CONTROLLING AS MANAGEMENT FUNCTION: MARITIME MANAGEMENT AND SUPPLY CHAIN MANAGEMENT AS A CASE STUDY

Abstract

At a time a when the management trends which undergo changes in the backdrop of the liberalization, privatization and globalization (LPG) and subsequent technological impact on management studies and practice gets attention. In this respect, the key management function 'controlling' cannot be overlooked or sidelined. In addition, when it comes to the maritime management and supply chain management, the controlling function is extremely relevant. As a result, the conventional notion of controlling undergoes changes not drastically in the whole process of management whether it is budgets, Critical Path Method (CPM), Programme Evaluation and Review Technique (PERT), Gantt Chart and the Management by Objectives (MBO), Six Sigma, Total Quality Management (TQM)-to name a few. The analysis of global trends, the marketing management, the last mile connectivity, supply chains resilience, adaptability impinges on the controlling function. Basically, the controlling is a performance appraisal or a corrective mechanism from the deviation of standards. Most of the areas of maritime management including cargo handling, port efficiency and cargo evacuation are of paramount importance in modern times. Identifying the existing gaps and finding solutions are mattered. In this process, there is an attempt being made to understand the entire supply chain process pertaining to the controlling process cannot be ignored. Since the maritime transportation in terms of 90 percent by volume and 70 percent in terms of value carried by the seaborne, the controlling aspects from the managerial point of view has its own relevance in future.

Keywords: LPG, Management, Maritime, CPM, PERT.

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One of the key managerial functions of management, the controlling has a multifaceted role in the organizational set up. The controlling function is so dynamic nature. It is the key indicator of efficiency, effectiveness and productivity. In modern times, the trend setting changes came into force. In this context, it is worth exploring the area of maritime management reacts and equips with tune of time while giving special emphasis on the controlling function. Around 80% of the volume of international trade and over 70 per cent of global trade by value in goods is carried by sea, and are handled by ports worldwide and the percentage is even higher for most developing countries.[i] Maritime transport is the backbone of international trade and the global economy. When it comes to maritime supply chains, maritime logistics, multimodal transportation, the impact of shipping invariably shows the ever increasing of relevance of seaborne trade across the nations. When it comes to the maritime management and controlling function of management, it is worth examine the futuristic trends impinge on each other and making a more meaningful engagement in addressing various issues and challenges of maritime management faces today's maritime eco system.

I. GLOBAL TRENDS

And the ever growing influence of the liberalization, privatization and globalization (LPG) makes the world is more interconnected. Adding to that, the technological impact in the form of artificial intelligence (AI), block chain, Internet of Things (IoT), augmented reality, big data, real time tracking, Electronic Data Interchange (EDI) and ChatGPT etc. pose greater challenges for maritime stakeholders as well as. The impact of e-commerce, m-commerce and social media cannot be overlooked in this context. Today, we live in the information age. The three flows of supply chain such as physical movement of goods and services, cash and information flow, and the information have the upper hand when it comes to the efficiency, performance and effectiveness of supply chain network. In the pandemic times of Covid-19, the supply chains all over the world affected extensively. Current challenges relate to the regulatory, legal and economic dimensions from the controlling perspective. The operational, technical and commercial areas of shipping and port get attention.

II. WHAT CONSTITUTES MARITIME AND MARITIME MANAGEMENT?

The scholars and academic community use 'maritime' as a broad concept. Is 'maritime'[ii] as concept contested? In broader sense, the maritime connotes to related to sea and shipping. Port and shipping management are being used synonymously with maritime management since it is the broader concept. In modern times, the ports also constitute the key element in the maritime concept. Maritime management related to the pillars of international trade and development, international economy, economic growth, international transportation, supply chains and logistics. Most of the international trade (export and import of cargoes) occurs through seaborne.

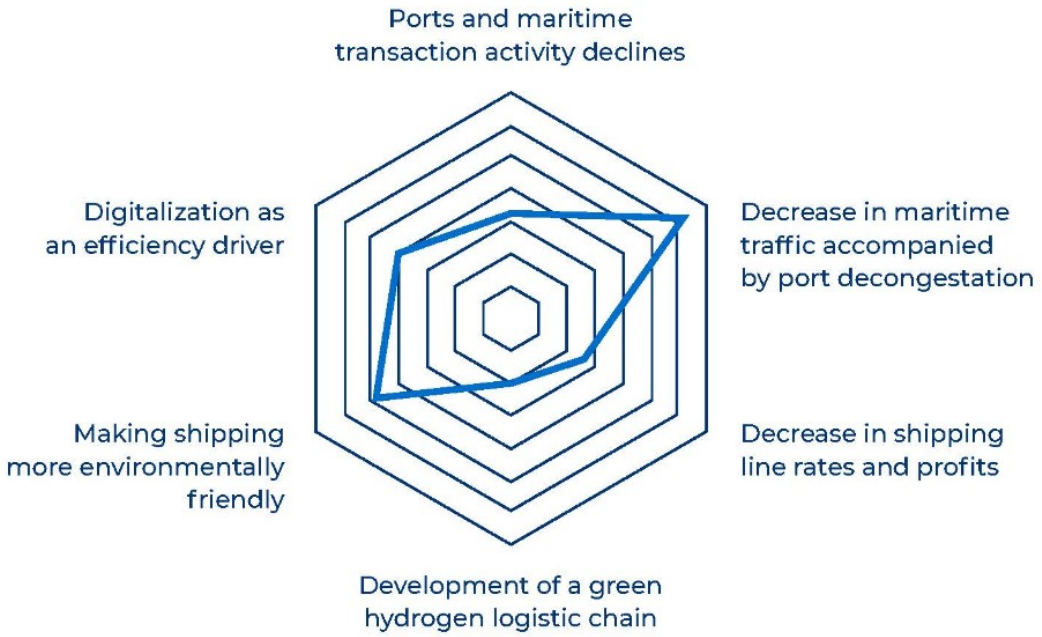
The maritime industry is so competitive and regulatory in modern times compared to the previous times. Analyzing the trends of maritime markets are a key component. The human resources management in the maritime field and maritime corporate, the evaluation of skill sets (trained man power), managing the personnel optimally, and maritime labour issues.

The corporate social responsibility in the maritime corporate field is one of the key areas in this respect.

The areas of controlling in maritime management relates to the performance both in terms of financial and non-financial, maritime finance, efficiency,

III. MARITIME TRENDS

The key trends in the maritime sector synchronizes with the sustainable development goals of the United Nations and International Maritime Organization's priority activities. Making the shipping activity carbon neutral and eco-friendly as the key trends also address issues arising out from the climate change and subsequent activities. The green hydrogen, decarbonization and the digitalization are getting more focus.



Source: https://alg-global.com/six-trends-of-the-maritime-sector-in-2023#

During the last years, the maritime industry has witnessed a continuous process of consolidation and restructuring of relationships that included processes of horizontal consolidation, through mergers and acquisitions, and processes of vertical integration, through carriers' investment in terminal operations and other logistics services. This implied an increasing number of M&As in the sector reaching a record of activity in 2022.

The need for new energy sources is helping to make green hydrogen a hot topic in the ports and maritime sector.[iii] There is a lot of interest from port authorities, operators, or users to be at the front on its implementation of the maritime sector. Ports and operators dream of becoming production and bunkering centres doing a reconfiguration of the sector and shipping lines expect to be more efficient and environmentally friendly. Projects in ports are aimed at developing hydrogen transport hubs, such as the ports of Vienna and Rotterdam, or

becoming producers of green hydrogen and suppliers for bunkering purposes, such as the ports of Valencia and Stockholm.

IV. CONTROLLING

Control means the process of monitoring activities to ensure that they are being accomplished as planned, and correcting any significant deviations.[iv] Basically, the controlling is the process of evaluating actual performance. Thus, it is an element of management process involves analyzing whether actions are being taken as planned and taking corrective actions to make these to conform to planning. And planning and controlling are intertwined.

Based on this concept, the control/controlling has the following features:[v] Controlling is a forward looking because one can control future happenings and not the past. In controlling process, always the past performance is measured because no one can measure the outcome of a happening, which not occurred. In the light of these measurements, managers suggest corrective actions for future period. Second feature relates to the controlling is both an executive process and, from the point of view of the organization as a system, a result. As an executive process, each manager has to perform controlling function in the organization. It is true that according to the level of a manager in the organization, the nature, scope, and limit of his control function may be different as compared to a manager at other level. The word 'control, is also preceded by an adjective to designate a control problem such as quality control, inventory control, production control, or even administrative control. In fact, it is administrative control constitutes the most comprehensive control concept. All other types of control may be subsumed under it. Thirdly, the controlling is a continuous process. Though managerial control enables the manager to exercise control at the point of action, it follows a definite pattern and timetable, month after month and year after year on a continuous basis. Finally, a controlling system is a coordinated-integrated system. This emphasizes that, although data collected for one purpose may differ from those with another purpose, these data should be reconciled with one another. In a sense, control system is a single system, but it is more accurate to think of it as a set of interlocking subsystems.

Managers can't really know whether their units are performing properly until they've evaluated what activities have been done and have compared the actual performance with the desired standard.[vi] An effective control system ensures that activities are completed in ways the lead to the attainment of the organization's goals. The criterion that determines the effectiveness of a control system is how well it facilitates goal achievement. The more it helps managers achieve their organization's goals, the better the control system.[vii] Ideally, every organization would like to efficiently and effectively reach its goals. Does this mean that the control systems organizations use are identical?

Why is control so important? Planning can be done, an organizational structure can be created to efficiently facilitate the achievement of goals, and employees can be motivated through effective leadership. Still, there is no assurance that activities are going as planned and that the goals managers are seeking are, in fact, being attained. Control is important, therefore, because it is the final link in the management functions. It is the only way managers know whether organizational goals are being met and, if not, the reasons why. The value of the control function lies in its relation to planning, empowering employees, and

protecting the workplace. Goals give specific direction to managers. However, just stating goals or having employees accept your goals is no guarantee that the necessary actions to accomplish those goals have been taken.[viii] As old saying goes, "The best-laid plans often go awry". The effective manager needs to follow up to ensure that what others are supposed to do is, in fact, being done and that their goals are, in fact, being achieved. In reality, managing is an ongoing process, and controlling activities provides critical link back to planning. If managers didn't control, they'd have no way of knowing whether goals and plans were on target and what future actions to take.

Control is closely related with other functions of management because control may be affected by other functions and may affect other functions too. Often it is said, "planning is the basis, action is the essence, delegation is the key, and information is the guide for control".[ix] This reflects how control is closely related with other functions of management. In fact, managing process is an integrated system and all managerial functions are interrelated and interdependent. When control exists in the organization, people know what targets they are striving for, they know they are doing in relation to the targets, and they know what changes, if any, are needed to keep their performance at a satisfactory level.

V. CONTROL PROCESS

The control process is a three-step process: measuring actual performance, comparing actual performance against a standard, and taking managerial action to correct deviations or inadequate standards.[x] The control process assumes that performance standards already exist. These standards are the specific goals created during the planning process against which performance progress is measured.

Take the case of port management—the effective budgeting is the key to the maximum profitability in the port industry, which in turn helps attract the investment that is vital to the long-term future of the port authority. There are several ways in which the existence of a budget can be advantageous:[xi] Firstly, the forecast of revenue and expenditure expressed in the budget enables management to predict the cash flow during the year and hence to make the best use of monthly cash surpluses or to meet any expected deficits. Knowledge about the pattern of income makes it possible to finance the company's investment programme efficiently and to make optimum use of the port authority resources. The budget may reveal the profit centres within the port activities and thus help avoid non-productive expenditure. Secondly, the budget acts as a yardstick against which to judge performance at regular intervals and hence allows management to adapt their policies to changing events. In this scenario, a fall in revenue below the forecast level may give early warning of the need to reduce expenditure in the face of a decline in business. The achievements of management and staff may also be measured objectively against the budget. Thirdly, the targets a budget necessarily implies encourage the development of an esprit de corps (team spirit) among managers, who are then better able to win the support of their staff. Having such targets also encourages cost consciousness, especially among senior and middle managers, who are most deeply committed to realization of the budget. Finally, in this respect, the budget facilitates the formulation of tariff increases in line with the predicted rises in expenditure and ensures that the company's profitability remains adequate.

Budgets are generally complied for one year and the income and expenditure are then spread over the period, usually on a monthly or four weekly basis, so that the results can be assessed at regular intervals. This is quite relevant when the port authority handles general cargo, bulk cargo, containers, Ro/Ro traffic and passengers. The budget headings, layout and contents will vary according to the type of port and nature of the trade/cargo involved.

To determine what actual performance is, a manger must acquire information about it. The first step in control, then, is measuring. In order to measure the four sources of information frequently used by managers to measure actual performance are personal observation, statistical reports, oral reports, and written reports. What we measure is probably more critical to the control process than how we measure because the selection of wrong criteria can result in serious dysfunctional consequences. Besides, what we measure determines, to a great extent, what people in the organization will attempt to excel at.[xii]

Some control criteria are applicable to any management situation. For instance, because all managers, by definition, coordinate the work of others, criteria such as employee satisfaction or turnover and absenteeism rates can be measured. Most managers also have budgets set in their currency costs for their area of responsibility. Keeping costs within budget is, therefore, a common control measure. However, any comprehensive control system needs to recognize the diversity of activities that managers do. Marketing managers often use measures such as percentage of market held, average money per sale, number of customer visits per salesperson, or number of customer impressions per advertising medium. Most jobs and activities can be expressed in tangible and measurable terms. However, when a performance indicator can not be stated in quantifiable terms, managers should use subjective measures. Although subjective measures have significant limitations, they are better than having no standards at all and ignoring the control function. If an activity is important, the excuse that it is difficulty to measure in unacceptable.

There is great variation in size amongst port authorities. From an economic standpoint the entrepreneur will try to maximize his profits and therefore expand his output, so long as the increase in his total cost is less than the increase in the total revenue. He will therefore continue to expand to the point where his marginal additional cost is equal to his marginal additional revenue. Increased profits generally arise from lower cost due to operating on a larger scale, or from the ability to control the price of the product. There are certain economics, which occur in a large scale operation. The large frim may be able to specialize and to use elaborate machinery, the cost of which can be spread over a large number of units of output. The tendency is for the number of ports to be rationalized and for the larger and some older ports to be modernized and rationalized in recent years. Ship owners conscious of the need to maximize ship utilization tend to favour particularly those ports, which are conveniently situated on the shipping lane. In developing the nearby river system if it is there does not the port have to rely on a hinterland in the immediate port environs which are congested.

The reasons for rationalization and modernization are manifold.[xiii] It may include the fact that economies are realized on administration costs; prospects are improved of raising more capital for port modernization/development through the sale of redundant dock systems; the rationalization of facilities through fewer berths more intensively used lowers unit cost; the concentration of port facilities tends to rationalize the number of offices required for

agents, port authority offices, etc.[xiv] Port modernization lowers cost, and encourages modern tonnage, thereby improving business expansion projects; and finally, modern technology, including berths, port facilities, computers and port facilities which facilitates more competitive tariffs to be available/negotiated. It is essential that the organization is so structured as to exploit/develop the maximum business opportunities of the port and its facilities.

When it comes to the common sources of information for measuring performance[xv] through the personal observations we get firsthand knowledge, information isn't filtered, and intensive coverage of work activities. The problem with personal observations include it is subject to personal biases, time consuming and obtrusive. The statistical reports are easy to visualize an effective for showing relationships. In addition, the disadvantages of it are—it provides the limited information and ignore subjective factors. In the case of oral reports, it is fast way to get information and allow for verbal and nonverbal feedback. The problems involve information is filtered and information cannot be documented. The written reports are comprehensive in nature, formal and easy to file and retrieve and the problems of it related to the taking more time to prepare.

VI. SUPPLY CHAINS

The prevailing business model of the closing decades of the twentieth century was very much based upon the search for greater levels of efficiency in the supply chain.[xvi] Experience highlighted that there was an opportunity in many sectors of industry to take out of significant cost by focusing on inventory reduction, just-in-time (JIT) practices were widely adopted and organizations became increasingly dependent upon suppliers. This model, whilst undoubtedly of merit in stable market conditions, may become less viable as volatility of demand increases. The challenge in today's business environment is how best to combine 'lean' practices with an 'agile' response. For complex supply chains or where complete mapping of the entire network is not practical, it would be appropriate only to look in detail at the 'critical paths'.

Improving supply chains is all about simplification, improving process reliability, reducing process variability and reducing complexity. For more long-established businesses it is probably true to say that rarely, have their supply chains been planned or designed in a holistic way. Rather they have developed organically in response to the needs and opportunities of the time.

VII. REDUCING PROCESS VARIABILITY THROUGH SIX SIGMA METHODOLOGY

Conventional approaches to quality management were typically based upon 'inspection'. In other words, a sample of the output of a process would be taken on a periodic basis and if non-standard outputs were detected then remedial action would be taken.[xvii] Not surprisingly, inspection-based quality management has proved to be less than satisfactory. Often non-conforming items would be 'slip through the net' and, in nay case, inspection is 'after the event'. Today, our thinking on quality management has changed. Now the recognition is that if we seek consistency in the quality of the output then the only way to achieve this is to ensure that the process that produces those outputs is under control. Thus

process control becomes the means by which *variation* in output is identified. Variation in any process is the problem. If everything in life or in business was totally constant or even predictable, then there would be few problems. This challenges arise because of variations. Hence it follows that if variation can be reduced then the consistency (and, by definition, the reliability) of the output can almost be guaranteed.

VIII. ISSUES AND PROBLEMS OF CONVENTIONAL ORGANIZATIONS

Amongst experienced observers and commentators of the logistics management process there is general agreement that the major barrier to the implementation of the logistics concept is organizational. In other words, a major impediment to change in these crucial managerial areas is the entrenched and rigid organizational structure that most established companies are burdened with.[xviii] There is a great danger that those companies that do not recognize the need for organizational change, or lack the will to make it happen, will never achieve the improvements in competitive advantage that integrated logistics management can bring. The argument advanced here is that the demands of the marketplace for enhanced service provision combined with dramatically heightened competition call for a paradigm shift in the way in which we thing about our organizations.

IX. BENCHMARKING

The intense level of competitive activity encountered in most markets has led to a new emphasis on measuring performance not just in absolute terms, but rather in terms relative to the competition, and beyond that to 'best practice'. At its most fundamental level, benchmarking means learning from others. Research shows that best practices frequently already exist within an organization but usually go unidentified and unused[xix]. In the past it was usually deemed to be sufficient simply to measure internal performance. In other words, the focus was on things such as productivity, utilization, cost per activity and so on.[xx] Whilst it is clearly important that such things continue to be measured and controlled it also has to be recognized that such measures only have meaning when they are compared against a relevant 'metric' or benchmark. In this respect, there are several dimensions to the measurement problem and hence the ultimate measuring rod is the customer, hence it is customers' perceptions of performance that must be paramount.

END NOTES

[i] The Review of Maritime Transport has been published annually since 1968. The flagship report provides an analysis of structural and cyclical changes affecting seaborne trade, ports and shipping, as well as an extensive collection of statistics. Visit https://unctad.org/topic/transport-and-trade-logistics/review-of-maritime-transport.

[ii] The academic literature on the term 'maritime' as a concept in the academic writings is a far and a few between in the real sense. There is no well-researched source what really the concept 'maritime' constitutes. Different scholars have different perceptions thereby the author takes the liberty from the experience and exposure in the maritime domain over the years to interpret the term in the broadest context. By and large, there is no doubt and confusion regarding the term 'maritime' relates to sea or ocean and nearby sea or ocean. The author does not see any legal interpretation of the term 'maritime' per se in an academic discourse at length. There are a few etymological interpretations and narrations, which are enough to give more insights and conceptual clarity on, maritime.

The adjective 'maritime' in 1540s, & quot;of or pertaining to the sea," from Middle French maritime (16c.) or directly from Latin maritimus "of the sea, near the sea," from mare(genitive maris) "sea" (see mere) + Latin ending -timus, originally a superlative suffix

(cf. intimus "inmost," ultimus "last"), here denoting "close association with." Maritimes "seacoast regions of a country" is from 1590s; specifically of the southeastern most provinces of Canada by 1926. Nowadays, there is an increasing tendency to use the adjective term 'maritime' in a broader context. When it comes to the 'maritime' as a terminology it covers not only sea, ocean currents, ocean meteorology but also seabed, ships, navy, search and rescue operations (SAR), coast guarding, water police, cyclones, marine archaeology, marine museum, nautical equipment, piracy, ports, inland waterways, archipelago, estuary, coastal shipping, coastal areas, anything related to marine resources, shipyards, ship-building and repairs, naval architecture, marine engineering, nautical science, marine chemistry, shipping finance, history of sea (maritime history), history of ships, marine artifacts, boats, nautical terms, lighthouses, fisheries, natural calamities at sea, and marine tourism-to name a few. Compared to ocean, sea, port, shipping, harbours and international transportation the term 'maritime' is much broader and wider. And maritime history can be divided into ancient, medieval, modern and contemporary. Cambridge Dictionary gives the meaning to the word 'maritime' in two ways: first, it is connected with human activity at sea; secondly, near the sea or coast. http://dictionary.cambridge.org/dictionary/english/maritime; (Definition of "maritime" from the Cambridge Advanced Learner's Dictionary & Thesaurus © Cambridge University Press). Also refer Online Etymology Dictionary, © 2010 Douglas Harper; http://www.dictionary.com/browse/maritime; Collins English Dictionary - Complete & Unabridged 2012 Digital Edition © William Collins Sons & Co. Ltd. 1979, 1986 © HarperCollins.

The adjective term 'maritime' receives more broader connotation from Oxford Dictionary which means: a) Connected with the sea, especially in relation to seaborne trade or naval matters; b) Living or found in or near the sea; c) Bordering on the sea ; d) (of climate) moist and temperate owing to the influence of the sea (Origin: Mid 16th century: from Latin maritimus, from marese): Oxford University Press: Oxford, London;https://en.oxforddictionaries.com/definition/maritime. First and foremost, let me reemphasize the connotation of the word 'maritime' since it has been highly contested even among vast realm scholars what really constitutes when it comes the adjective 'maritime'. Merriam-Webster
dictionary defines the term 'maritime' as

1: of, relating to, or bordering on the sea <a maritime province>
2: of or relating to navigation or commerce on the sea
3: having the characteristics of a mariner

(Source-https://www.merriam-webster.com/dictionary/maritime). The above said observations, I have used as research article in the upcoming book on 'Bunches of Essays for National Development', published by Centre for Development Studies, Jhajjar.

[iii] https://alg-global.com/six-trends-of-the-maritime-sector-in2023#:~:text=Some%20of%20these%20trends%20such, activity %20are%20new%20to%202023. Accessed on 27th August, 2023.

[iv] Stephen P. Robbins and Mary Coulter, 2005, Management (New Delhi: Pearson Prentice Hall), p. 488.

[v] See L.M. Prasad, 2014, Principles and Practice of Management (New Delhi: Sultan Chand & Sons), pp. 699-740.

[vi] K.A. Merchant, "The Control Function of Management", *Sloan Management Review,* Summer 1982, pp.43-55.

[vii] E. Flamholtz, "Organizational Control Systems as a Managerial Tool", *California Management Review*, Winter 1979, p.55.

[viii] Stephen P. Robbins and Mary Coulter, 2005, Management (New Delhi: Pearson Prentice Hall), p. 489.

[ix] L.M. Prasad, 2014, Principles and Practice of Management (New Delhi: Sultan Chand & Sons), pp.700-701.

[x] Stephen P. Robbins and Mary Coulter, 2005, Management (New Delhi: Pearson Prentice Hall), p. 490.

[xi] See Alan E. Branch, 1986, Elements of Port Operation and Management (London: Chapman & Hall). pp. 200-201.

[xii] See S. Kerr, "On the Folly of Rewarding A, While Hoping for B", *Academy of Management Journal*, December 1975, pp.769-83.

[xiii] Alan E. Branch, 1986, Elements of Port Operation and Management (London: Chapman & Hall). pp. 178-179.

[xiv] Ibid.

[xv] Stephen P. Robbins and Mary Coulter, 2005, Management (New Delhi: Pearson Prentice Hall), p. 491.

[xvi] Martin Christopher, 5th edn, 2016, Logistics and Supply Chain Management, (London: Pearson), pp. 216-217.

[xvii] Ibid. pp-254-255.

[xviii] Ibid. P. 254.

[xix] T.Leay "Extracting Diamonds in the Rough", *Business Finance,* August 2000, pp-33-37.
[xx] Martin Christopher, 5th edn, 2016, Logistics and Supply Chain Management, (London: Pearson), p. 263.

