach for small and medium sized manufacturing companies. The model may be used for small and medium sized companies in other industry.

**Keywords:** Decision, Improvement, Lean, Manufacturing, Outsourcing.

## 1.0 Introduction

In order to survive in the dynamic market organisations have adopted outsourcing as a short-term strategy. The author of 'The offshoring Craze (2005)' mentioned that many executives and analysts fear that many firms are unwisely jumping motivated by the promise of the cheap labour. Due to hidden costs, ineffective management and lack of communication the potential benefits of the outsourcing are often lost. Outsourcing process can be improved if it is managed effectively. All outsourcing weaknesses can turn into strengths by combining the lean philosophy with outsourcing.

The outsourcing models and frameworks proposed by other researchers have addressed different areas, such as 'outsourcing of information technology', 'outsourcing of asset management services', 'assessing outsourcing risks' and 'Virtual IDM Model for Outsourcing Chip Design and Manufacturing' (Barragan et al. 2003); (Canez et al. 2000); (Hassanain an Al-Saadi 2005); (McIvor, 2000); (Sabatini, 2004); (Visser et al. 2000); (Zeng, 2003). The outsourcing model proposed by Hong et al. (2004) focused only on the customer's requirements regarding engineering and manufacturing. Harland et al. (2005) proposed a framework for assessing the outsourcing risks and benefits for organisations, sectors and nations, whereas Choy and Lee (2002) proposed the Case-Based Reasoning model for the selection of the supplier relationship. Novak and Eppinger (2001) presented models for relationships between product complexity and sourcing, and Stopler and Samuelson (1941) formulated an expression to relate products through the costs of the labour. Bragg (2006) suggested a model for outsourcing of the total manufacturing function. However, critical analysis shows that these models lack continuous improvement element. Some of these models mention continuous improvement, but they do not propose a method for carrying out continuous improvement. Therefore, there is a need to devise a method by which outsourcing could be continuously improved, without investing additional effort and resources.

Instead of continuously improving outsourcing by conventional means, it is desirable to research a philosophy that incorporates continuous improvement as part of its strategy. In this regard, lean philosophy is best suited. Lean is an extension of the Toyota Production System (TPS) and grew through revolution and evolution (Bicheno, 2004). The term 'lean' was introduced in order to describe a production system that uses fewer resources, compared with mass production. Due to continuously adapting to satisfy market demand, organisations throughout the globe have been implementing lean. Some organisations have been successful in improving output (Emiliani and Stec, 2005). Several studies point to the lean manufacturing system as a major factor behind the success of world-class Japanese companies. Moreover, there is considerable evidence that the lean manufacturing system can be successfully used for non-Japanese manufacturing Environment (Perrons, 2005). The characteristics of lean companies are observed to be better, faster and cheaper than their competitors (Comm and Mathaisel, 2000). Lean production provides a large variety of products at lower cost and higher quality, with less of every input, compared with traditional mass production.

Lean manufacturing can result in a 50% reduction of human effort, manufacturing space, tool investment and product development time, and a 200-500% improvement in quality (Wu, 2003) cited (Zayko et al. 1997).

Taking into account all of the abovementioned achievements, lean is selected to be combined with outsourcing, in order to achieve a continuously improving outsourcing system. The model is presented to the management of a small manufacturing company for feedback. The results of the feedback are presented in this paper.

## 2.0 Formulation of Lean Outsourcing model

A basic outsourcing model consists of outsourcer, outsourcee, transportation system, and communication system. The communication system is responsible for providing an information exchange link between the outsourcer and the outsourcee. For example outsourcer requests an order and the outsourcee confirms the request that is carried out through using communication system. It may be consisted of networks, telephones, internet or some secure messaging dedicated system. The transportation system is used for delivering materials, finished components, semi-finished products and modules between the outsourcer and the outsourcee. This system may be consisted of conveyor belts, cable cars, trucks, trains, ships and planes.

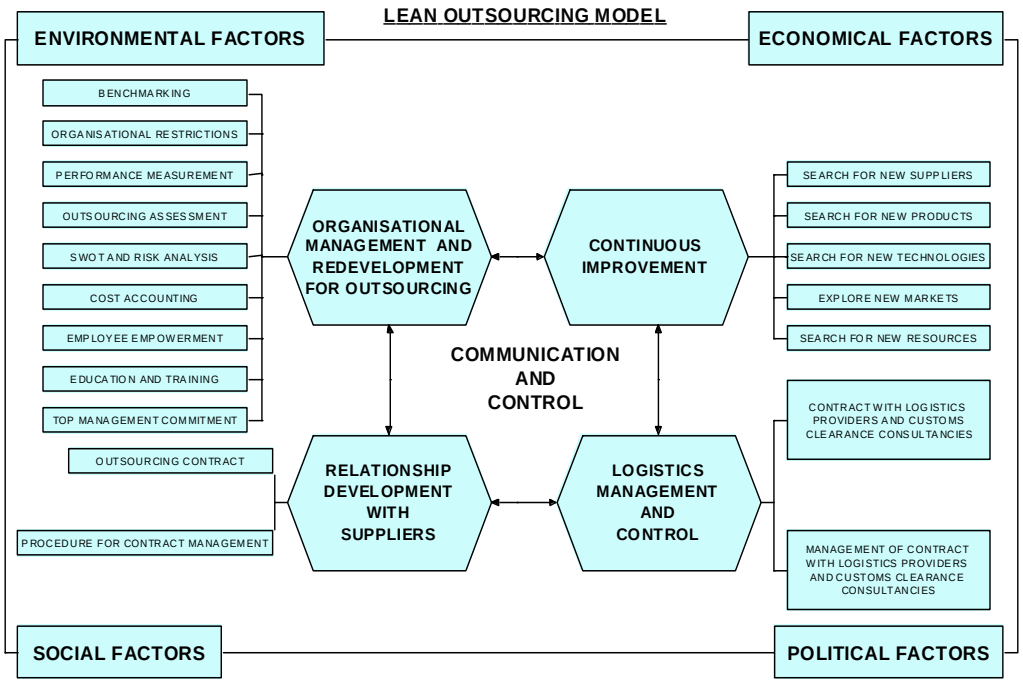


Figure 1: Lean Outsourcing Model

As the outsourcing activities increases, the model also evolves to cope with the work load. The control system is added that is responsible for auxiliary operations. It is employed to monitor functions and assure the smooth running of all operations. The operation like delivery order confirmation, correct delivery matching and correct invoice matching are executed using control system. Then it was considered selecting measurable criteria for assessing outsourcing operations. The outsourcing model was upgraded in stages but the rate of improvement was not enough. Because there was a need to train staff, develop relationships with the participants and reform the company for the dynamic market.

In order to achieve above mentioned, finally the lean outsourcing model was structured. The aim of combining lean with outsourcing was to create continuously improving outsourcing, with no additional effort or resources. Lean outsourcing also delivers competitiveness by creating a balanced flow of value-adding processes, and by eliminating waste.

## 2.1 Components of Lean Outsourcing model

The components and sub-components of the lean outsourcing model are listed in Figure 1: 'Organisational Management and Redevelopment for Outsourcing', 'Relationship Development with Supplier', 'Logistics Management and Control', 'Communication and Control', 'External Elements' and 'Continuous Improvement'.

The Lean outsourcing model was presented to the management of a manufacturing organisation for feedback; hence, a tier-1, UK-based manufacturing company was selected. The company had been outsourcing part of its manufacturing operations. The information collection process was started in 2006. The feedback incorporation into the model, in order to improve it, was initiated in 2007, in incremental stages.

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### 3.0 Organisational Management and Redevelopment for Outsourcing

Prior to outsourcing, the company used to manage its manufacturing internally. The management structure of the company was manufacture-oriented. The manufacturing department of the company consisted of machine tools, manufacturing facility, manufacturing staff and management (managers and executives), manufacturing processes and manufacturing technology. Fan (2000) highlighted that most companies were managing their outsourcing programmes in the same way as their standard supplier/management procedure. The senior manager of S Enterprise explained that after the outsourcing process was started, the company's requirements changed. The management of the manufacturing department was transferred to the external company (outsourcee). The organisational management of outsourcing involves transferring the customer's demands to the outsourcee. The manufacturing staff and management are either transferred to the outsourcee, along with the manufacturing facilities, or retrained to perform other tasks.

A new management structure emerged that is described by the new component called 'Organisational Management and Redevelopment for Outsourcing'. It comprises nine sub-components: 'Education and Training', 'Benchmarking', 'Outsourcing Assessment', 'Employee Empowerment', 'Performance Measurement', 'Top Management Commitment', 'Cost Accounting', 'Organisational Restrictions' and 'Strengths, Weaknesses, Opportunities and Threat and Risk Analysis'.

### 3.1 Education and Training

By carrying out literature survey identified that organisations have practised various functional systems and philosophies to achieve competitive advantages and to solve the problems encountered, those varied from market survey, to the product launch in the market. For example, the Ford Motor Company achieved success by the introduction of a more precise measurement system for components, simplifying the design for manufacture, and developing skilled labour.

Downey (1995) highlighted that the philosophy of the lean system is continuous improvement and reduction in waste. Every individual involved is multi-skilled, improving the process while performing his/her own job. Downey (1995) also encouraged training and development regarding outsourcing.

A lack of qualified personnel emerged as the most serious problem (Trent and Monczka, 2003). Hindle (2005) emphasised the need for educating employees regarding outsourcing. Kim (1993) stated that all organisations learn, whether they consciously choose to or not; it is a fundamental requirement of their sustained existence. Education enhances skills and motivation in encouraging teamwork. In a survey of training needs for the future, it was concluded that previous training skills and procedures had to be revised for understanding systems and social skills, as the need shifted to more conceptual awareness of what a person can do, rather than only what he/she knows (Downs, 1998).

After analysing the information acquired through literature survey about education and training, the author proposed to managers of companies that employees should be trained with regard to the concepts, philosophies and techniques of the lean system and outsourcing, as individuals, and how they can be integrated. This could be achieved by conducting workshops, higher education and specialised conferences. Wherever necessary, external experts and consultants should be hired to assess the organisation's suitability for outsourcing, and then develop an educational programme for all levels of the organisation. Lean outsourcing stresses the need for continuously improving the educational and training programme, in order to fulfil the business needs of the organisation. The educational programme should cover all elements that influence the outsourcing, ranging from external elements to contract management. After discussion with managers and academics from school of education, the author proposed that in order to achieve better results, employees should be trained in practising the new approach (lean outsourcing). Education and training play a crucial role in integrating lean philosophy with outsourcing, and practising lean outsourcing. Educating the workforce on the new lean outsourcing is the only key to success.

It was discovered that the company did not have adequate information about lean outsourcing. Therefore, it was essential that the management and staff of the company are well-informed regarding the concepts of outsourcing and lean. The education and training of the staff and management is very important for introducing and practising lean outsourcing. Therefore, before introducing the lean outsourcing model, the company was informed about the procedure and what could be expected as an outcome.

According to lean outsourcing the educational and training programme must be continuously improved / updated, in order to fulfil the business needs of the organisation. First of all, information was collected about the current educational and training programmes run by the company. The information was used to draw up a current-state map of the company. Then management of the company was questioned about future planning. That information was used to draw up a future-state map. The difference between the future-state map and the current-state map was assessed, in order to establish the actual requirements of the company. By analysing the information identified that there was a knowledge gap between staff and management of the company regarding lean and outsourcing. The management of the company was familiar with the concepts of lean and outsourcing operations. Because the management of the company was actively involved in professional development programmes, compared to staff. The management was planning educational and training programmes for staff by taking into account the monetary constraints, time restrictions and objectives of the company. The training programmes comprise introduction to lean and its concepts, outsourcing operations and lean outsourcing and how to implement lean outsourcing.

### 3.2 Benchmarking

McIvor (2000) suggested that outsourced activities should be benchmarked against the capabilities of all the external providers (suppliers), for a particular activity. Fans (2000) argued that benchmarking should be performed on a regular basis and involves re-tendering of the outsourced activity to other providers.

The author carried out a literature review and established that the most common benchmarks used in the manufacturing sector are cost, price, quality, quantity and delivery. In the case of outsourcing of manufacturing, a number of benchmarks could be used, which were proposed to the management of the company. The company (N Equipment) has been manufacturing for several decades and had already applied benchmarks in order to assess manufacturing activities. It was agreed by the management that the company will also be introducing benchmarks in order to assess outsourcing operations.

### 3.3 Outsourcing Assessment

McIvor et al. (1997) suggested multi-attribute analysis for assessing internal capabilities with those of suppliers. Zeng (2003) used cost models to estimate the economic and operating benefits of completing the project.

The outsourcing process can be assessed by comparison with the predicted results, instead of performing the activities internally. The outsourcing could also be assessed by comparing the financial gain before implementing outsourcing, to the financial gain, after implementing outsourcing. For lean outsourcing, outsourcing determinant index (ODI) was used for assessing the improvement periodically, in the outsourcing of manufacturing. The ODI assess whether improvement in outsourcing has taken place at the present, compared with the past.

### 3.4 Employee Empowerment

Greasley and King (2005) stated that empowerment involves the workforce being provided with a greater degree of flexibility, and more freedom to make work-related decisions. The empowerment is concerned with power, control and influence. Empowerment is the combination of the psychological state of the subordinate, which is influenced by the empowering behaviour of the supervisors. Empowerment is a dynamic process of redistribution of power between management and employee. Johnson (2002) suggested that managers should give people the power to perform their jobs. It was argued that the leader (manager) is responsible for creating a common goal, and continuously monitoring the fact that their subordinates feel empowered. Greasley and King (2005) highlighted the importance of a dynamic relationship of the leader, with employees, for empowerment. It was argued that managers must focus on team empowerment, as well as individual empowerment. Greasley and King (2005) also pointed out that management may influence individual perceptions of empowerment in many ways.

During a visit to S Enterprise (company), one of the managers stated that empowered organisations have demonstrated improvements in various performance areas. The employees, who consider themselves empowered, have reduced conflict and ambiguity in their roles.

Greasley and King (2005) argued that empowerment is not a permanent, fixed reality that is shared by all; however, it is experienced in variations from person to person. It is a proven fact that successful implementation of the lean outsourcing model demands a motivated workforce. Due to this reason, the company (N Equipment) is facilitating open communication amongst employees, involving them in its decisions. The company has introduced a reward scheme for employees. Management is also considering offering shares to employees of the company, in order to give them a sense of ownership. It was made clear to the management of the company that empowerment is a state of mind, created in workers by giving them control and power, together with business information, including the strategic context in which the job is performed and accountability for performance outcomes, thereby motivating them to perform the job effectively and efficiently.

Employee empowerment is considered an important element of lean outsourcing. In order to enhance employee empowerment, the company has begun establishing an effective information system; self-managed teams, training and reward incentive schemes. Furthermore, management has been planning to train employees in new skills, instead of replacing them. This has increased a sense of security in employees, and is facilitating in adopting lean outsourcing.

### 3.5 Performance Measurement

Bourne et al. (2005) highlighted that average-performing business units used the performance measurement system as a simple control system, whereas high-performing business units were using the measurement system much more interactively. Bourne et al. (2005) quoted the analyses of surveys carried out by Franco and Bourne (2004) and found that performance measurement had a positive impact on organisational performance. There is a number of outsourcing performance-measurement methods, such as financial and operational performance-measurement matrices. Some companies are employing non-financial performance measures, such as cycle time, time to reach market, set-up time, flexibility, quality, inventory level and output rate. Business performance is examined using financial measures of returns on investment (ROI), returns on equity (ROE), and returns on sales (ROS). According to Leachman et al. (2005), manufacturing performance is identified by the following metric expression 1:

$$Manufacturing\ performance = \frac{Output(Production\ volume,\ Product\ quality)}{Input(Direct\ inputs,\ Indirect\ inputs)} \quad \ldots (1)$$

Dean and Kiu (2002) highlighted that in contracted services, performance-monitoring involves both efficiency (costs) and effectiveness (quality). Avery (2000) recommends the development of written performance goals, and monitoring of external providers to ensure contract fulfilment.

Olve et al. (2004) stated that organisations can assess their performance employing various short-term and long-term performance indicators. Kaplan and Norton (1996) expressed manufacturing-cycle effectiveness as the ratio of the processing time to the throughput time. The same expression can be translated for outsourcing operations, as outsourcing cycle effectiveness (OCE). The economic benefits and saving in primary transactions are shown as expression 2 and 3 can also be used for performance measurement.

Economic Benefit = In-house Manufacturing Cost – Acquisition Cost … (2)

Saving in primary transactions = Investment in infrastructure without outsourcing – Investment in infrastructure after outsourcing … (3)

In outsourcing, manufacturing or processing time (value-added time) is less than 5% of the total cycle time. The total outsourcing cycle time may be in multiples of weeks, whereas the manufacturing or the processing time is in days or hours. In an ideal outsourcing operation, the difference between the outsourcing cycle time and the processing time is reduced to the minimum.

In order to measure performance, the financial gain before implementing lean outsourcing is compared with the financial gain after implementing lean outsourcing. Since the N Equipment is introducing the lean outsourcing model in small steps, the normal activities are not affected, and the cost of adoption is kept to a minimum. The improvement in financial gain is not significant after a year's time. On the other hand, staff members are motivated because of the new approach. Management agrees that the number of defects and the frequency of defects could be reduced. The management of the company acknowledged the improvement since the application of the lean outsourcing model was initiated. It is deduced that in the long run, improvements due to the adoption of the lean outsourcing model will be significant.

### 3.6 Top Management Commitment

Qureshi et al. (2007) emphasised that top management support and commitment helps staff gain better understanding in order to achieve objectives. Kakouris (2006) suggested assessing management capability that reflects the capacity and quality of the top people in management. Tafti (2005) pointed out that for successful outsourcing; senior executives assume full responsibility for the outsourcing agreement from start to finish. Ellram (1990) suggested top-management support as an enabler in partnerships.

The author proposed that in order to implement lean outsourcing, it is important that top management provide moral, technical and financial support. A clear strategy and programme should be formulated. Qureshi et al. (2007) argued that top-management support is vital to commence and sustain a healthy relationship. It is a well-known fact that quality of leadership and guidance originates from a well-committed and dedicated top-management team. Top management is sufficiently informed about the philosophy of lean outsourcing to be convinced that improved competitiveness will result. May (1998) recommends that management teams require expertise in outsourcing management. Senior managers are encouraged to visit other countries and attend conferences and workshops on outsourcing, to understand the leadership responsibilities required. Hindle (2005) feared that employees are threatened by the idea of their personal information being dealt with by outsiders. The author considers it important that senior management should provide the necessary reassurance that outsourcing is about improving, not abandoning them (workforce).

According to the literature survey, top management is mostly interested in making profit through buying and selling businesses. Sometimes, top management even buy and sell human resources, especially managers, in order to increase their profit. Overall, top management is interested in increasing their market share of the company.

After realising the importance of implementing lean outsourcing, the top management of N Equipment has started showing commitment to outsourcing, and to improving it. The top management of N Equipment is considering including lean outsourcing in its corporate strategy. The author proposed the management, visiting other countries and attending conferences and workshops on outsourcing.

### 3.7 Cost Accounting

Kavcic and Tavcar (2008) referred to Hindle (2005), suggested that although the negative effects of outsourcing are common, their costs are hard to measure in the short-term. Barthelemy (2001) highlighted the hidden costs of outsourcing. Tatje and Lovell (2000) stated that operating cost varies through time, and across producers of even a reasonably-homogeneous product. Cost analysis is rarely performed on an equal footing. Fan (2000) argued that the costs for the in-house provider are usually assessed by a third party, and then compared with the results of the external provider's quotation. McIvor (2000) stated that many companies have inadequate costing systems.

Lee-Mortimer (2006) identified a number of hidden costs in the outsourcing of manufacturing, which should be included to calculate the true, total cost of an outsourced product. The hidden costs are: 'cost of services of a third party acting as a broker in a deal', 'cost of net price value-analysis that includes inventory carrying-cost, reduction in cash flow due to products in transit and cost of cargo insurance against loss', 'ancillary costs (travel costs, communication and lost time cost, new supplier selection cost)', 'product defects costs (these costs are paid by warranty funds and are not included as product costs)' and 'costs due to legal issues and costs due to loss of manufacturing control and flexibility'.

Sheu et al. (2003) describes activity-based costing (ABC) as allocating cost of each activity. ABC allocates indirect costs to cost objects (products and customers), and states that the cost objects consume different types of activities at different rates.

The author proposed that in outsourcing, the final cost comprises manufacturing cost (cost paid to supplier), logistics cost, taxation (if applicable), storage cost and outsourcing management cost, and unexpected hidden costs (Cost of insurance to cover the risk). Since lean outsourcing requires constant cost updating, N Equipment is planning introducing a cost-monitoring system as a safety check for loss and profit.

### 3.8 Organisational Restrictions

The organisational structure for lean outsourcing practice is based on bringing the key people from various functional areas together; it being borne in mind that the adoption of the outsourcing is the responsibility of everyone in the organisation. Organisations must contend with increased rules and regulations, currency fluctuations, customs requirements, language and time differences (Trent and Monczka, 2003).

According to the lean outsourcing model, functional departments such as accounting and finance should continuously assess the outsourcing and the in-house production, comparing the investment with the benefits. The organisation must develop a smooth flow of information and an open communication system among all the participants. In addition, the employees should be made aware of, and given the necessary authority to perform effectively. The author emphasised that lean outsourcing should be acceptable throughout the organisation; ultimately, the proposal was acceptable after top management approved it as part of the business strategy. Once lean outsourcing embodies the dynamic feature of constant improvement, it must be compatible with the restrictions imposed by finite resources in the organisation.

One of the factors that must be taken into account is the possibility of barriers created by the cultural backgrounds of all the people involved in the organisation. It is also considered essential, that including psychological factors and providing training in psychology for managers, would ultimately result in improved output. Managing different languages, currencies and business practices employed by an outsourcing organisation creates complexity (Min, 1994). N Equipment has been working to find a solution to avoid organisational restrictions in order to foster continuous improvement. It is also made compatible with the restrictions imposed by finite resources in the organisation.

### 3.9 Strengths, Weaknesses, Opportunities and Threat and Risk Analysis

In the past it was thought that once an organisation had carried out SWOT (Strengths, Weaknesses, Opportunities and Threats) and Risk analysis for a certain function, this was sufficient to hold it, until its phase-out stage. However, in the lean outsourcing Environmental it is recommended to carry out these analyses periodically, along with the continuous improvement cycle of the business. This is essential for providing real information to the management of the company, in order to improve their strategic business decisions.

The periodic SWOT and Risk analysis costs additional time and resources. There is no evidence that periodic SWOT and Risk analysis would increase financial gain. The periodic SWOT and Risk analysis only keeps managers updated about the company. In order to conserve resources and avoid additional cost, the management of N Equipment decided carrying out SWOT and Risk analysis periodically in the future.

## 4.0 Communication and Control

Tafti (2005) suggested that companies must continuously monitor their overseas vendors to ensure that the vendors properly handle data access, usage, storage, sharing and transmission. The author emphasised that effective communication plays a vital role in implementing lean outsourcing. Advancements in information technology and communication media is helping in the education and training of workers. Further advances in computer applications, such as demand and forecast analysis, order placement and shipment tracking (logistics) play a vital role in implementing lean outsourcing. The distance convergence brought about by the Internet and video-conferencing, has improved communication. Employees become more effective team players through video-conferencing and internet communication. Improved communication by such means, among various functional areas, enhances the effectiveness of outsourcing and hence, productivity.

Gowan Jr and Mathieu (2005) argued that the quality of an outsourcing partnership is significantly related to the degree of information sharing, communication quality and coordination. Thus, effective communication can be used to integrate elements between suppliers and the organisation to reduce the lead time at various places in the manufacturing organisation.

The contract should be agreed, so that the fluctuations in market demand are automatically conveyed to the suppliers. As an outcome of effective communication, suppliers should know when, where and how market needs should be satisfied, in order to encourage a 'pull' system. With effective communication, an external supplier integrates as a part of the organisation, and this results in minimising loss, due to over, or under-production.

The advancements in computer applications, such as demand and forecast analysis, order placement and shipment tracking (logistics) are used in order to achieve results required by lean outsourcing. N Equipment has been using the Internet and video-conferencing for communication. Employees have become more effective team players through video-conferencing and internet communication. N Equipment is also using modern communication methods for integrating suppliers and the company, in order to reduce the lead time. In order to implement lean outsourcing, the company is working with suppliers (outsourcees) for starting a 'pull' system. The company has also started working with outsources, by developing effective communication for minimising losses due to over, or under-production.

## 5.0 Relationship Development with Supplier

Kavcic and Tavcar (2008) referred to research conducted by Gibler and Black (2004) that for a successful outsourcing relationship requires both parties to be on the same page. It was argued that misunderstanding the (outsourcer) client's objectives, policy and culture, disagreement on the (outsourcee) provider's objectives and policy, are the biggest hindrance for an efficient outsourcing arrangement.

Qureshi et al. (2007) referred Lehtonen (2004) stated that the success of a relationship is based on a number of factors, such as 'two-way information sharing', 'joint problem-solving', 'the partner's ability to meet performance expectations', 'clearly defined and mutually defined goals' and 'mutual involvement in relationship development and planning'. Kavcic and Tavcar (2008) pointed out that companies are ill-prepared for the time when cooperation between the outsourcing and insourcing companies ends. Kakouris (2006) argued that by focusing on relationship activities, financial advantage can be achieved, such as reduction in cost, enhancement of asset utilisation and reduction in inventory. During relationship development, organisations seek to come closer together and identify overlapping interests. Wu (2003) pointed out that JIT manufacturers ask their suppliers to adopt JIT production and JIT deliveries. Levy (1995) highlighted that for lean production, suppliers and customers require close coordination. Helper (1991) argued that lean suppliers gain more responsibility from relationships. Cox (2004) suggested that successful outcomes for buyers and suppliers must imply that there is an alignment between the goals and aspirations of the buyer, and those of the supplier, that makes a relationship successful for both.

During the literature review, it was found that the most significant problem of outsourcing is misunderstanding of (outsourcer) client's objectives and policy, and outsourcer disagreeing with (outsourcee) provider's objectives and policy. Handfield and Nichols (1999) found that managers have realised that they cannot achieve corporate objectives without the collaboration of satisfactory vendors. Brandes (1997) argues that outsourcing leads to increasing demands on the relationship between supplier and company. Feigenbaum (1956) pointed out that quality is the responsibility of all groups within an organisation. After discussions with managers, the author identified that for a successful outsourcing relationship required both parties be at the same level of understanding.

N Equipment considers that the outsourcing process starts from the planning stage (deciding whether to outsource or not.). After analysing the information from literature survey and managers, the author recommended that contracts must include the smallest detail, and be endorsed with original signatures. In order to implement lean outsourcing, management wants to avoid any kind of dispute. Therefore, it is made clear that all participants agree on the contract-management procedure and the manufacturing-level agreement. In order to meet the dynamic market demand, the company is structuring the contractual business relationship with the suppliers, to be flexible enough to be adaptable to changes without any penalties. The company acknowledged that the agreements are renegotiable or amendable, according to the participants' needs, by prior arrangement. In the lean outsourcing environment, the company has achieved continuous improvement by developing good relationships with the supplier. It was concluded that 'Outsourcing Contract (Manufacturing Level Agreement)' and 'Procedure for Contract (MLA) Management' are sub-components of 'Relationship Development with Supplier'.

### 5.1 Outsourcing Contract (Manufacturing Level Agreement)

The author argued that there may be difficulties in practising outsourcing effectively, due to differences between outsourcer (company) and outsourcee (supplier), regarding their locations, management methods, legal and taxation systems. The difficulties can be removed with an explicit and well-defined Manufacturing Level Agreement (MLA) among outsourcing participants. All the points in a contract should be clearly stated and agreed capable of being monitored by both parties. May (1998) advises that the penalties for failures to meet contractual obligations need to be clearly laid down before the contract is finalised. Downey (1995) pointed out that the ability to change terms and conditions of the contract should clearly be stated in the contract. Khong (2005) highlighted that in outsourcing agreements, the relationships between the companies and their partners are based on trust and contracts. The company was provided with guidelines to prepare a comprehensive MLA. In the event of asset transfer, it must be carried through a sale agreement and subjected to independent valuation of the assets. The assets may include hardware, software licences, rental leases on equipment, patent licences and intellectual property rights. Transfer of staff is an essential feature of the outsourcing arrangement.

In the United Kingdom, Labour Regulations 1981 and section 33(1) of the Trade Union Reform and Employment Rights Act 1993, require elaborate procedures to be completed before the staff transfer can take place, and that the existing terms of services be granted in their transfer (Lee, 1996). It was explained to the management of the company that the outsourcee (supplier) is responsible for paying for the transferred staff, and that the cost is passed on to the outsourcer (company).

It is important that the manufacturing level agreement includes costing, payment terms and penalties. It should also state when, how and to whom payments should be made and the amounts and the structure of the payments. Lee (1996) argued that it is important to ensure that losses are recoverable, by explicitly providing for them in the contract. It was pointed out to the company that the inability of the outsourcee to comply makes it liable to be penalised by the outsourcer for damages, and must be included in the manufacturing level agreement.

The company was made aware of the possibilities that participants may not follow the contract agreement, and this could result in dispute. Instead of following an expensive legal system to resolve dispute, a proper dispute-resolution mechanism is included in the agreement for dispute resolution through an independent third party (arbitrator or consultant). In case the dispute is not resolved, and ends up in agreement termination, then the consequences of the termination should be taken into account and reasonable guidelines should be included in the outsourcing agreement. The outsourcing agreement should cover issues, such as buying back assets (hardware, software and human resources) and price equation of buy-back, transfer of third party contracts and leases, with assurance from participants that the transfer is smooth and proper. It was considered important that the company and its supplier include a level of information security and confidentiality required by both participants. The company may rely on the manufacturing warranty to claim from the supplier for any losses due to non-compliance with standards. Instead, the company was advised to include these losses in the contract. Since the supplier would have had access to the company's commercially sensitive data, it is very important to ensure that confidentiality is maintained, both during the agreement period, and after termination or end of the agreement period, by including relevant clauses in the agreement.

By carrying out literature survey found out that the outsourcee behaviour-control mechanism changes from a structured focus on operational efficiency to a more structured concern for the relationship's impact on strategic direction. Outsourcee behaviour-control is assessed by preparing quarterly reports and must be included in the MLA. The demarcation of labour between the outsourcer and the outsourcee is specified following the scope of the agreement. The participant organisations work together for continuous innovation, but with different capabilities and specialisation by complementing each other. It was recommended to the company to include the preparation of monthly reports discussing labour demarcation in the MLA. The company was made aware that the transfer of personnel from outsourcer to the outsourcee is recognised as valuable, rare and appropriate, as they become a strategic resource. The MLA must also include the contributions expected to be made by the outsourcee, such as its resources to make technological initiatives accessible to the outsourcer. The outsourcee represents a set of complementary capabilities, skills, competences and methods.

It was suggested to the company to include, in the MLA, the type of relationships expected (such relationships are collaborative outsourcing of manufacturing activities), and that the outsourcer and outsourcee ensure that requirements are fulfilled. It is also essential that any tangible or intangible resource is available for use, and must be defined in the MLA.

It was proposed to the company to include the motives and the outcomes of outsourcing in the MLA, such as scarcity of investment for resources creates social exchange and engages company and supplier in acquiring valuable input. As the outsourcing matures, inter-personnel exchange from purely economic, to non-economic, is encouraged.

Finally, the author would like to quote Lee (1996), according to whom, for the completeness of an agreement, the outsourcing agreement must cover transfer of assets, staffing, pricing and payments, warranty and liability, a dispute-resolution mechanism, termination, intellectual property matters and information security. As the outsourcing relationship matures, participation becomes more apparent. The management appraised the details of the manufacturing level agreement and it will be considered when renewing the agreement.

### 5.2 Procedure for Contract (MLA) Management

Contractual issues are common to most types of outsourcing contracts, when transferring manufacturing responsibilities from an outsourcer to an outsourcee through a contract. An outsourcer cannot expect from an outsourcee to act in its best interest, in situations where a conflict of interest arises. Lee (1996) emphasised that a watertight contract is the only mechanism to ensure that the expectations of the outsourcing customers are met. The author suggested that in order to avoid any kind of conflict, it is important to have a clear, straightforward contract between the company and the supplier. After the manufacturing agreement is finalised, the company and the supplier agree on an outsourcing contract (MLA) management-procedure. The guidelines for MLA management are formulated to facilitate the company and the supplier in carrying out outsourcing contracts effectively.

The author proposed recommendations, which included complete details of the outsourcing contract management-procedure, and includes all stages from 'order request', to 'control of outsourcing activities'. The management of the company agreed to follow the procedure in future.

## 6.0 Logistics Management and Control

Logistics has played a very important role in outsourcing. Like lean manufacturing/production, the just in time (JIT) delivery system is the most important element of lean outsourcing. Levy (1995) highlighted that auto manufacturers require their suppliers to make several deliveries a day, with each delivery scheduled to arrive within a narrow window of time. Wu (2003) suggested that suppliers using the lean system are the perfect candidates for making frequent JIT deliveries. By following JIT, the transportation provider can minimise the amount of inventory held by a manufacturer. Wu (2003) feared that distant suppliers may be at a disadvantage in communication. Anderson and Quinn (1986) stated that reform of transportation regulation made long distances feasible in JIT systems. The author found that for efficiency and cost effectiveness, N Equipment has been negotiating to draw up contracts with the logistics and transportation providers. The company has set up a procedure for selecting an appropriate means of transportation. It depends on the product and the delivery due dates, i.e. via air, sea or land. In order to create a lean outsourcing environment, the company has set up the logistics management procedure with the logistics provider's agreement. According to the management of the company, logistics providers must understand the requirements and the constraints of the business. In order to adopt lean outsourcing, N Equipment and logistics providers are working as a team and continuously improving the process. In order to manage effectively, 'Logistics Management and Control' is divided into two sub-components: 'Contract with Logistics Providers and Customs Clearance Consultancies' and 'Management of Contract with Logistics Providers and Customs Clearance Consultancies'.

**Contract with Logistics Providers and Customs Clearance Consultancies:** Burnes and Anastasiads (2003) emphasised that where a service level agreement already exists, prior to outsourcing, it can be of great assistance in defining the company's requirements regarding the outsourced activities. The author emphasised that similar to the MLA for outsourcing of manufacturing, an explicit and well-defined contract is prepared for logistics providers, and a separate contract for customs clearance consultancies. The contracts are focused to eliminate any operational difficulties among the company and the logistics/transportation providers and customs clearance consultancies.

**Management of Contract with Logistics Providers and Customs Clearance Consultancies:** Qureshi et al. (2007) highlighted that a good relationship motivates logistics service providers to venture into outsourcing business, in a big way. The author also considers it important that there should be a clear management and control procedure between the company and the logistics/transportation providers, in order to avoid any kind of conflict. After carrying out an extensive study of the transportation chain, the author identified the important role of customs clearance agents. It was found that without the right customs clearance agent, it may not be possible to achieve lean delivery. In this regard, the author proposed a procedure for facilitating the contract management between the company and the logistics provider, and between the company and the customs clearance consultancies. In spite of the fact that there may not be a connection between the logistics provider and the customs clearance consultancy, they are obliged to liaise in order to avoid any kind of delay.

## 7.0 External Factors

The external factors are those, over which the company and the participants have no control. As an outcome of a literature review, found out that outsourcing is affected by environmental and economical issues.

The author argued that external factors, such as social, political, environmental and economical factors, affect the decisions needed to develop, or amend, outsourcing strategies. As these external factors change with time and circumstances, N Equipment modifies its strategies to adapt to the changing environment.

In 2008 the US dollar '$' became weak. The supplier did not want to trade in US dollars, due to market uncertainty. Euro currency was desirable. In order to practise lean outsourcing, N Equipment negotiated the changes accordingly. The sub-components of 'External Factors' are: 'Environmental Factors', 'Economical Factors', 'Political Factors' and 'Social Factors'.

### 7.1 Environmental Factors

There are a number of environmental factors that are influencing outsourcing. The European Monitoring Centre on Change, EMC (2004b) highlighted 'the demand of increasing concern for environmental sustainability' and 'legislation for emission and recycling' drivers for outsourcing. According to EMC (2004b), 'increased pressure to improve occupant and pedestrian safety' is also influencing companies to change their outsourcing strategy and involve suppliers in safe product development. The managing director of the company agrees that the business has been influenced by environmental issues. The company is making sure that the activities of its suppliers are environmentally friendly. When searching for new suppliers, it was ensured that the company selected green suppliers.

### 7.2 Economical Factors

The European Monitoring Centre on Change, EMC (2004b) highlighted 'The need to increase margins on vehicle sales by fitting high-value extras' and 'Intense competition' as the external, influencing, economical factors of outsourcing. Burkholder (2006) has listed 'Reducing capital cost', **'**Cash infusion' and 'freeing up resources for other purposes' as economical external factors.

The company is outsourcing because of the economical benefits. It was cheaper for the company to outsource to China, rather than to manufacture in-house, and outsource to local UK companies.

### 7.3 Political Factors

There has been significant pressure on the UK government to save local jobs. Koong et al. (2007) argued that political and social pressure in-house may force the government to intervene, and use taxation to control outsourcing. On the other hand, it may be possible that the government of the outsourcing destination country uses preferential policies to make outsourcing more attractive. Harland et al. (2005) feared a rise in international exploitation and shifts in power structure.

The managing director of N Equipment stated that the political stability of the region, where suppliers are based, is crucial for outsourcing. The company has selected suppliers only from stable political regions. For manufacturing, China is a stable state and it has a network of suppliers. The country is also investing a great deal to improve its internal transportation system.

### 7.4 Social Factors

Koong et al. (2007) emphasised that an organisation's inclination to adopt outsourcing may be influenced by social factors. The author highlighted the significance of the impact of social factors on the outsourcing of manufacturing. Due to the fact that a large number of jobs are lost in the manufacturing sector because of outsourcing, it creates a social dilemma for the outsourcing companies. The European Monitoring Centre on Change, EMC (2004b) highlighted social factors affecting outsourcing. On the other hand competitiveness and consumer demand for novelty is an external factor, over which the company has no control.

The consolidation of vehicle makers and suppliers has forced manufacturing companies to change their policies on how outsourcing should be managed. Harland et al. (2005) posited that outsourcing to newly-emerging economies can give rise to international exploitation, with outsourcing nations gaining benefits from softer legislation on issues such as human rights and Environmental care. Nations are taking on undesirable activities, place improved financial status above some social concerns, such as the use of child labour, or the dumping of toxic waste. Doh (2005) criticised the low-cost seeking behaviour of the organisations. It was stressed that the organisations must address the social needs of the home country. The managing director of the company advised that the company considers all external factors when making their decisions.

## 8.0 Continuous Improvement

Delbridge and Barton (2002) stated that organisations should proactively and continuously seek out and solve problems. Continuous improvement may not have been invented in Japan; however, kaizen (change for the better) has attracted attention throughout the world. Kakouris (2006) argued that top management powers a culture of continuous improvement. The author emphasised that lean outsourcing entails continuously improving processes and functions in all aspects and attributes. The author found that N Equipment has been trying to foster continuous improvement by constant searching for new technologies, resources and suppliers, with a view to new or improved products or services, in order to gain and maintain a competitive advantage in the market. In order to improve its image, N Equipment has been addressing selection criteria such as cost, reliability to deliver, quality, performance and versatility. The company is also taking into account any changing demands, particularly from customers. The 'continuous improvement' is achieved through its sub-components which are, 'Search for new Suppliers', 'Search for new Technologies', 'Search for new Resources', 'Search for new Products', and 'Explore new Markets'.

**Search for New Suppliers:** Outsourcing activities start after the supplier is selected and the contract is signed. The outsourcing continues until the contract period expires. In conventional outsourcing, the companies continue their business with the same selected supplier. It was stated by the managers of companies that they prefer continuing the business with the same supplier, in order to enhance their experience and grow their relationship. It was also explained that with the experience curve, the outsourcing process improves and participating companies gain experience in how to work as a team. Earl (1996) highlighted the problem of selecting the most suitable supplier with longer time-ability, to offer the capabilities that are needed in rapid technology change. Lean outsourcing acknowledges the importance of the experience curve and supplier/relationship development in outsourcing improvement. At the same time, lean outsourcing advocates a search for new suppliers.

N Equipment was proposed searching for new suppliers as part of the lean outsourcing philosophy. One of the managers argued that there was no use spending resources and effort in searching for new suppliers, when one already has suitable suppliers. The managing director of the company agreed that if the company did not search for new suppliers and compares them with the existing suppliers, it may not have been possible to identify a direction for improvement.

**Search for New Technologies:** Technology had been one of the important factors used in making the decision to outsource, or manufacture in-house. If the company does not have the in-house technology to manufacture, and it is expensive to acquire it, then it is decided to outsource. After the outsourcing process is started, it is necessary to improve the process continuously by implementing the lean outsourcing model. Nowadays, the majority of the new technologies are patented and the user has to pay a licence fee. A component/product can be manufactured using more than one type of technology to perform each manufacturing process; therefore, it was recommended that the company must search for alternate new technologies. The management of N Equipment showed mixed reactions. The managing director explained that it was not company's policy to search for new technology.

It is preferable to outsource, rather than manufacture in-house. In order to implement lean outsourcing, the company is searching for new suppliers, and in view of new information, the company has decided to search for new suppliers who are using new technologies. The company has already been searching for new suppliers who are using green technologies.

**Search for New Resources:** In order to achieve continuous improvement in an outsourcing process that is sustainable, it is essential to carry out a search for new resources. Parry et al. (2006) highlighted that when considering outsourcing, it is important to discuss a firm's resources. In the manufacturing sector, resources include raw materials, energy supply, manpower and machine tools, and manufacturing facilities. The management of NEquipment has been searching for new resources to satisfy its business demands.

For example, initially the company had been acquiring raw materials from inland companies. Then it started acquiring materials from off-shore companies, and has now even started searching for new resources (new material suppliers). The company has been manufacturing components in small numbers; therefore, the new resources must be such that they are willing and able to supply the desired quantity. The company has also been searching for new suppliers who are developing new materials. The company has adopted a similar procedure for the rest of the resources.

**Search for New Products:** Lean outsourcing advocates that for continuous improvement, new products must be introduced. The company can itself develop new products, or outsource a new product development process to the supplier. The company should not confine its new product search to its current supplier (outsourcee), but also search for new products from other suppliers available in the market.

The management of the company agreed that searching for new products will assist in improving the image of the company. It was argued that continuously searching for new products, costs resources and time. In spite of the hidden costs of searching for new products, the management of the company agreed to allocate resources for searching for new products.

**Explore New Markets:** It is a well-known fact that after a certain time, a company acquires the maximum share of the market. In spite of improvements in its processes and strategies, it is not possible to achieve any further increase in market share. In other words, the current market in which the company is trading is saturated. Due to this reason, lean outsourcing urges companies to explore new markets. The management of N Equipment agreed that the company may start exploring new markets in order to promote its business.

According to literature survey, John (2003) highlighted that a slow changeover may be more costly, and it is believed that a fast-track approach may ensure benefits are delivered more rapidly, but the rate at which a company is able to transition, is dependent on culture of the company. The author wanted to implement the model as soon as possible. However, due to the financial implications and lack of additional staff restrictions, imposed by the company, it could not be implemented. The management of the company stated that it would not be possible to allocate full-time staff for implementation of lean outsourcing, due to a tight schedule (the company does not want to affect its routine activities). Lean philosophy does not allow for sudden transformation. Similar to lean philosophy, the lean outsourcing philosophy advocates that improvements should be carried out continuously, in small steps, like a choreographed rhythm.

## 10.0 Conclusions

In this paper, it was proposed to improve the outsourcing process continuously by combining lean philosophy as an integral part of the outsourcing model. The lean outsourcing model and its components have been explained in detail. The major factors that facilitate an organisation to implement and practise lean outsourcing are: education and training, team-working, employee empowerment and relationship development with suppliers. Last but not least, management styles must be sensitive to external elements based on information, and barriers are an essential component in ensuring the ultimate success of lean outsourcing. The model was presented for feedback to a small size manufacturing company, N Equipment, currently outsourcing part of its activities. The management of the company agreed to test the model in the near future. The N Equipment has started training programmes for its staff in order to implement lean outsourcing. It was noticed by management that workers were motivated and there was an improvement in teamwork. As part of the lean outsourcing programme, the management of the company has been planning to train its employees in new skills, instead of replacing them. This has increased a sense of security in employees. There has been an improvement in employee morale since the implementation of lean outsourcing was initiated. It is deduced that in the long run, improvements due to the implementation of lean outsourcing would be significant.

It was noted that the manufacturing level agreement process was not clearly explained to each of the outsourcing participants, as to what their responsibilities were. There was also not sufficient discussion, in order to establish suitable communication. It is possible for an outsourcing participant not to realise that what is clear to one, may not be clear to the other outsourcing participant. The author identified that by setting up a two-way discussion, a better understanding of each other's requirements could be achieved.

The N Equipment requires small quantity, large variety, and good quality products at an effective cost. After carrying out market search, the author identified that there are a large number of firms, ranging from small, to very large in size. Most of the firms have websites, but some of the small firms advertise only in local directories. The large firms may not be interested in supplying to meet a company's versatile demands, whereas small firms may not have the capability to meet the demands of the company.

After analysing the literature survey and information acquired from N Equipment, the author found out that there are a number of possible risks to the company due to outsourcing. The first and most serious risk is inconsistent and interrupted supply. If the company does not receive a particular supply, it cannot make a product in time, and that means the company will be in financial trouble. In order to run a successful outsourcing process, it is important to have a reliable supplier. Faulty design or incorrectly manufactured components are also contributors to the risk.

Furthermore, correcting or amending any product or component means extra cost to the company. In the case of introducing a new product to overcome supplier problems, the best product has to be produced; otherwise the company cannot make a profit. For example, suppliers deliver the faulty products to other countries for modification, and that would be a costly exercise for suppliers.

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