Servitization: A leap in future for Indian Industries

A case study on Larsen and Toubro

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***Abstract*—This study deals with emerging concept of servitization which is prevalent in developed countries but still in nascent stage in India. With this study researcher tries to focus how companies can change their focus on manufacturing to core to servitization. The advantages to the organization which is considered as a leverage point here in this study researcher tries to take example of L&T and explains the concept of servitization in operational method.**

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I. INTRODUCTION

The feather in caps for Larsen & Toubro(L&T) include many titles such as biggest, largest and best among the world over a broad spectrum of engineering capabilities. Larsen & Toubro today is India's Biggest and oldest engineering giant with almost 75 years of operational expertise. Achieving competitive advantage is not easy, whether it is domestic or global markets. Businesses that do well in these markets need to be able to use their systems, technologies and knowledge effectively across the whole of the organization and respond to local people, cultures and different ways of working. One such organization that uses its knowledge and expertise to achieve competitive advantage is L&T. L&T is a global engineering group involving many different engineering specialties. It is recognized worldwide for its innovation, expertise and global manufacturing capabilities with presence in over 50 countries to match customer needs.

L&T's competitive advantage comes from combining the knowledge and skills of its people with an in-depth understanding of what its customers want and need. L&T's strengths of expertise and innovation differentiate it in the markets it serves. L&T operates in a B2B (business to business) environment, providing tailored products and services to companies. These include large household names such as Chevron, Shell, Volvo Trucks, General Motors, Coca-Cola and McDonalds, as well as smaller niche companies dealing in specialized equipment or building materials.

II. L&T HEAVY ENGINEERING AND ITS DELIVERABLES

With over 128 subsidiaries, 18 associates and 14 joint venture companies L&T caters to almost anything and everything of modern engineering. L&T Heavy Engineering forms a vital element in delivering core engineering capabilities. L&T's Heavy Engineering designs, manufactures & supplies precision custom engineered critical static hi-tech equipment & systems for the hydrocarbon sector including Oil & Gas Refinery, Cracker, Petrochemicals, Fertilizer etc. apart from meeting the requirements of Defense, Aerospace and Nuclear Power sectors. It also supplies Key Coal Gasification equipment including Coal Gasifiers & Syngas Coolers for Coal Gasification Plants.

For the Hydrocarbon sector, L&T supplies hi-tech critical equipment such as Reactors, Pressure Vessels, and High Pressure - High Temperature Heat Exchangers worldwide. It has exported equipment and systems to more than 40 countries. For Nuclear Power Plants, range includes equipment for pressurized heavy water reactors, fast breeder reactors heavy water plants &fuel reprocessing plants. Also offered are end shields calandria steam generators, roof slab, high pressure exchangers apart from site services in new & operating plants. In India L&T is one of the very few private companies that are authorized to make equipments in nuclear and defense sectors.

This case study looks at how L&T can innovate by combining its skills and knowledge, customer insight and innovation to achieve global market leadership.The case study focus on shedding light on how L&T can benefit can incorporate service capability thereby adding service side into core manufacturing to a new level and how it can negate the shortfalls in order inflows, which forms the major bloodline for manufacturing industry.
Maintaining the Integrity of the Specifications

A. The Scenario

Manufacturing Industry forms a major part in India's growth story. The contribution of manufacturing sector in India's GDP is decreasing YOY but at the same time that of service sector is increasing. The manufacturing industry in

India even though is matured still can be affected by slowdowns. This is very much clear from the 2008 recession. This study of the manufacturing Industry in L&T's context aims to develop multiple options for the firms to make sustained revenue models even in times of economic doldrums.

A consistent Order inflow is the lifeline (for growth) of any Heavy Engineering & Infrastructure Company; L&T is not exempted from that. The shortfalls in order inflows can cast shadows on the growth story of a company. Even the fear surrounding the uncertainty/cancellation of order inflows has a huge bearing on the stock price (which can be witnessed in FY2009, FY 2012). On evaluating the order inflows for the FY 2010-11 & FY 2011-12, we can clearly see the short falls (around 12.1 %) in the total order inflows for the company. In L&T's new business strategy which includes setting up independent companies, the shortfalls in order inflows in any of its infra, power or process plants which are having high operational overheads can lead to more operational issues. This actually paves the way for this research as of how L&T can tide over periods of shorter order inflows. For seeking alternatives for the above question we can look at similar firms from developed countries catering to the heavy industries sector itself.

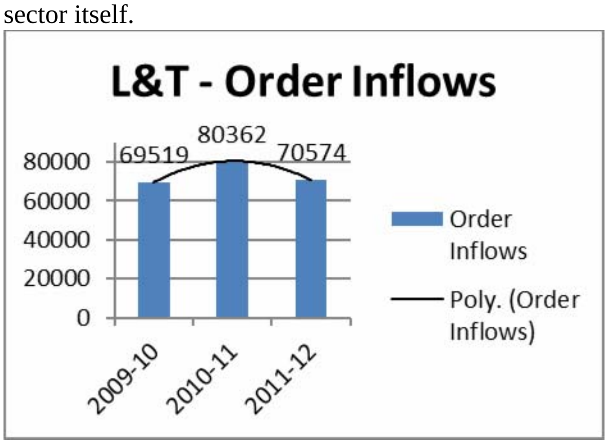


Figure1. orderinflow details of L&T

B. Relevance of study in L&T's context

In India's Industrial sector the Index of Industrial production (IIP) serves as the scale for Industrial growth. Analyzing the IIP values in the year 2012-13 we can understand the trend followed by the Industrial sector in India. IIP data released recently reveals that the Indian industry's performance in 2012-13 is its worst showing in the past 20 years. Industrial output has grown by 1.0 per cent in 2012-13, down from 2.9 per cent in 2011-12; manufacturing output, with nearly three quarter weight in the IIP, has grown by only 1.2 per cent during the fiscal. The current situation is reminiscent of the crisis year of 1991-92 when industrial output grew by a mere 0.6 per cent whereas manufacturing output contracted by 0.8 per cent. Growth of manufacturing output has remained well below its trend growth rate in the last few years with the gap from the trend only expanding with each passing year. It's expected that the industrial growth lifting from its current lows in 2013-14, but still remaining below its long-term trend. A mild recovery in consumption will aid recovery in the industrial sector.

The factors on the need for study listed are based on the current operational strategies as well as those which the company is planning for the future.

- L&T's LAKSHYA 2015 aims to make independent companies out of the main firm for better operations, calls for better financial stability as a standalone Company .
- Uncertainties in the order inflows due to policy stagnation, decrease infra spending, competition etc.
- Since EPC is very much capital intensive decrease in order inflows will cause pressure on Working capital (If order inflow increases then advances increases which will help to generate working capital)
- Larger the organization larger the variable cost & overheads (labor, operating cost, salaries etc...).So better revenue models to be incorporated as safety
- Need for better vertical integration and client lock-in to beat the increasing domestic & international competition.
- To understand the decreasing contribution of manufacturing industry in National GDP.

The study involves various objectives as listed below:

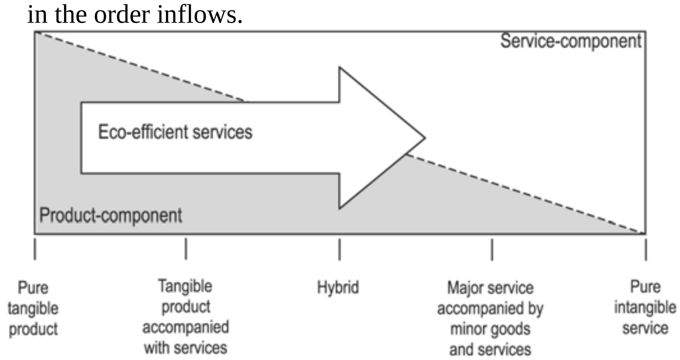
1) Understanding the current operational strategy of the company and correlate it with various possible reasons related to decrease in revenues and profits.
2) To look for feasible solutions in macro level and change in operational strategy
3) Develop & Suggest a new operations strategy through scientific approach

III. SETTING STRATEGY

In the middle of the 1990`s Rolls-Royce introduced the "TotalCareTM" concept in the jet engine market. Instead of just selling jet engines, Rolls-Royce broadened their business scope to selling airtime power. This new product-service concept ensured "a peace of mind" for their customers. As downtime, due to engine problems represented a huge risk for airlines, Rolls-Royce realized that by transferring the risk of an engine failure from their customers onto themselves, and they would create value for all parties. By using Rolls-Royce's own extensive knowledge about their jet engines and their service network, they could utilize their economics of scope to minimize the financial and operational risk of an engine failure and undertake maintenance much more effectively than the airlines could do themselves. Thanks to the new "servitized" business model, incentives and goals, for both parties, were aligned and overall cost of flying was reduced. At the same time, Rolls-Royce managed to widen their business area, differentiate their offerings and create entry barriers to their market (Rolls-Royce 2010).

The Goods – Service continuum: L&T is an organization that very much differentiates between goods and services. In its 75 years of operations, the company mainly focused on the Product Sector which contributed the major chunk of revenues this whole time. Normally it's considered that, any product is a combination of goods & services .Pure service industries are common like pure product industries but the globalization has made derivatives from both in different levels. Today in world economies especially in the developed one, the service industry has clearly outrun the manufacturing sector in the output, employment etc.

In Indian context especially in the core manufacturing sector in which L&T is a major player being the largest heavy engineering manufacturing company in the country they still focus on the order inflows in the financial side as growth decider. In this industry the contribution of innovation as a growth driving force is minimal. This research aims to find out the feasibility of inducting services into core manufacturing to make a sustained revenue model even during times of shortfall in the order inflows.



Source: Based on Kotler (1994) and Shostack (1977)

Figure2. figure showing eco effeicient frontier diagram

Consider the computer hardware market. A person buys a laptop/PC and opts for an Annual Maintenance Contract (AMC) .Here the PC /Laptop forms the product whereas the AMC forms the service part. For the Vendor who sold the Laptop PC, he will get revenue from the sale of the good and also will get a yearly premium as AMC which is a service charge. The revenue from service i.e. AMC guarantees revenue even if the number of products sold decreases in a particular year.

India has registered about 28% increase in service sector during the past 25 years. Factors such as global communication, business & technology growth, urbanization and low labor cost in developing world are all considered reasons for the shift. The strategy aims at make product solution options & service contract with the client at the start of a product selling itself. This is different from what MRU handles now)

A. Scope for L&T

L&T is an engineering giant that mainly focus on the core manufacturing side. The company is mainly divided into different Strategic business units (SBU) with vertical divisions for each SBU. The top management aims to separate each SBU into independent firms in future so that it's easier to manage and function. The major chunk of revenues & Order inflow for the whole group comes from its Heavy Engineering & Construction SBU. In the recent restructuring a new vertical was introduced into the Heavy Engineering SBU which mainly focuses on Modifications, Revamps & upgrades (MRU). Considering the operational expertise across its business domains the MRU can be considered as a service entity. The MRU division provides core technical expertise to various manufacturing firms who need revamp operations which are very much critical. The current scenario is that if a firm wants MRU service then it has to contact and make suitable contract with the company to do the operation. As scope for service orientation, L&T can provide long term service contracts with its clients to whom L&T makes equipments. This can include the capabilities of MRU division along with other major operational requirements of a manufacturing plant such as Total Preventive Maintenance (TPM), Plant overhauling, etc

B. Servitization Academic Research

Although academic work has remained overly biased towards manufacturing, there is a 'practitioner' trend that tells a different story. This is because products and services are merging. Increasingly, product manufacturers are seeking either to grow or protect their profitability by enhancing the service elements of their customer offerings. Within the manufacturing sector, the lack of serious development in service strategy is impairing operations strategy's contribution. For example, arguably, one of the most significant trends in manufacturing, especially in complex, high worth capital goods, is the trend towards '**servitization**'. Servitization is the generic term that has come to mean any strategy that seeks to change the way in which product functionality is delivered to its markets. This is a powerful concept and one that seems to offer a lifeline to many manufacturers under competitive pressure. An example comes from the aerospace sector. Although originally developed independently, engine management systems, navigation systems, landing systems, instrumentation systems, and so on, are increasingly integrated within the aircraft platform to provide higher degrees of product sophistication.

At the same time the companies that make these aircraft are becoming aware of the value of the servitization of their products (e.g. Oliva and Kallenberg, 2003). That is, marketing the capability that their products bring. So, for example, in aero engine manufacture, Rolls Royce used the phrase "power by the hour" to denote its ability to sell hours of flying capability rather than an aircraft engine alone. The ability to do this requires the coordination of manufacturing systems, maintenance systems; spare parts supply systems, logistics systems, and so on. These individual operations processes need to be integrated in the same way as the physical systems that make up its products have been integrated. Again, the underlying technical knowledge on which products themselves have been developed over the years has become significantly relevant in the development of the operations processes that enable them to be delivered into the market. But, this depends on the application of these ideas into a practical business context.

The traditional boundary between manufacturing and services is becoming more and more blurred. The role of service in providing value is even more important. Not long ago, most of a product's added value came from the production processes that transformed raw materials into products. Now there is added value from technological improvements, intellectual property, product image and name brands, aesthetic design and styling that only services can create. …therefore there is an increased interest amongst manufacturing industries in putting less emphasis on producing products and more interest in adding value to a customer through the provision of a service that helps them to extend the spectrum of their products." (Mont, 2000). However, in order to more critically appraise the servitization concept it will be necessary to further investigate the emerging key components of the process. In particular, it is important to distinguish the reality of implementing servitization strategies from the more rhetorical pronouncements starting to become evident, both in the popular management press and amongst the consultancy community.

Early studies on industrial service providers concentrated largely on spare parts manufacture and simple maintenance provision (Wise and Baumgartner, 1999). Later work increasingly concentrated on the integration of products and service as the context in which industrial service providers could be developed, particularly in terms of how product manufacturers seek either to grow or protect their profitability by enhancing the service element of their customer offerings. This is why most literature assumes that, product manufacturers increasingly are seeking, either to grow, or protect their profitability by enhancing the service elements of their customer offerings (Matthyssens and Vandenbempt, 1998; Wise and Baumgarter, 1999). Thus the emergence of a wide variety of strategies based on "blend[s] of services with products, and vice-versa, [that are] increasingly common" (White et al., 1999).

Servitization is clearly more than a management fad. It is an important indicator of the way in which many industries are likely to develop. It is a movement along the trajectory of economic development that could enable the bulk of value capture to remain in developed economies, even when manufacturing itself moves to less developed economies.

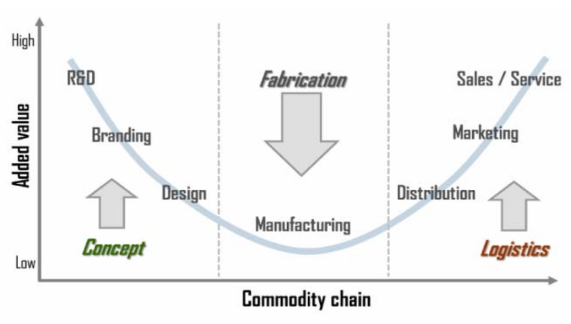


Figure3. Smile curve on value chain Addition

However, what seems to be clear, even at this stage, is that servitization is not without its challenges. These include coping with the differences between 'efficiency' and 'value-creating' drivers, recognizing the difficulty of reconciling 'purchaser' and 'provider' requirements, adapting technology development trajectories to changed risk characteristics, and above all, updating the mindset of the firm to make the most of a service dominated environment. One recent investigation (Slack, 2005) into the patterns of servitization presents the results from a study that investigated some of the emerging conceptual and practical opportunities as well as the threats that are associated with the servitization challenge in companies featuring servitization a variety of sectors. It reached the following conclusions.

The main motivation behind the strategy of moving towards servitization is largely based on revenue generation. This is especially true for organizations with a large installed base of products, but applies more broadly, particularly because services are regarded as having higher margins than products. In addition, services are regarded as providing a more stable source of revenue, less prone to less economic cycles, as well as having the ability to grow even in mature markets.

Customer motivation is primarily based on cost and (to a lesser extent) quality. By far the most important drivers for customer companies to outsourcing their services is to focus on their core business and reduce their overall cost base. There will be a limit as to how far suppliers of service can improve profitability, while customers simultaneously save costs. Although most companies surveyed saw these two seemingly opposing factors being reconciled through the development of higher value services.

Servitization has two distinct dimensions – stretch and width. Stretch means the extent to which a company moves down the supply chain. Width means the number of service components offered to customers at each stage of the supply chain. It is likely that different patterns of servitization along these two dimensions will have implications for the nature of their implementation.

IV. Strategic Convergence: Strategy Analysis using Balance Score card approach

The balanced scorecard is a strategic planning and management system that is used extensively in business and industry, government, and nonprofit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organization performance against strategic goals. Developed by Drs. Robert Kaplan (Harvard Business School) and David Norton as a performance measurement framework that added strategic non-financial performance measures to traditional financial metrics to give managers and executives a more 'balanced' view of organizational performance.

While the phrase balanced scorecard was coined in the early 1990s, the roots of the this type of approach are deep, and include the pioneering work of General Electric on performance measurement reporting in the 1950's and the work of French process engineers) in the early part of the 20th century.

The balanced scorecard has evolved from its early use as a simple performance measurement framework to a full strategic planning and management system. The "new" balanced scorecard transforms an organization's strategic plan from an attractive but passive document into the "marching orders" for the organization on a daily basis. It provides a framework that not only provides performance measurements, but helps planners identify what should be done and measured. It enables executives to truly execute their strategies.

The balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation."

In times of uncertainty, managing the factors that drive business value becomes especially significant. Standard financial measures are insufficient for capturing all the critical elements of business worth. It is crucial to establish standards for non-financial measurement of business performance. This thought bring the Balanced Scorecard approach to the forefront in formulating & implementing Operations strategy

A. Why Implement a Balanced Scorecard?

- Increase focus on strategy and results
- Improve organizational performance by measuring what matters
- Align organization strategy with the work people do on a day-to-day basis
- Focus on the drivers of future performance
- Improve communication of the organization's Vision and Strategy
- Prioritize Projects / Initiatives

B. The Balanced Scorecard Perspective:

The balanced scorecard suggests that we view the organization from four perspectives, and to develop metrics, collect data and analyze it relative to each of these perspectives:

*C. **The Learning & Growth Perspective***

This perspective includes employee training and corporate cultural attitudes related to both individual and corporate self-improvement. In a knowledge-worker organization, people -- the only repository of knowledge -- are the main resource. In the current climate of rapid technological change, it is becoming necessary for knowledge workers to be in a continuous learning mode. Metrics can be put into place to guide managers in focusing training funds where they can help the most. In any case, learning and growth constitute the essential foundation for success of any knowledge-worker organization.

*D. **The Business Process Perspective***

This perspective refers to internal business processes. Metrics based on this perspective allow the managers to know how well their business is running, and whether its products and services conform to customer requirements (the mission). These metrics have to be carefully designed by those who know these processes most intimately; with our unique missions these are not something that can be developed by outside consultants.

*E. **The Customer Perspective***

Recent management philosophy has shown an increasing realization of the importance of customer focus and customer satisfaction in any business. These are leading indicators: if customers are not satisfied, they will eventually find other suppliers that will meet their needs. Poor performance from this perspective is thus a leading indicator of future decline, even though the current financial picture may look good. In developing metrics for satisfaction, customers should be analyzed in terms of kinds of customers and the kinds of processes for which we are providing a product or service to those customer groups.

*F. **The Financial Perspective***

Kaplan and Norton do not disregard the traditional need for financial data. Timely and accurate funding data will always be a priority, and managers will do whatever necessary to provide it. In fact, often there is more than enough handling and processing of financial data. With the implementation of a corporate database, it is hoped that more of the processing can be centralized and automated. But the point is that the current emphasis on financials leads to the "unbalanced" situation with regard to other perspectives. There is perhaps a need to include additional financial-related data, such as risk assessment and cost-benefit data, in this category.

These metrics include, for example, leading-edge indicators for an enterprise's ability to innovate as well as manage demand, supply and shared services. Such metrics should be standard, objective and capable of being audited. Supported by new reference models, methodologies and advancement in IT, performance measurement can provide greater insights into the cause-and-effect relationships between operating events and financial results. Such knowledge depends on measures that expand the traditional financial metrics to encompass non-financial elements that offer a platform for management of performance. The balanced scorecard methodology thus extends beyond financial measures to link vision to action. The Harvard Business

Review has acclaimed the balanced scorecard as one of the most influential ideas of the past 75 years.

At the highest level, the Balanced Scorecard is a framework that helps organizations to translate strategy into operational objectives that drive both behavior and performance.The BSC is a structured approach to performance measurement and performance management that links the organization's strategic thinking to the activities necessary to achieve desired results

The BSC is a vehicle for communicating an organization's strategic direction and for measuring achievements towards these predetermined objectives. The BSC clearly establishes linkage between strategic objectives, the measures for determining progress, the stretch targets established, and the focused initiatives needed to move the organization forward to meet those organizational goals.

V. STRATEGY MAPPING

Strategy maps are communication tools used to tell a story of how value is created for the organization. They show a logical, step-by-step connection between strategic objectives (shown as ovals on the map) in the form of a cause-and-effect chain. Generally speaking, improving performance in the objectives found in the Learning & Growth perspective (the bottom row) enables the organization to improve its Internal Process perspective Objectives (the next row up), which in turn enables the organization to create desirable results in the Customer and Financial perspectives (the top two rows).

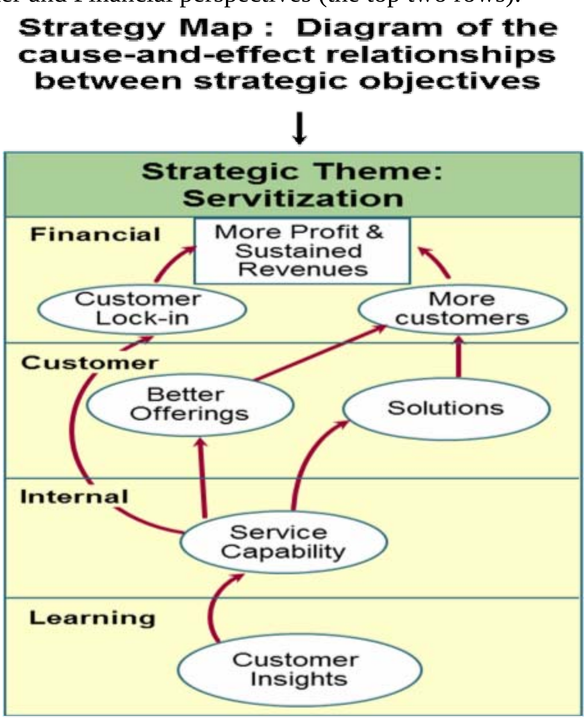


Figure 4. Figure showing strategy map diagram of the cause effect relationship between strategic objectives.

Balanced Scorecard is to be positioned as top-level business intelligence linking operational achievements to vision, strategy and financial & non-financial measure in combination with various business intelligence such as knowledge management; data warehousing, data mining and business analysis to identify, track and improve key processes and data, as well as identify and monitor trends in corporate, competitor and market performance

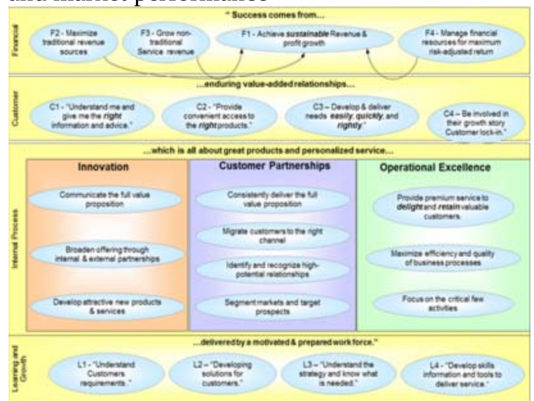


Figure 5. Emerging operational strategy

A. *Practicality of Strategy*

Servitization involves new and ill-understood risks. These include, the risks inherent in diverting financial resources away from other core activities, the larger than expect cost of establishing service networks, and (for some companies) the cost of investing in market positioning. Servitization involves designing services, a task that is significantly different to designing products. Services, by their nature, are fuzzy and difficult to define. This has several implications particularly in the way services are perceived by customers, how service quality is defined, and how service innovation is managed. Servitization involves significant organizational structuring choices. Most organizations have evolved using an organizational structure that separates out service from manufacturing divisions. But this structure may become increasingly inappropriate as the extent of servitization increases.

Servitization exposes costing deficiencies. In particular life cycle costing was seen as a very approximate activity that would have to be improved significantly if servitization was to avoid unacceptable risks. Servitization may be limited by the extent of strategic span in the supply chain. Moving down the supply to provide service will inevitably increase strategic span unless some upstream activities are abandoned. The dilemma is for companies that derive competitive advantage through the embedded knowledge of their upstream activities. Servitization emphasizes new relationship skills in the supply chain. Managing the supply chain where intangible services rather than physical products are traded requires a new set of supply chain relationship skills.

Servitization redefines risk management. There was significant anxiety regarding the un-quantified but probably significant increase in risk in taking over activities previously performed by customers. It may be that at some point the marginal extra risk incurred will outweigh the marginal benefits of increased profit potential. Servitization impacts technology strategy. The value of new but less reliable technologies is likely to decrease when servitization involves taking on more explicit risk. Servitization involves integrating service processes. It is generally recognized that the integration of service processes posed different challenges to those involved in the integration of physical process. Servitization poses new opportunities for knowledge transfer mechanisms. Generating knowledge is a key task, especially for front line staff, yet most companies were dissatisfied with their ability to feed back this knowledge, especially into product design activities. While some of these emergent points are treated within the broad business strategy area, not all of them receive sufficient attention from a purely operations strategy perspective. So, there may be a case for arguing that not only is academic operations strategy failing to reflect the dominance of service activity in most economies, even when it treats manufacturing, it is ignoring the influence of service concepts within its traditional sector.

VI. Findings & Interpretations

Thus by evaluating the four perspectives in balance scorecard with L&T's current and future strategies it can be considered that servitization can be taken as viable option for the company to create the next big move. The major benefits servitization can bring about include

- ✓ Better customer deliverables & differentiation :

The service part can influence the clients purchase decisions. Even during downturns prices can be protected by emphasis on the service part on offer. The organization becomes more customers centric.

- ✓ Enhance firms performance and stability:

In spite of the differences in the cost & profit allocations, it is well established that margins on service is more superior to product sales. The market volume of services is still somewhat smaller than that of new machine sales .However the EBIT margins on services is 3 to 7 times higher than products.

- ✓ Revenue Generation

Services provide continuous revenue streams and they have higher profit margins but require lesser assets than manufacturing

- ✓ Helps to achieve competitive advantage & customer lock in by increasing dependency

Coupling services associated with the product will help the organization attain better competitive advantage .Service part will help in better vertical integration of the offering a product manufacture can provide. It helps in increase the offerings portfolio. This also helps in customer locking in and going for another vendor. Customer service can be used as a competitive trump card as services are difficult to imitate.

- ✓ It also helps in better resource utilization

Since the organization is already having the technical knowhow on the product as well as the tangible and non-tangible expertise's and capabilities, service part will help in better utilization of its capabilities.

- ✓ Gain insight in customer needs through a closer relationship

Earlier the main of business firms especially was to focus on selling their products or service portfolio's to feasible clients. Now the industry calls for product and service providers to provide solutions to the problems faced by companies. Solutions can be determined only if the company understands what its clients are facing in its actual operations. Thus Servitization can help in increased market and operational level insights of its customers.

- ✓ Increase reputation and brand value and Increase future competitiveness

In today's Business scenarios with tight competition the winner will always have advantage of the brand value and reputation it has over other companies

VII. Conclusion

Considering the operational side of L&T along with its capabilities, it can surely venture more into service side. The concept being new in Indian manufacturing this will surely give a first starter advantage. Considering the scale and operational expertise as well as the client portfolio of L&T this will add up to the capability of the company. On the other side inducting services into core manufacturing is not that easy. Starting from the organizational culture to the thinking of the employees need to be realigned for the successful transformation into a servitised organization

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