Decision making in the port organization

Adrian J. Beharry

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THE WORLD MARITIME UNIVERSITY

DECISION MAKING

IN

THE PORT ORGANIZATION

A CASE STUDY OF MANAGEMENT AND OPERATIONS

AT PORT OF SPAIN, TRINIDAD

By

ADRIAN J. BEHARRY

1986

GENERAL MARITIME ADMINISTRATION
DETECTION MAKING
IN
THE PORT ORGANIZATION

By

ADRIAN J. BEHARRY

A Paper submitted to the Faculty of the World Maritime University in partial satisfaction of the requirements for the award of a

MASTER OF SCIENCE DEGREE
in
GENERAL MARITIME ADMINISTRATION

The contents of this Paper reflect my personal views and are not necessarily endorsed by the University

Signature: Date: 29.11.86

Best Wishes to

Supervised and Assessed by: Professor Aage Os
WMU

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# TABLE OF CONTENTS

ACKNOWLEDGEMENT

PURPOSE OF STUDY

METHODOLOGY

CHAPTER I  MARITIME LINER INDUSTRY - GENERAL
   CONSIDERATIONS  1
   1.1 Competitive Characteristics  1
   1.2 Technological Characteristics  4
      1.2.1 Ship Technology  4
      1.2.2 Container Unit Technology  7
      1.2.3 Port Technology  10
      1.2.4 Information System Process and Control  13
   1.3 Implications for Port Operations  15

CHAPTER II  THE OPERATIONAL AND FINANCIAL DATA
   BASE  19
   2.1 Tonnage Movements at P.O.S.  19
      2.1.1 Tonnage by Composition and Carrier Mode  21
   2.2 Tonnage movement and Economic Activity  22
2.3 Implication for Future Tonnage Movement
2.4 Vessel Calls at Port of Spain
2.5 Analysis of Productivity and Capacity Utilization
2.6 Financial Analysis
2.7 Broad Decisions to be Taken

CHAPTER III HISTORICAL BACKGROUND TO PORT DEVELOPMENT AT PORT OF SPAIN

CHAPTER IV CURRENT POLICY
4.1 The Port System and P.A.T.T

CHAPTER V PORT ADMINISTRATION AND PLANNING
5.1 Administration
5.2 Port Planning
5.3 The Degree of Port Autonomy
CHAPTER VI PORT MANAGEMENT AND OPERATIONS

6.1 Administrative Management

6.2 Engineering Management

6.3 Operations Management

CHAPTER VII CONCLUSIONS AND RECOMMENDATIONS

REFERENCES

BIBLIOGRAPHY

LIST OF FIGURES

1. Decision making information flow chart x-xi

2. Total import/export tonnages handled at Port of Spain (1980-1985) 20

3. Vessel calls at Port of Spain 29
LIST OF APPENDICES

1. Analysis of non-oil imports by economic end use (1980-1985)

2. G.D.P. growth rates at factor cost (current prices)


   PATT Breakdown of Revenue/Expenditure for 1984-1985

9. Original proposals by Port Contractors Ltd. for a Container Contract

10. Functional Chart of Management
The subject of this paper was originally proposed by Professor E. Frankel of M.I.T. and the World Bank, and the author is grateful for his direction in this effort. For his advice and suggestions on the structure of this study the author is grateful to Professor Captain E. K. Mangels of the Bremen Polytechnic. The views expressed in this paper are however those of the author and have evolved from a number of sources.

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It has traditionally been regarded that investments in port facilities were relatively static investments in gateway or municipal ports. These facilities served rather stable transportation objectives and provided significant employment opportunities for their respective communities. The commercial considerations attached to such investments were that economic returns would be derived over the long term life of port facilities. As a consequence, the role of the decision-maker in port management and operations was also regarded as being relatively static and restricted to administrative and operational decisions only.

However, within the last decade and a half, important changes in international industry and economy, including changes in the maritime transportation environment has caused the role and function of the port decision maker to be re-defined.

Firstly, important economic changes in the nature and pattern of international production and consumption has resulted in major fluctuations in the pattern and direction of world trade and tonnage movements and consequently, port user demand.

Secondly, the competitive and technological characteristics of the maritime transportation environment has almost totally altered the nature of cargo handling
and processing and consequently, port user requirements.

In this study, the author proposes a methodology of decision-making based on accepted economic and management principles and applies same to a case study of decision-making at the Port of Spain Wharves, Trinidad.

In so doing, the conceptual requirements and decision-making process is applied and the decisions to be taken are recommended.
Decision making in the planning, management and operation of port facilities, requires a basic understanding and knowledge of important variables, which impact on the port organization. Information relating to the volume of cargoes expected, the types of cargoes e.g. unitized, palletized, bulk, break-bulk, containerized, the size and design of vessels and the frequency of their calls, impending changes in ship design and port technology, which may make existing capital equipment and labour ratios obsolete and consequently necessitate some changes to existing port infrastructure and superstructure.

We may conceptually describe these more important variables in terms of the external and internal ports' environment.

The external ports' environment therefore would comprise knowledge, whether precise or estimated of existing and future port user requirements and demands as they relate to vessel operators, shipping agents, consignees, shippers' council and the national economy.

The internal ports' environment would comprise knowledge of available factors inputs, their
current allocation and optimization, and the changes in the external environment which demand changes in the mix of inputs may range from an internal re-organization of inputs to the purchase of new inputs to replace obsolete ones.

Decision making may be strategic, administrative and operational. Strategic decisions relate to, or are affected by, external or long range planning of the port; administrative decisions are concerned with the structure of the port and finally, operational decisions are concerned with resource allocation and optimization.

Conceptually, decisions can be taken through two major processes, which are defined by the pattern of information flows to senior management (See Figure 1). The first process involves a feedback of precise data and information on operational and financial performance. Based on an analysis of past performance, management will be able to define strategies to cope with any important changes in port user requirements, which have impacted on the internal ports' environment. The main drawback of this approach is that management tends to be re-active rather than progressive. Changes in user requirements are allowed to affect the organization first before strategies are developed to deal with the changes. Secondly, the time lapse between the initial impact on operations, and the time taken by management to evaluate the importance of changes taking place and subsequently to identify and implement strategic solutions may be long and costly.
DECISION MAKING INFORMATION FLOW CHART

EXTERNAL ENVIRONMENT

THE INTERNATIONAL ECONOMY

INTERESTS OF PRODUCERS
CONSUMERS AND GOVERNMENT

TRADE AND TONNAGE MOVEMENTS

PORT USER REQUIREMENTS

PORT FACILITIES

PORT OPERATIONS

RESOURCE ALLOCATION AND OPTIMIZATION

PORT ADMINISTRATION

PERSONNEL

AND FINANCIAL

DATA BASE ON OPERATIONAL PERFORMANCE

MANAGEMENT INFORMATION ON REVENUE/EXPENDITURE

TECHNOLOGICAL APPLICATIONS

THE INTERESTS OF THE MARITIME INDUSTRY

LINER STRATEGIES

FEEDFORWARD KNOWLEDGE AND INFORMATION ON EXTERNAL ENVIRONMENT

DECISION MAKING AND DEFINITION OF MASTER STRATEGIES AT THE STRATEGIC LEVEL OF TOP MANAGEMENT

FEEDBACK INFORMATION REVIEW AND EVALUATION OF DECISIONS
feed forward information

Strategic decisions

feedback information data

policy decisions

degree of autonomy

managerial capability

objectives and departmental...
The second conceptual process to decision-making, involves the use of a feed forward processing of information and knowledge of important changes taking place in the external ports' environment and an evaluation of the likely impact of these changes on the internal ports' environment. In this situation, port management assumes a progressive, forward-looking orientation. The main drawbacks of this approach are that dynamic changes and fluctuations in the external environment become difficult to evaluate and secondly, that precise information and data obtainable in the internal environment are replaced by rough estimations and difficulties experienced in obtaining information on the external environment.

A prudent management approach to decision making is to combine elements of both the external and internal environment, which takes account of the past, present and future trends in the maritime environment.

Decision-making, therefore, covers a wide range of knowledge and information on the total ports' environment which allows for an evaluation of the organization in terms of its strengths, weaknesses, opportunities and threats.

Armed with this information, Port Management can set about correcting imbalances through the making, taking implementation and control of decisions to improve the port organization over its short, medium and long term life.
All decisions will be defined by the role and purpose, i.e. the objectives established for the port organization, which in turn are subject to change as objectives are periodically re-assessed and re-defined.

Decisions may be taken at all levels of the port organization beginning with top management, who set the broad purposes and objectives of the organization, and continuing downwards through the administration and operations management to the lowest level at which the decision-maker has the necessary information and data to translate top management objectives into realizable departmental goals.

In actual fact, decisions taken at one or the other level, affect and in turn are affected by each other. Management information and a relevant data base constitute vital inputs in measuring, assessing and evaluating the effectiveness of tactical plans and targets set for each individual department and the organization as a whole.

Ports have many sub-functional units. As such there will always be a need to delegate authority to various functional centres. However, it is important that management is able to coordinate decisions and operating performance from a total systems approach, if targets are to be set and a balance kept in operations.

Moreover, the systems approach allows for an easy identification of weakness and bottlenecks in this system which require attention.
Finally, decision-making in the port organization is a function of the quality of the decision makers themselves which comes with education and training, and the degree of autonomy held by senior management in their ability to implement and control the decision-making process. This is derived from the pattern of ownership and administration.

Structure of the Study

The first part of this study examines major trends and developments in the external ports' environment, i.e. the national/international economic activity and trade, and consequently the cargo traffic passing through the Port of Spain wharves; changes in the maritime industry, shipping container and port technology, and the implications held for present and future port operations. In this respect, we attempt to conduct an impact analysis to evaluate the nature of the threats and opportunities posed to the internal ports environment. This is conducted in Chapters 1 and 2.

The second part of this study is concerned with an evaluation of the structure and operation of port facilities, identifying strengths and weaknesses in the context of the threats and opportunities posed by the external environment. In so doing we define the decisions to be taken by port management.

Finally, recommendations and conclusions are presented as they have been identified and evaluated within the parameters set for this study.
Chapter I

MARITIME LINER INDUSTRY
GENERAL CONSIDERATIONS

1.1 COMPETITIVE CHARACTERISTICS

The liner industry today is characterized by significant overtonnaging at all levels, and in most routes, with the possible exception of the Pacific Westbound run.

Hirishi Oshuga in his paper on Transpacific liner trades its carrying capacity and cargo volumes at 1984 Seatrade Conference, has argued that overtonnaging began with the introduction of containerized vessels, which can now derive greater levels of efficiency in their operations, less turnaround times etc., which lead to a greater net available tonnage capacity for cargo transportation.

To this we may wish to add the following major developments in the recent past which have increased the real capacity.

1) The lowering of shipbuilding prices by most countries including subsidization, to keep shipyards operational. This has been particularly acute in some industrialized countries in Europe where uncompetitive operations have been subsidized by national governments through the enormous capital concentrated in these countries and which is flowing into shipbuilding for want of other means of investment.
In spite of this, some shipyards in Europe and the Far East have had to be closed down.

2) Increasing trends in the modernization of shipbuilding technology, particularly in South Korea and Japan, which has drastically reduced the time required for completing ships. It is now possible to mass produce vessels in a very short period of time including the jumboizing of vessels.

3) The emergence of some developing countries fleets as national political and economic aspirations are given form and encouragement through the recent coming into force of the "Liner Code of Conduct" which allows for a carriage of goods in national bottoms on an equitable basis with second and third carriers, such as a 40-40-20 cargo sharing arrangement.

4) The emergence in 1984 of the new Round-the-World Service in both the East and Westbound directions. This has led to an increase of available tonnage through the purchase of large vessels ranging from 3,000 to 5,000 TEU capacity. Operators such as Evergreen and United States Lines can derive cost reductions of as little as 3.5/4 cents and 4/4.5 cents per space mile respectively, depending on utilization rates.2

When these factors are taken together with the fact that the construction and operation of container ships are not limited to a few industrialized countries, it is understandable that the present over-tonnaged situation remains.

Moreover, this has taken place at a time of bleakness in
the international growth of the World trade. With the exception of 1984, where a growth in the world trade of 7-9 per cent was recorded, present trends indicate a relative decline in the rate of growth of the world trade.

Significantly the rate of laid up tonnage as at the end of 1984, stood at only 3.5 per cent of the total liner tonnage.

This is perhaps an indication of the optimism of vessel operators for the future growth of world trade.

However at the present, the overtonnaged liner market continues to encourage a rationalization of the supply side of both vessel operators and port calls.

The round-the-world service engages in long hauls, calling at a few selected load-centre ports. Cargoes are transshipped to/from these ports by feeder vessels, road and rail, using micro-bridge or landbridge services.

The relatively higher capacity utilization combined with lower costs per TEU has led to an unprofitable situation for many marginal operators who must either re-adjust their shipping strategies or leave the market.

New shipping strategies based on efficiency, significant cost reduction and higher capacity utilization has led to great in-fighting in many liner conferences. The more efficient operators are opting to leave the conferences and compete as outsiders.

The Caribbean has not been spared. In 1986, Tropical Line
left the Floridal Caribbean Conference to compete as an outsider. This has significantly affected the Conference and led to a restructuring and revision of its own internal arrangements and practices.

1.2 TECHNOLOGICAL CHARACTERISTICS

1.2.1 Ship Technology

Since late 1960s, there has been rapid development in both the design and the size of container vessels. Today there are fully-cellular container ships, semi-container ships e.g multideck break-bulk vessels and multipurpose carriers combination vessels, container/bulk carriers, Roll-on Roll-off vessels and, hybrid vessels which carry both ro-ro and lift-on lift-off containers.

Fully cellular container ships are now classed in generations ranging from 1st to the present day 5th generation vessels now in use by United States Lines.

The only real limitation to ship design and size seems to be by the Panama Canal, which contains the dimensions of container ships to a beam of 32.24 m and a draft of 12 m.

If these limits were to be removed as some have suggested the future construction and dredging costs of load centre ports would be significantly increased, larger quayside cranes would be needed with greater outreach and perhaps more importantly, it would mean changes in container specification too, to allow them to be stacked unsupported at higher levels than at present. Existing I.S.O. standards allow for container stacking of 6 high, fully
loaded at 20 tonnes gross per unit.

There is a safety and efficiency factor involved in securing container above deck. As shipowner strive to accommodate more containers aboard ship they have to face the choice of enlarging the ship to accommodate the containers below decks, which increases the ship’s draft and its fuel consumption, or to accommodate the containers above deck by increasing the height of the stacks of containers, which results in additional problems of safety and efficiency in loading and unloading the ship.

The most common method of securing containers in an above-deck-stack, is with the use of twistlock, the stevedores have to get on top of the containers to apply twistlocks, which involves a safety problem and causes the work to slow down. Two alternatives solutions are to design future containerships with a solid frame securing system above deck, such as those now being introduced by Sealand using a "T" shaped towerlocking device, or with the limited stack height of four containers.

However at the present there are no codified I.S.O rules on above-deck security of containers.

We can anticipate that future changes in container stacking and container height are a real possibility.

Significantly this will also lead to a change in the type of shore based container handling equipment being used at present, in terms of height outreach and perhaps tonnage capacity. However, primarily high throughput ports i.e load centres will be affected.
At present, Port of Spain in addition to handling traditional break-bulk vessels, now accommodates multi-purpose vessels ro-ro's and lo-lo's containerships.

The current draught of the channel and berths is to a design depth of 12 m L.W.D.S.T. The majority of containers calls are feeder type vessels of up to 500 TEU capacity. In addition this port also accommodates 1st generation vessels.

At present the specialized handling facilities are adequate to handle the types of ships calling at Port of Spain.
1.2.2 CONTAINER UNIT TECHNOLOGY

With the introduction of the containerization in the late 1960s, the focus of attention has shifted from the vessel per se towards the container unit itself. Today, there are a wide proliferation of container types, open-topped, closed-ventilated, platform-based, bulk cargo containers, reefer containers, etc.

Today technological innovations and/or improvements are geared towards increasing the rates at which boxes may be handled. Moreover, the box itself has been the subject of much study as designs are being sought to improve the technical, economic, optimal container design, which combines a low manufacturing price with maximum internal dimensions, minimum tare, minimum maintenance and repair costs.

The most recent developments in containers relate to self consolidation / de-consolidating containers, collapsible containers, inflatable containers and disposable containers.

At present containers are standardized by the International Organization for Standardization (ISO) which has the fundamental objective of ensuring the operational interchangeability of containers on a world wide basis.

With regard to operational interchangeability, three standards are relevant:

-Dimensions and ratings
Corner fittings and

Strength criteria and related tests.

Between 1964-68 I.S.O reached agreement on the dimensions and ratings of two series of containers: series 1 and series 2, based on a groundrule for standardization which recognized on the one hand, widely used existing practices which may be used as guidelines for the future developments. The authors of the above-mentioned objectives have recognized the essential contradiction in terms of attempting to label existing practices and at the same time tie them to future trends and developments. Problems will remain, given that maritime technology is still very much in a period of evolution and standards will need to be revised to keep pace with major industrial developments. Indeed, legal restrictions as they relate to road and rail transport has had a very constraining effect on the introduction of high cube containers. Recently the U.S government lowered its restrictions to allow rail containers to be stacked two high.

Since 1968, several changes have been made in the container design and dimensions. In 1970, 40 foot containers with a height of 8 feet 6 in were introduced. In 1978, I.S.O standards only mentioned series 1 containers, now restricted to four length sizes of 10, 20, 30, 40 feet one width of 8 feet and two alternative heights of 8 feet 6 in. In current practice, the selection process has largely reduced the number of container size to two. The 20 and 40 foot length container unit.

Sealand which has traditionally used a container length
of 35 feet is currently adjusting to international standards by ‘stretching’ some containers to 40 feet.

In addition many owners of container services currently set their own standards to suit the needs of their respective trades.

At present there exist containers of 45 feet and 48 feet. Similarly the height of non-ISO containers have passed the 8 1/2 foot mark to include heights of 9 1/2 feet. The same applies to variations in allowable gross weight and construction materials. The move is towards an allowable weight of 24 tonnes per TEU.

All of these variations exist for the basic all-purpose dry-cargo container. There are further variations when it comes to special-purpose containers.

The reason for the wide variety of ‘standardized’ containers is not only to provide for varying circumstances but because new standards have to be developed occasionally to reflect changing practices in the real world of intermodal transportation.

For our purposes, we may conclude that by and large, ISO standards will prevail; however we should note that container dimensions are still very much in period of evolution. Possible changes will affect positively the degree to which cargoes may further containerized. Invariably this will have implications for the ratio of break-bulk viz-a-viz container facilities needed to perform container handling operations.
1.2.3 Port Technology

Since the introduction of containerization and the utilisation of mechanized high throughput equipment such as gantry cranes, yard transfer cranes etc., which we may conveniently regard as current 'standard' technology, there has been further improvements and/or innovations in the kind technology used.

The port's industry has been able to utilize technological developments arising both within and external to the maritime industry.

Technological improvements/innovations, including the use of computers are currently being used at all levels of management and operations. First line applications refer to actual cargo handling operations and control and includes the use of both mechanized equipment, and computers second line technology refers to computers applications in data processing, accounting management information control and the exchange of information among independent parties such as shipping lines, customs, freight forwarders etc. The above separation into first and second line applications is a mere convenience used by this author. In actual fact, the versatility of computer applications including the increasing compatibility of different systems hardware and software, has increased the level to which management and operations can be integrated, both within and across functional areas of port operations to include information exchange by independent parties from ship-to-port-to-hinterland.
The extent to which improvements and/or new innovations are being applied varies with the cargo throughput level handled by individual operators whether single or multi-modal and therefore their own operational requirements. As a consequence, the trend is towards custom-built equipment, management information processing and control systems for computer aided decision making in handling operations. The former i.e equipment used, tends towards improving on existing equipment being used in the industry and will probably maintain characteristics which allow for operational interchangeability in handling operations. The latter i.e management information processing and control tends towards the fulfilment of individual requirements of operators concerned and varies from port to port.

The most important recent developments in container handling are:

1) Container conveyors serving as an interface between the ship transfer and yard gantries, which are designed to feed a continuous flow of containers to a static position under these devices and therefore eliminate multiple handling by transfer devices, such as tractor trailers or straddle carriers. The conveyors are usually equipped at various locations with automated devices for transfer of containers between truck or trailers and the conveyor belt.

2) Computerized Stacking Control which provide optimum stacking and unstacking sequences and stack cell allocations, designed to minimize yard gantry working times.
This type of system is usually co-ordinated with computerized containership cargo planning, and minimizes container handling while maintaining all the ship's particular requirements.

3) Automated Container Inventory and Storage: Various container chain types, retracting and shelf conveyor type automated container warehousing systems have been developed. These are designed to automatically stack and recall any container and transport it to or from a transfer station interfacing with pier side gantries, or belt conveyors to the freight station and inland transport system.

4) Batch container handling: Several methods for the handling of blocks of standard coupled containers are under investigation. These designs attempt to permit handling transfer and storage of blocks of coupled containers. Most are based on transversely assembled blocks of 20 foot or 40 foot containers 2 to 3 high and 2 to 3 containers wide.

5) Container Elevator and side load Devices: Devices similar to ships side pallet loaders designed to transfer containers to or from quay to ship decks. The elevators are fed by sideload devices. The elevator either only transfers containers from quay to ship or extends like a pallet loader into the (non cellular) box type ship's hold, where conveyor cushion pallets or rail transfer devices distribute the containers transversely across the ship's side.
Warehousing and Storage

Today fully automated computerized warehouses, permit the retrieval of any piece of cargo (loose or on pallet) without dislocation of other cargo. This technology has been derived from automated warehousing used in merchandizing and distribution. Although relatively expensive to install, this system permits space utilization of up to 82 per cent of the volume available, which is 50 per cent more than currently normally feasible. Such warehouses are remotely operated by one man and operating costs are therefore only a fraction of those of conventional warehouses.

New technology is available for warehouse or transit shed operations, including automatic stacking and retrieval devices, computerized cargo locator systems, narrow aisle automated pallet movers, monorail supported rotating pillar stockers, shelf conveyors variable controllable speed conveyors, multi-direction conveyors, air cushion pallet with hand or mobile devices and inflatable bag packing and lifting devices.

1.2.4 Information Systems Process and Control

Such systems are already in operation in many high throughput terminals: the port of Bremen/Bremerhaven are currently operating two main systems. The one system (COMPASS) primarily serves Bremen's port traffic administration and also provides facilities for data exchange between shippers or inland carriers and dockside forwarding agents. The second system (CT.-ON-LINE) links
the port with a number of its customers.

In America, several operators have developed terminal management systems. Matson Terminal (MATSYSTEMS) and both American President Lines and Sea-Land with their custom-built developments, have been leaders in this field. These terminal systems are augmented by data inputs from other departments on the steamship side on the business. Several independent terminal operators such as Maher, and Marine Terminal Corporation with its (M.T.A.M.S) system have developed state-of-the-art programmes to help manage their terminals.

Data communications constitute a primary input to facilitate the exchange of information between control computers and office building, entrance gate, mobile equipment and even personnel in charge of inspection, equipment interchange, reefer control and yard control.

Europe Container Terminus (ECT) the Netherlands, is currently developing a wireless data communications system which will be operated through an internally developed infra-red light-based data transmission system. It is also expected that ship planning process will be based upon CAD-CAM technology, utilizing bar-code equipment, colour graphic screens and graphic tablets. High speed line printers will ensure that ships are given a completely updated vessel stowage plan one quarter of an hour after the last container is handled.

New techniques such as voice input and fibre optics are currently being developed. Voice inputs facilitate the information input activities required of equipment operators. Fibre optic technology is rapidly becoming
more feasible and this technique can definitely improve the inter-connection of networks structured for decentralized and distributed processing. The timing for operational implementation depends on the maturity of these technologies reflected through reliability and maintainability and costs. Current estimates put the implementation phase, within the next decade, perhaps by the year 1995 in developed countries.

Systems software, communications software and generative software used in data base systems are increasingly being used to fulfil the requirements of an operator-oriented information system and for flexibility in management information.

The development of information systems probably constitute the area of fastest progress in port technology applications.

By the year 2000, port terminals may be provided with a local area network connected through fibre optics and offering features like voice input and output, text processing, electronic mail telephone/vision/text, distributed processing to data bases, all of which will constitute yet another major turning point in the evolution of the maritime industry posing real challenges to port operators.

1.3 IMPLICATIONS FOR PORT OPERATIONS

The commercial and competitive characteristics which has originated principally from the strategic interests of vessel operators, has today forced many changes on the
ports' industry.

The imposition of technological changes and new requirements by vessel operators has been accompanied to a large extent by the imposition of commercial and competitive considerations on the ports' industry.

Today there is very little discussion about gateway ports and captive cargoes.

The growing competitiveness of alternative ports both nationally and within regional reach, have led to a rationalization of port calls by vessel operators. The more efficient ports replacing the less efficient ones. Where the port is inefficient, it is forced to lose its cargo and rely on a transhipment of tonnage from some neighbouring base port.

Operational strategies aimed at improving the attractiveness of ports is a vital necessity today. Strategies range from increasing the operational hours, improving the productivity rates of vessel operations and cargo handling activities, to increasing the documentary and administrative aspects associated with vessel stowage plans etc.. In so doing, the turnaround time of vessels in port is reduced and the operational attractiveness of the port is increased.

A second related and equally important point lies in the cost and revenue structure of port operations. The advent of sophisticated high throughput technology has forced major changes in the investment and operating expenditure portfolio of port operators. Clearly, the investment costs associated with constructing and operating a container
terminal, cannot be reconciled with the traditional human intensity of port operations. Many ports have been forced to reduce the human aspect of their operations after the acquisition of high throughput technological systems, to ensure that port costs and consequently, port charges remain competitive viz-a-viz other operators. To a large extent this has been possible through major reductions in the quantity of labour, personnel and managers employed in operations. At the same time, the quality of remaining managers, personnel and labour has been improved to take account of the new requirements of the industry. These relate to managers and personnel, trained in the use of computers and able to analyse information flows and operational data bases; skilled and semi-skilled operators, able to manage and control equipment under their command and able to make and take vital operational decisions without direct supervision. In addition, the critical role of maintenance and repairs, including servicing and the availability of an adequate reserve or stock of spare parts, introduces new and important considerations in managing and operating port facilities as technical skills are increasingly being demanded.

The third and most important point lies in the administration and ownership pattern of ports in most developing countries. Traditionally, the high investment costs associated with port infrastructure and superstructure, has led to a significant involvement of national governments in port affairs. The outlay of investment has usually been accompanied by bureaucratic controls and mechanisms, designed to ensure that port operations follow strict government rules and procedures. The result has been a multiplicity of bureaucratic rules, regulations and ordinances, which control important areas
relating to finance and tariff structures, management appointments and personnel relations, and finally the desire to maintain employment objectives consistent with the level of government finance involved in port facilities. In such situations, it is often difficult to efficiently manage port operations and derive a reasonable return from operations and investments.

On the one hand, government finance is much needed to adequately serve the modern maritime and transportation needs of port users. On the other hand, a professional and commercial approach is needed if efficiencies are to be derived in operations, and revenues reconciled with port investment and expenditure. Once the port organization has been equipped with professionally trained managers, an adequate degree of management autonomy is needed to ensure effective performance. These are not contradictory considerations, where a properly constituted board of directors are responsible and accountable to government for the management of port operations.

The conclusion therefore is that the commercial orientation, originating out of the needs of vessel operators, will continue to force similar considerations on the ports' industry. As we have tried to highlight in the previous sections, the maritime industry is still very much in a process of transition.
Chapter II

THE OPERATIONAL AND FINANCIAL DATABASE.

The Port of Spain Wharves has traditionally accounted for general cargo movement into and out of Trinidad and Tobago. Within the recent years, beginning in 1982, the industrial Port of Point Lisas has begun to handle modest flows of both break-bulk, bulk and containerized general cargo. Data on cargo flows at Point Lisas is unavailable at this time, and for the purposes of this study, we shall assume that the monopoly traditionally held by Port of Spain in general cargo handling is still significantly retained or at least that it is highly oligopolistic tending towards monopolistic.

2.1 TONNAGE MOVEMENT AT PORT OF SPAIN

General cargo flows at Port of Spain are normally comprised of consumer goods (non-durable, semi-durable and durable), intermediate goods, raw-materials and capital goods. At Port of Spain, facilities are provided for the accomodation of conventional break-bulk, bulk and container ships, lo-lo, ro-ro, and semi-container.
Figure 2 depicts the total import/export tonnages handled at Port of Spain for the period 1980 - 1985. Imports constitute the most significant share of tonnage movements and typically account for between 95 to 97 per cent of total tonnage handled.

On the other hand, export tonnage has remained relatively low accounting for a mere 3 to 5 per cent share on average of total tonnage moved.

Total tonnage has grown continuously since 1973 and despite declines in 1978-79 and 1980-81, tonnage levels reached a peak of 1.8 million metric tonnes in 1983 from a total of 0.8 million tonnes in 1973, representing an average annual growth of roughly 12 per cent. Since 1983, total tonnages have fallen sharply by 20 percent and 24 per cent for 1984 and 1985 respectively.

For the first three quarters (January-September) of 1986 total tonnage handled represent 50 per cent of the 1985 level or 0.6 million tonnes. It is estimated that total tonnage handled for 1986 may not exceed 0.75 million tonnes of which 0.5 million tonnes should be import tonnage reflecting a further decline in import tonnage of roughly 25 per cent.

2.1.1 Tonnage by Composition and Carrier Mode

With respect to the composition of cargo, available data only allows for an analysis of non-oil imports by value for the period 1980-1985. (See Appendix 1).
During the period 1980 to 1984, consumer goods rose from a percentage share of 24 to 32 percent; intermediate goods, rose from a percentage share of 33 to 37 percent; capital goods fell from a percentage share of 36 percent to 23 percent and finally raw materials rose from 6 to 8 percent.

For the period 1984 to 1985, there was a marked change in the composition of import by value. Consumer goods fell from 32 to 27 per cent; intermediate goods declined from 37 to 34 per cent, capital goods experienced an increase from 23 to 33 per cent and finally raw materials declined from 8 to 6 per cent.

In terms of tonnage moved by mode of carrier, in 1980 the share of container tonnage versus break-bulk and bulk tonnage was 65 to 35 percent. By 1983, the year representing the peak of tonnage flows, this share was 47 to 53 percent for container and break-bulk and bulk respectively. In 1985, container carriers accounted for 65 percent of tonnage moved and break-bulk, bulk carriers, 35 per cent. It is expected that this ratio should be maintained over the next few years.

2.2 TONNAGE MOVEMENT AND ECONOMIC ACTIVITY

Import/Export tonnage movements constitute the visible international trade of an economy. At Port of Spain, this trade is restricted to non-oil import/export.

Cargo flows normally reflect major trends and developments in the national economy viz-a-viz the international economy with which it interacts. Economic
change normally has a time-lag effect on tonnage movements, the time-lag being determined by the nature and sensitivity of changes taking place.

Since trade and tonnage movements are normally a function of national economic activity, it is convenient to use economic indicators relating to gross domestic production, government revenue/expenditure and government's fiscal monetary and other policies, to explain changes in tonnage movements.

Appendix 2 depicts the growth rates in G.D.P. at factor cost (current prices) for 1982-1985. After achieving a phenomenal average annual growth rate of 25.8 per cent between 1973-82, total G.D.P declined in 1983; 1984 and 1985 by 1.6 percent, 0.5 percent and 3.5 percent respectively. The major engine of growth in G.D.P. has been the rise in production and export of petroleum and petro-chemicals between 1973-82. In 1973, petroleum accounted by sector for 20.6 percent of G.D.P., by 1982 this had increased to 27 percent G.D.P. The growth was also matched by other non-oil sectoral growth. The manufacturing sector increased its contribution to G.D.P primarily in areas related to foods and beverages, chemicals, wood and assembly type industries, and by 1982 accounted for 6 percent G.D.P. Within this sector, the production and exportation of chemicals has been quite important accounting for between 65 to 71 percent of total non-oil exports between 1980 and 1985. The export of food and beverages typically accounted for between 11 to 15 percent of total non-oil exports. The export of manufactured goods and articles accounted for roughly 13 percent of total non-oil exports.
The construction sector grew continually since 1973 through economic expansion principally in housing and commerce and by 1982 reached a peak of 15 percent G.D.P.

Distribution and Restaurants and, Transport and Communication both grew to 10 percent each of G.D.P.

Finally both government and Financial Services grew and by 1982 accounted for 14 percent and 8 percent of G.D.P. respectively (See Appendix 3).

The growth in G.D.P. from 1973-82 was also paralleled in increasing government revenues, principally accruing from taxes and royalties on oil sector activities.

It is arguable that increasing revenue/expenditure accruing principally from the industrial base of the economy, served to increase and expand total domestic production and consumption through a multiplier effect as domestic aggregate demand increased as a result of increased net disposable incomes and profits generated by private companies and government engaged in industry and the commercial service sectors. Appendix 4 depicts government expenditure, which averages about 80 percent for recurrent expenditure on wages and salaries, demonstrating the importance of the public sector in generating employment and incomes in the national economy. Consequently the economic fortunes of the country has been tied intricately to developments in the international economy.

Since 1980 the international recession and
the dramatic fall in the international price of oil has created important problems for the industrial and export base of the economy. As a consequence of international declining demand and the economic re-structuring policies taking place in the major economies. In 1983, government began to take certain deliberate actions aimed at restructuring and adjusting the economy to falling revenues as a consequence of reductions in the international price of petroleum, and reductions in revenue generated from the industrial sector.

Policies implemented in 1983, related to import budgeting measures, import quota requirements and foreign exchange controls. Policies were designed on the one hand to reduce imports of conspicuous and non-essential consumer goods, increasing import substitution, and on the other hand to promote and encourage export-led economic production and development.

The dramatic effect of these policies together with the already apparent decline in domestic revenue/expenditure and G.D.P since 1982, may be considered as the prime reason for the decline in total tonnage movement beginning in 1983 and continuing through 1985 up to the present.

Recent 1986 policy decisions relate to the January devaluation of the TT dollar by 33 per cent, and the imposition of a two-tier parallel system of exchange rates. Since 1976, the TT dollar has been linked to the United States dollar. At present, the United States remains the most significant import/export market for domestic production/consumption accounting for 65 percent of exports and 36 percent of imports (See Appendix 5).
The United States is at present also experiencing a depreciation of its own currency value viz-a-viz other currencies. The full extent of the depreciation has not yet been determined. As a consequence, the real impact of Trinidad and Tobago's own devaluation cannot be properly measured in terms of tonnage movement affected.

In the present situation, the decline in the domestic activity indicates a further decline in G.D.P. In 1986, there was a decline in the Financial Service sector particularly affecting insurance companies and private finance houses, indicating a growing illiquidity in the financial system, which is apparently affecting both the public and private sector.

The decline in economic activity has also led to a closure of an unquantified number of businesses. Revised estimates put the level of unemployment in 1985 at 15 percent, a rise of 2 percent over the 1984 level. Sectors particularly affected were the assembly, distribution, manufacturing and construction and service industries.

With respect to the international price of oil, no definitive statement can be made, as most forecasts made in the past have been off-target. At present, O.P.E.C has failed to reach agreement on production quotas and the current international price of crude oil stands at a low of 5 dollars per barrel. Some studies indicate an upswing by 1990-1995.
2.3 IMPLICATION FOR FUTURE TONNAGE MOVEMENT

In attempting to predict future tonnage movements, we must bear in mind the above-mentioned factors, particularly government's own policies and current trends in the domestic and international economy, the price of oil and the present the United States currency depreciation.

We have seen the dramatic impact of the international oil shocks on national revenues in former years 1973-1982 which spurred economic growth and activity. Since 1983 government's own policy shocks have also had a dramatic impact on economic activity, attempting to re-adjust and re-structure the national economy in the face of declining national revenues.

Both shocks have already been reflected in tonnage throughput since 1973, the full extent of the 1986 de-valuation cannot yet be fully determined. Current estimates indicate a fall in tonnage for 1986 to a level of about 0.75 million tonnes.

In our opinion, tonnages levels may decline in the near future given the 1986 devaluation and understanding that such policies are normally accompanied by a freeze on wages and prices which may further depress aggregate demand of producers and consumers. However this should not decline further than 0.7 million tonnes, given past historic trends and on the understanding that economic growth and development of a more permanent nature other than in the oil sector, has in fact taken place over the years. Between the period 1987 and continuing perhaps to the year 1990, we should expect tonnage throughput to
move between 0.8 and 1 million tonnes as government's policies are translated through time into tangible economic trade realities. Assuming that the national economy is able to restructure itself and perhaps increase national revenues through export-led policies, we may witness an upswing in tonnage throughput from 1990 onwards. In addition, the possibility of an upswing in oil prices should not be neglected, at least for 1990-1995.

With respect to the composition of cargoes, we should expect the 35-65 ratio, to be maintained to the year 1990. The 65 percent relates to container loads and the 35 percent relates to conventional cargo loads.

2.4 VESSEL CALLS AT PORT OF SPAIN.

Figure 3, gives a break down of vessel calls at Port of Spain for the period 1980 to 1985. After reaching a peak of 809 calls in 1983, total calls have declined 14 percent between 1983 and 1985 to reach a level of 704 calls. Over the same period, container calls increased marginally by 1 percent in 1984 and then experienced a 17 percent decline in 1985. As at September 1986, container vessels stood at 218 calls. Vessel calls normally have a higher frequency during the latter three months of the year (Christmas season).

If we assume a peaking factor of 30 percent, we can estimate that in 1986 container vessels may average a total of roughly 285 calls.
FIGURE 3

TOTAL VESSEL CALLS
(EXCLUDING PASSENGER)

Year
Source: PATT
With respect to break-bulk, bulk and lumber vessels as a group, vessel calls declined from a peak in 1982 of 449 calls to 386 calls registered in 1985, reflecting a total decline of 15 percent. As at September 1986, vessel calls stood at 176 calls. Again, estimating a further 30 percent for the last three months of 1986, we can calculate that total calls for 1986 for break bulk, bulk and lumber vessels should average around 230 calls.

As a result we can estimate that total vessel calls in 1986, should average around 515 calls, reflecting a decline of roughly 25 percent. Based on this estimate, it is clear that there will also be a significant over-capacity in berth utilization ratios, more so for break-bulk, bulk and lumber vessels than for container vessels.

2.5 ANALYSIS OF PRODUCTIVITY AND CAPACITY UTILIZATION

The port operates 7 general cargo berths and 2 container berths equipped with 2 rail mounted gantry cranes to perform container operations. In addition a third berth is provided at the terminal for handling semi-container and ro-ro vessels utilizing ships' gear. The hours of work are from 7am to 4pm with a contingency of 3 hours, 4pm to 7pm overtime. Weekend work is regarded as overtime.

In 1984, the average net productivity in container operations recorded was 10 moves per crane hour (See Appendix 6). The average turnaround time of a containership was roughly 4 to 5 days.
Internationally and regionally acceptable productivity levels average between 20 to 45 moves per crane hour, with a vessel turnaround time ranging from 1 to 2 days, depending on the number of units discharged/loaded.

In 1984, the average net productivity in break-bulk operations recorded was 9 tonnes per gang hour (See Appendix 7). The average turnaround time of a break-bulk vessel was between 8 to 10 days.

Internationally and regionally acceptable levels average between 12 to 15 tonnes per gang hour, with a vessel turnaround time ranging from 4 to 6 days depending on the tonnages handled.

With respect to capacity utilization, we have already identified the continuing decline in tonnage movement, and the growing over-capacity in port operations. The over-capacity is much greater in break-bulk operations, where the decline in tonnage has been more severe.

We may conclude that while on the one hand, the tendency is towards a growing over-capacity in operations, on the other hand the structure of working hours together with low productivity levels creates an inefficient utilization of existing capacity.
2.6 FINANCIAL ANALYSIS.

With respect to the financial flows involved in PATT's operations, Appendix 8 gives a comparison of revenue/expenditure, including deficits incurred by PATT for the period 1981-1985. After reaching a peak in 1983, of 216 million TT$, the deficit declined to 202 million dollars in 1985.

The rise and fall of revenues and costs reflect, inter alia, the growth and decline in operational activity through tonnage movements and vessel calls over the period. We may note that stevedoring longshoring and container operations accounted for roughly 20 percent, 27 percent and 30 percent respectively of operational revenues for the period January to August 1985. (See Appendix 8). Revenues accruing principally from rental charges on warehoused cargoes accounted for another 14 percent and finally port dues accounted for 6 percent of revenues during the same period.

For the period January to August 1984 and 1985, stevedoring revenues declined by 50 percent, and longshoring revenues declined by 53 percent.

Increases were recorded over the same period for container charges and rental charges, the former increased by 35 percent and the latter, by 186 percent. These increases reflect primarily the increases granted in 1984 by the Public Utilities Commission, a rate regulating body, with respect to container port charges and storage rent charges. However, between 1984 and 1985, total revenues declined by 30 percent.
For the period January to August between 1984 and 1985, expenditure on labour wages and cost of living allowances fell by 76 percent, and expenditure on overtime fell by 67 percent. Although adequate financial data is not available at this time, we should note that the most significant share of operating costs are accounted for by expenditure on wages, cost of living and overtime at the port. The second important area of expenditure is on salaries and overtime payments made to port personnel. The third area of expenditure is maintenance, repair and overhead costs. Between 1984 and 1985, total expenditure declined by 13 percent.

Given our past analysis on declining cargo tonnage trends and vessel calls, we may conclude that generally it is anticipated that revenues will continue to fall in 1986 and 1987 and perhaps level off in the latter part of 1987.

2.7 BROAD DECISIONS TO BE TAKEN

Based on our analysis of tonnage movements, vessel calls and finally the imbalance between revenues and expenditure, the imperative to management is to seek dramatic reductions in its operating costs through a restructuring and reduction of the excess capacity and the streamlining of operations.

As we have seen these costs are primarily related to expenditure on personnel and labour, including the cost of overtime operations. Cost reductions should be geared at eliminating the human intensity of operations,
as well as finding an alternative which will reduce the costs incurred in overtime operations. In addition the port needs to restructure and reduce the high degree of excess capacity in its break-bulk operations.

Importantly, the measures designed by management to effect cost controls and cost reductions to meet the shortfalls in operating revenues, should be accompanied by strategies designed to improve the efficiency of operations, through a reduction in the gross available port capacity, but an increase in capacity utilization of net available facilities. These strategies should increase the attractiveness of the port by reducing the turnaround time of vessels and possibly encourage a marginal increase in vessel calls over previously estimated levels.

Having identified the broad nature of decisions to be taken, and armed with a knowledge of the opportunities and threats posed by the external ports' environment, we now turn to an assessment of the administration, management and operation of port facilities in terms of its component strengths and weaknesses. Through such an assessment, it is possible to derive a more accurate definition of areas where decisions are to be taken and determine the prerequisites needed by port management to implement such decisions.
The development of the Port of Spain Wharves, as a deep water harbour began in 1939, some 47 years ago while Trinidad was still a British colony. The first phase of port development involved the construction of 5 berths each of average length 200 m. Later 5 sheds were constructed, each measuring approximately 3,280 sq.meters. Apart from this, no major port development programmes were instituted until 1952, when the physical capacity of the port was increased by some 40 per cent, with the purchase and the acquisition of facilities formerly owned by the American government.

In August 1961, Trinidad gained political independence from the British; later that same year, government established the Port Authority of Trinidad and Tobago (PATT) to provide a co-ordinated and integrated system of harbour facilities and port services. Harbour facilities were defined as relating to the Port of Spain Wharves and the Port of Scarborough, Tobago. Prior to the establishment of PATT, stevedoring operations including labour recruitment was conducted privately by the Shipping Association and its agents, longshoring operations were conducted by the Port Services Department.

The nature of labour recruitment with regard to stevedoring was casual, while longshoring employed a permanent
register of labourers. Port tariffs in stevedoring were privately adjusted and administrated by the Shipping Association, and in the absence of strict regulations operations were profitable. On the other hand, longshoring operations and port tariffs were regulated and controlled by government authorities and consequently revenues in this aspect of operations were relatively less than those obtaining in the former, i.e. stevedoring operations.

The casual nature of stevedoring labour, tied as it were to the number of vessels handled, encouraged greater productivity in this aspect of operations vis-à-vis longshoring operations. However, the condition of stevedoring employment remained unstable and were often harsh when compared to the permanent nature of longshoring labour.

By the late 1960's, government began to address the question of unifying the total port labour force under a single employer.

In 1961 it was determined that a private cargo handling firm, Port Contractors Ltd, would be established with a shareholding made up of government, through the PATT, private enterprise, through the Shipping Association other interested parties and finally labour, through the recognised bargaining unit, the Seamen and Waterfront Workers' Trade Union (S.W.W.T.U).

It was envisaged that this company would conduct cargo handling operations as a single employer and private entrepreneur with the PATT acting as overseer and landlord of port facilities.
By late 1969, Port Contractors begin operations on a phased basis by acquiring stevedoring operations. In 1972 it extended its operations to include longshoring. The acquisition of stevedoring operations was relatively easy, given the casual nature of stevedoring employment. As such, there were no benefits etc. to be lost in change of employer.

However, the acquisition of longshoring labour and personnel presented some initial problems, as former employees of the Port Authority were required to resign their service to take up employment with Port Contractors Ltd. Moreover, the relatively lucrative terms and conditions offered by Port Contractors Ltd led to an exodus of junior personnel from PATT who might have considered that they had no positions of seniority within the PATT organisation and that chances for promotion were better with the new company. Indeed, many formerly junior personnel of PATT rose quickly through the ranks of Port Contractors Ltd vis-a-vis their former colleagues who had remained with the PATT.

The administrative and organisational arrangements between PATT and Port Contractors Ltd were poor. Members of the Board of PATT also sat on the Board of Port Contractors Ltd. As a result, this led to improper accountability and strict observance of business rules and procedures. It was determined by one government Commission of Enquiry held in 1977, the Gregoire Commission, that no contract was ever signed between both parties.

The operating revenues of Port Contractors Ltd related directly to the inherited nature of both stevedoring and
Longshoring operations, which is to say that between 1969-1974 it was able to earn profits from its stevedoring operations largely as a result of the tariff rates formerly set by the Shipping Association and which it (Port Contractors Ltd) adopted when it commenced operations. On the other hand, the situation was not the same in long-shoring operations where Port Contractors Ltd incurred serious losses in this aspect of its operations, largely as a result of poor tariff structure. Government upon the formation of Port Contractors Ltd, began to regulate stevedoring tariffs in addition to longshoring tariffs.

By 1971, Port Contractors Ltd had begun to handle modest volume of container cargoes in addition to its break-bulk cargo handling operations. However, in the absence of dedicated container facilities, operations were poor and there was significant congestion.

This resulted in the mounting pressure by vessel operators and shipping lines who demanded new facilities consistent with the new requirements of the trade. On the other hand, the Trade Union considered containerisation to be a threat to the future of port workers.

The Move To Containerisation

The development of dedicated container handling facilities and equipment at the port of Port of Spain began in earnest in 1976 with the construction of a single container berth and the purchase of one container crane. Funding for this development was provided in 1976 by the National Government in the form of a Port Development
Fund. Early attempts to gain World Bank support had failed on the grounds of technical problems in the planned layout of berthing facilities and low levels of both labour productivity and container traffic which the World Bank estimated would make investments in container facilities not financially viable. However, in the face of mounting pressure by port users, government took the decision to begin construction of container facilities by mid 1978 after many delays, facilities development were completed and comprised 2 container berths, 2 rail mounted PACECO gantry cranes, 2 straddle carriers for yard transfer operations and other ancillary equipment. However back up marshalling yard facilities remained problematic as significant port areas adjacent to the container facilities had been leased years before to various private companies, and their retrieval involved court litigation.

Attempts to negotiate an interim container contract had begun in mid 1977. However, the BWWTU objected to many of the proposals, continued to express strong concern about the future of port workers and in the absence of adequate back up facilities, refused to work in the Container Terminal.

Negotiations dragged on from 1978 to 1979 and for a period of one year, facilities lay idle.

In May 1979, in the absence of a negotiated contract, a transitional agreement was arrived at which essentially duplicated the hours of work, labour recruitment procedures gang sizes and other terms and conditions which obtained in conventional general cargo handling operations. The original proposals of management are
Another major development occurred in 1979. Port Contractors Ltd, after experiencing severe cash flow problems, became insolvent and consequently went into liquidation. This led to an exodus of its Board of Directors and many senior managers, and constituted a serious weakness in terms of decision making in Port management and operations.

The PATT immediately moved to resume control of all operations and employees. However, it should be understood that in the terms and conditions of the former Port Contractors Ltd, employees differed markedly from those employed with PATT. Indeed many junior staff who had left PATT now enjoyed relatively senior positions when compared to their former colleagues and counterparts at PATT. For some time this led to a duality of functions, especially personnel and industrial relations functions. At one time there existed two personnel managers, one for PATT employees and another for former Port Contractors Ltd employees. Many of these problems had legal ramifications and as yet are not quite settled.

These are some of the major developments as they relate to the Port of Spain Wharves. Many of the problems of the port are intimately related, affect and are affected by one or the other area of its operations.

It is convenient to recap in a chronological order some of the "benchmark" policy decisions taken by government and port management, since the establishment of PATT in 1961 and it a brief evaluation before turning to what we might term the current situation in cargo handling operations.
1- In 1969, Cabinet agreed:

"a) that there should be a single employer of labour engaged in carrying out cargo handling operations in Trinidad and Tobago whether on ship or shore

b) that a Cabinet Committee be appointed to consider and work out mechanics for the establishment of a handling company which should be a single employer of labour referred to a) above, engaged in carrying out cargo handling operations....

c) the Port Authority should be requested to continue negotiations with representatives of the stevedores and longshoremen employed at the ports with respect to the terms and conditions of their employment and on the question of the rationalisation of all port labour."

11- In 1969, government determined that any revision of tariff structure, whether stevedoring or longshoring should be subject to approval by the Public Utilities Commission, a government appointed Agency.

This a time consuming process, which significantly affected the revenue position of Port Contractors Ltd.

(111) - In 1976, government established a Port Development Fund of 150 million dollars and began the construction and purchase of modern container handling facilities.
In 1979 Port Contractors Ltd liquidated and government subsequently instructed PATT to resume control of all operations; including responsibility for labour and personnel formerly employed by Port Contractors Ltd.

We have already described the severe consequences this development had on the port organisation.

In retrospect, it is clear that the Port Organisation underwent some major structural changes beginning in late 1969.

It might be considered that port policy and decision making fell victim to a series of unexpected developments originating both in the internal and external ports' environment. As a result strategic planning gave way to pragmatic problem solving. Certainly decisions relating to the establishment of Port Contractors Ltd; the unification/regularization of Port Labour; and the modernization of port facilities were and still remain desirable strategic objectives and reflected a recognition on the part of the port planners, of the need for proper management, a permanent dedicated labour pool and state of the art technology.
Chapter IV

CURRENT POLICY

4.1 THE PORT SYSTEM AND P.A.T.T

In current situation of port development, different authorities bear responsibility regarding the port of Trinidad and Tobago. In other words, an overall port organization, such as National Port Authority does not exist, this has led to the proliferation of many public and private ports and unquantified duplication of port investment. With respect to public ports, having deep draught facilities, the Point Lisas Industrial Port Development Corporation (PLIPDECO) and the Port Authority of Trinidad and Tobago (PATT).

Point Lisas Industrial Development Corporation

Originally conceived of as a public Industrial port PLIPDECO began operations in 1980 as a state corporation responsible to the Ministry of State Enterprises. Industries served by this port include the Iron and Steel Company of Trinidad and Tobago (FERTRIN); the Methanol plant Aluminium Company of Trinidad and Tobago (ALCOTT). In addition to serving single users, this port now offers common user facilities. As a result, PLIPDECO has succeeded in attracting general cargoes of both the conventional and containerized type. With respect to the latter cargoes, it should be noted that no dedicated container terminal exists at this port.
The Port Authority of Trinidad and Tobago (PATT)

Role Policy and Functions

Originally established in 1961 by an Act of Parliament (Act 39 of 19661 with amendments) PATT reports to the Ministry of Public Utilities and National Transportation. It functions as a national public utility. PATT is responsible for the "provision of a co-ordinated and integrated system of harbour facilities and port services". Harbours refer to the Port of Spain Wharves and the Port of Scarborough, Tobago.

PATT operates a number of different services at the Port of Spain Wharves and separate facilities are provided for servicing, the government shipping service which ferries passengers and cargoes between Port of Spain and Scarborough and finally general cargo operations which includes conventional and containerized cargoes lumber and neo-bulk cargoes. In addition private bulk operators also lease port areas to conduct their own operations. However it has recently determined that these operators should be relocated to Point Lisas, to make way for any future port development of container facilities. The Port of Scarborough is primarily engaged in the feeder ferry service provided by the government shipping service In addition facilities exist at Scarborough for servicing passenger cruise liners

4.2 CURRENT POLICY
In 1983, government in adjusting to its much reduced revenue position determined that all public utilities should move to become self-sufficient in their operations by instituting measures aimed at reducing operating costs. Moreover, tariff structure have been revised to improve the revenue position of all public utilities. In addition, a number of measures have been implemented within recent years which are essentially aimed at improving the autonomy of port management. These measures shall be discussed under the relevant sections later on.

As we have seen in the previous Sections, the Port Organisation (Port of Spain Wharves) has undergone some major changes since 1969 both in the internal and external ports’ environment. It might be considered that port management has virtually had its hands full in attempting to remedy the many crises which have developed over time. In such circumstances, it is very difficult to sit back and attempt to formulate strategic or long term plans for an organization, whether it be government or senior port management.

For instance while on the one hand, improved tariffs structures and consequently revenues matched with reductions in operating costs may go a long way in creating a desired level of self-sufficiently in port operations. On the other hand, improved port efficiency through the provision of adequate capacity and capacity utilization can lead to further improvements in the cost/revenue position of an organisation and at the same time increase the competitive nature of one’s operations.

The benefits of improved efficiency are manifold and have
wide national economic implications which include encoura-
gement and expansion of International trade objectives: the saving of foreign exchange; increased competitiveness of national producers on the international market, including wider market access. In addition modernized ships and ports, seeking higher levels of efficiency in their operations are now increasing the demand for skilled and semi-skilled employees both personnel and labour oriented. This has opened up considerable employment opportunities.

It is of interest to us to explore in greater detail the above-mentioned benefits as they have been identified.

Ports and International Trade

In one UNCTAD Publication on port policy issues, it is argued that severe port congestion often result in restriction on actual trade flows and the propensity to trade. Further trade where it occurs in the face of congestion frequently incurs abnormal costs and this consequently leads to a reduction in the competitive prices of goods viz-a-viz other substitute goods not affected by congestion.

Certainly there are other factors involved which impact on final prices; however UNCTAD estimates that the cost of ship’s time in port typically represent 35 per cent of liner freight rates in trade between developed and developing countries. Rational adequate port capacity is a vital pre-requisite to fostering the International trade and therefore the economic growth of a country. It cannot be accepted for economic development to be dictated by static port capacity. A basic problem in making an assessment of
what is adequate capacity is that very often, and especially in today’s economic environment, the nature of the traffic is unknown in advance.

In industrialised countries it has become normal practice to provide surplus port capacity. A study conducted by the International Association of Ports and Harbours in 1976 showed that the average occupancy of berths handling dry cargo in these countries was less than 35 per cent, whereas the corresponding figure for developing countries was more than 70 per cent. For the purposes of this study we have seen that existing capacity is more than adequate for estimated tonnage flows.

The Saving of Foreign Exchange

To understand how substantial amounts of foreign exchange can be saved or earned as a result of improved port efficiency, it is necessary to examine the cost structure of sea transport.

In the context of sea transport costs "port costs" comprise three main elements. First there are the expenses incurred by ship operators in using ports. These include port dues on the ship and specific charges for such services as berthing and unberthing pilotage etc. Second, there are the costs of cargo handling in particular the costs of loading and discharging the vessel which, in the case of liner shipping are normally included in the freight rate. Third, there is the cost if ships' time in port. The importance of this last element although not a specific expense like the first two, can be judged from the fact that even excluding occasions of high waiting
times in serious congested ports a typical conventional liner currently spends between 50 per cent and 60 per cent of its time in port.

The significance of "port costs" in the total cost of sea transport depends on a number of factors, such as the nature of the cargo, the size and type of ship, length of trade route and the labour costs and productivities in the various ports of call. UNCTAD Secretariat studies indicate that port charges, cargo handling costs and the cost of ships' time in port typically represent about 5 per cent, 25 per cent and 35 per cent respectively of liner freight rates between developed and developing countries. In other words, almost two-thirds of the shipping costs initially borne by the shipping operator are actually incurred in ports and this takes no account of port charges for cargo handling and storage borne directly by the shipper.

In view of the fact that such a high proportion in shipping costs is incurred in ports, improved port performance can be the key to a reduction in the costs of sea transport. However, it should be noted that Liner Conferences often set freight rates on the basis of, inter alia, the average service point performance within the region as a whole in which they operate. For example, let us assume that a liner conference is operating in the Caribbean area, and that the service points comprise Kingston, Jamaica; San Juan, Puerto Rico; Bridgetown, Barbados and; finally, Port of Spain, Trinidad. Assuming that the former two ports are efficient and the latter two are less efficient, a liner conference may determine freight rates equally applicable to all service points; as a result, the relatively efficient ports may be effectively punished for inefficiencies existing in other
ports in the region.

In the present situation of overtonnaging in the liner industry and in the Caribbean, cut-throat competition and competitiveness has led to the breakup of at least one major Liner Conference, the Florida / Caribbean Liner Association. As a result, liner freight rates may now include other more competitive considerations than those included in the example given above.

There is a second theoretical dimension to the foreign exchange savings / earnings, which is that for prices of goods set by a producer, reductions in costs as a result of efficient port operations, may lead to cheaper overseas prices, thus increasing competitiveness, stimulating sales and consequently increasing export earnings. With respect to the primary products exported by developing countries for which prices tend to be fixed in the market, the earnings of producers are reduced, ceteris paribus, by the cost of carrying the commodity to the market. Consequently, any improvements in port costs and freight rates represent additional foreign exchange savings / earnings for the exporter.

In the case of imports, prices tend to be fixed by the producer. To these prices are added the costs of transport, handling, insurance etc. and the aggregate of all these items including local charges, customs duties etc. represents the final cost to an importer in a developing country. Any reduction in the sea and port transport costs therefore may be considered as foreign exchange savings.
Encouragement of Industrial Development

Within recent years many developing countries have taken specific steps to encourage the development of industries within the port areas as free trade zones, example of this are to be found in Kingston, Jamaica, Bataan in the Phillipinnes, Hamburg in Germany and other South East Asian ports. Goods are transported semi-finished from one country to another as an intermediary, where final production is completed and the goods routed to major industrial markets. Although the criteria for choosing between various possible countries to locate such centres may be complex and involve other considerations as for example, the price of labour and productivity levels; the availability of efficient port facilities remain an essential consideration.

The provision of suitable port facilities can thus encourage the creation of transit industries which in turn provide increased demand for port services.

Services to the Port User Industry

Increasingly ports are moving away from their somewhat restricted stereotype as simple providers of cargo handling services, from ship to shore. This has become all the more possible with the advent of containerization. For example, containerization is a very capital land and space intensive operation. Storage areas are often limited and optimal capacity utilization, demands the timely clearance of containers. Ports therefore have a very real interest in ensuring that there is a steady flow of containers into the hinterland so that space requirements are upkept. Ports might well consider, engaging in trucking operations
so as to effectively assist the delivery process. Where the port is owned and operated by a government authority as in the case of Port of Spain, there is the added possibility of co-operation, with the Customs authorities, in provision of a "port to door" service and a streamlining of activities. Moreover there is the additional implication that superfluous documentary requirements and procedures may be reduced. These possibilities are not farfetched and in fact constitute the type of services frequently offered in many industrialized countries.

Port as a Contributor to Employment

Traditionally ports have been regarded as labour intensive and indeed, it can be argued that over time, the Port Organization has made a far greater contribution to employment in many economies than many other industries. Perhaps this has even led to a stereotype image of the port as labour intensive, and therefore accounts for much of the labour resistance and strikes which have occurred internationally with the advent of containerization.

While modern port technology has led to an absolute reduction in the demand for labour. At the same time, it has increased the demand for skilled and semi-skilled employees, who are currently earning relatively higher wages than previously obtained. So that while the quantity of labour has decreased, the quality and price of labour has significantly increased. Government policies may wish to optimize the use of this new skilled labour force in the provision of services to ancillary external industries. For example, Port Technology has increased the
need for equipment maintenance and repair services. Since the ratio of equipment used in container operations is high in relation to other factor imputs, port policy may be geared towards training and employing a skilled cadre of maintenance and repair servicemen and possibly hiring out their services to the wider community.

Port policy and investments, may if properly planned and executed lead to increased efficiency in operations and at the same time redound to the benefit of the wider community, with which it interacts on a daily basis.

We may conclude by suggesting that port policy as enacted in the Port Authority Act no. 39 of 1961 is in need of revision. In this section we have identified some desirable policy objectives and government may wish to include these when revising its port policy.
5.1 ADMINISTRATION

As stated earlier the PATT administers, manages and operates the public ports of Port Of Spain and Scarborough on behalf of government who are the principal owners. PATT is a statutory body directly responsible to the Ministry of Public Utilities and National Transportation. The normal channels of communication between PATT and government is as follows:

MINISTRY OF PUBLIC UTILITIES AND NATIONAL TRANSPORTATION

PERMANENT SECRETARY

PLANNING UNIT

PATT BOARD

OTHER PUBLIC UTILITIES
5.2 PORT PLANNING

Within the Ministry, a planning unit deals with ports, airports and other public utilities. This unit is responsible for:

- Planning, implementation and administration of development programme and
- Administrative matters connected with ports.

The planning unit provides for the following personnel, Senior Economist, Senior Planning Officer, Statistical Officer and Clerical Staff. However, in the absence of adequate staff and expertise, this unit now functions to approve the disbursement of funds to the PATT and monitor plans, which are actually developed by the board of PATT.

The PATT is administered by a board of nine Commissioners of various disciplinary backgrounds including an executive chairman appointed by Cabinet. The actual Management of PATT's operations are conducted by the General Manager who is responsible and reports to the Board of PATT. To effectively carry out its functions, the Board is formed itself into various sub-committees re: Tenders; Industrial relations; Finance; Development and Pension. With the exception of the Executive Chairman. The Board is not permanently resident and meetings are held bi-monthly and monthly or as needs are determined. Additionally, the Board supervises the senior managerial positions at the PATT. A functional chart of management is shown in Appendix 10. The General Manager is responsible for directing, planning, co-ordinating and administrating PATT's activities. Traditionally, the PATT has looked internally for appointments to the position of General
Manager. Upon retirement of the former General Manager who had come through the ranks of Port Labour and was at one time a union representative. The Board conducted an external search for new and professional management talent. The present General Manager as of 1984, has his grounding in private enterprise. This is consistent with PATT’s intention of strengthening the Senior Managerial base of operations.

5.3 THE DEGREE OF PORT AUTONOMY

The PATT has many formal and informal relations with both governmental and other organizations, apart from its direct relation to the Ministry of Public Utilities and National Transportation.

Tariffs structures are subject to approval by the Public Utilities Commission (P.U.C.); delays associated with the revision of Tariffs have been recognized by the Chairman of the P.U.C. who has suggested in one report to government that consideration be given to allowing P.A.T.T. to apply interim rates where it is deemed necessary, subject to final approval by the P.U.C. However, it is not clear whether this recommendation has been accepted. What is clear is that this has constituted a major weakness in the financial management of operations.

In matters of Port Finance, PATT relates to the Ministry of Finance, through the Ministry of Public Utilities and National Transportation. Each fiscal year, PATT submits budget proposals to the Ministry of Public Utilities and National Transportation for its approval. Budget approval are assessed, including proposals from other Public
Utilities; requests are then made for the release of funds from the Ministry of Finance, which are in turn disbursed to PATT.

All Tenderings for port development works have traditionally fallen under the Central Tenders Board. However, since 1983, the PATT has been granted approval to conduct its own tendering within certain limitations. Issues relating to discipline, salaries, and promotion have traditionally fallen under the purview of the Statutory Authority Service Commission. However, subsequently after resuming control of the management and operation of port services, PATT was removed from the S.A.S.C. and consequently enjoys a greater degree of control over personnel matters. Traditionally, the senior management and professional staff of PATT, were regarded as Civil Servants, consequently matters relating to salaries and terms and conditions of employment fell under the jurisdiction of the Salaries Reviews Commission.

However, this have been changed and PATT is now able to offer more competitive terms and conditions necessary to attract professional senior managers. Nevertheless serious personnel and individual relations problems continue to affect the organization and have legal ramifications.

Formerly the Chief Personnel Office, a government body, prepared general job descriptions for PATT including other Public Utilities. Currently this is being done by the Senior Management of PATT. It should be considered that these relations are reflection of the degree of autonomy PATT now enjoys in the execution of its functions. Indeed it is evident that major improvements have been made in
this respect over the last years. Recommendations regarding the application of interim Tariff rates, should be given serious consideration. However, improvements in port performance and productivity should constitute necessary criteria in evaluating the justification for such actions. This will ensure that inefficiency is not compensated for by increased port charges.

Having described the current planning and administrative structure of PATT we can turn to a brief evaluation.

Port Administration throughout the world have one common feature. They are all distinctly different. R.O Goss in "A comparative Study of Seaport Management and Administration" has summed this up quite aptly by concluding "...the arrangements described...are so deeply embedded in the life and culture of the communities concerned that it is difficult to find generalizations that cannot be contradicted from elsewhere......It is tempting to examine seaports and their practices as if they were wholly generic, so that the good practices of any one could simply be transferred to others. But one over-riding impression left at the end of this study is the importance of organization and management of seaports being appropriate to the general system of government and the beliefs of the people in their own country, even if the latter are expressed in over simplified slogans. To attempt to shift the practices of Hong kong to Singapore, of Israel to Canada or of Japan to any of these could be to ask for trouble in terms of confusion as to the purpose and principles of changes and a correspondingly low level of ability in applying them. Almost certainly, this would lead to a lowering of morale and of efficiency in its everyday use."
In the present situation, the Port of Spain Wharves may be regarded as part of a total organisation which manages the maritime access routes, the port as well as cargo handling operations under the responsibility of one overall organisation.

In our view, the future viability of the Port of Spain Wharves which includes the need to become self-sufficient in financial operations hinges on the adoption of a commercial management approach, rather than a public utility, bureaucratic approach.

In fact we can argue that the increasing autonomy being given to PATT, and which we might add is desirable, already sets it apart from other public utilities.

With respect to the current situation regarding Port Planning at PATT, we have already described the weakness as they relate to the Ministry Of Public Utilities and National Transportation, and the need for a national coordination of the port planning and facilities development.

Within the Board of PATT, the position of Executive Chairman is desirable in so far as a professional port planner can fill this position and devote his time to formulating strategic plans for the Port Organization. As a member of the Board of PATT, such a port planning expert will have access to the requisite management information on the internal ports’ environment and together with his professional knowledge and understanding of major external developments in the maritime industry and changing economic trends, will be well positioned to formulate and propose strategic future alternatives and options to be
pursued. He should not however be involved in directing the daily affairs of the port organization, which should be the function of the general manager. As a result, he will have sufficient time to conduct the planning functions as it relates to PATT.

However localized port planning should be subject to national co-ordination and even regional co-ordination of plans.

In the present situation this is not done and is a reflection of the disjointed nature of port development and operations in Trinidad and Tobago. More specifically, with respect to the physical layout of the Port of Spain Wharves. Serious problems remain in terms of its location and the possibilities for future expansion, however this will be dealt with under a subsequent section on physical facilities.

Government should now give serious consideration to establishing a national port planning unit, perhaps under the aegis of a National Port’s Authority to ensure that national resources are used in the most economical manner and indeed that proposed port investments are subject to cost/benefit analyses, including the opportunity cost involved in such investments. Today the Port of Spain Wharves, is sited on what might be considered high value, prime lands, whereas it is now widely recognized that the land and space intensive nature of port facilities are more suited to physical locations outside city centres and on relatively cheap lands.
Moreover, port operations are today faced with larger uncertainties and risks than ever before. These do not only include risk in cargo and therefore ship traffic demand, but also technical risks, investment risks, risks in labour availability and more. These risks occur separately or in combination. Commitment of assets and therefore investment decisions in a port are long term and are usually quite large in relation to annual cash flows, since ports take a long time to develop and usually have a long operational and economic life. It is desirable, therefore, that port planning and investment studies be carefully conducted and alternative strategies properly evaluated so that strategic objectives as well as shorter economic and operational objectives have maximum chance of success.

With respect to the regional considerations in port planning, UNCTAD presents the following argument in one report "The temptation to bid to become a regional pivot port needs careful thought out. If all that countries in the region attempt to do that, there would be tremendous over capacity with port competing savagely for the limited trade. So the message must be to look beyond your national boundaries at the demand and supply of container traffic at the regional level and to plan on an international scale for one or two regional pivot ports only."2

It is clear therefore, that port planning and decisions relating to long term investment involve many considerations at both the national and regional level. It is desirable that professional and expert advice be given to ensure that the many risks attached to port investments are reduced to the manageable levels.

We may conclude therefore that in the present context of
Trinidad and Tobago three options are available:

(i) that the executive chairman be a qualified port planner, who is able to liaise on a national and regional level with other port organizations through the relevant ministry concerned.

(ii) that all port planning be conducted by a national port planning agency. In the context of Port of Spain Wharves, this will eliminate the need for a resident port planner.

(iii) or that both elements are combined and a National Port Planning agency be established which will approve and co-ordinate plans developed at the level of the local port organizations themselves.

The last option, although perhaps the most costly, remains the most desirable long term solution to national and localized port planning, and government should give serious consideration to the establishment of such an agency, as stated earlier, this may well be one of the functions of a National Ports' Authority. In the current situation and acknowledging the lack of resident planning expertise, the second option should urgently be pursued.
Since 1984, PATT has taken certain deliberate steps towards improving the quality of senior management and decision making and secondly restructuring the organization and management of port operations.

Appendix 1 depicts the most recent functional chart of the PATT from the level of general manager down. Three new positions have been created and job specifications redefined namely the assistant general managers of administration, engineering and operations. Further the creation of three assistant general managers, allows for greater involvement of general management in the respective functional areas of port activity. In addition, it enhances the responsibilities of the assistant general managers concerned.

6.1 ADMINISTRATIVE MANAGEMENT

The Administrative Division is responsible for the development and implementation of policies relating to both financial and human resources, the acquisition, storage and control of all the Authority’s assets including matters relating to the health, welfare, safety and training of employees.
Financial Management

This aspect of the PATT operations has been most problematic for many years. Serious weaknesses existed in the structure of accounts and this division's ability to prepare timely accounts for use by port management. Moreover documentation and data processing remain poor and involve significant duplication and lengthy manual procedures and forms.

This constitutes a serious weakness to PATT, where financial objectives have to clearly identified and defined. The setting of financial objectives are essential prerequisite to formulating port tariff structures. Port tariffs and the policy of the port organization is the mechanism by which the port recovers sufficient revenues to meet financial objectives therefore, there is a direct relation between financial objectives, the requisite management information viz: financial statements, expenditure and revenue accounts and preparation of the port tariffs.

We have already discussed the present policy of the self-sufficiency in port operations, this requires PATT to cover its working expenses, interest on loans, depreciation of assets on a replacement cost basis, taxation and provide a margin for reserves to meet contingencies and help finance minor improvements. In the absence of subsidization, the stressing of the commercial aspects of PATT's operations may also include a financial policy of showing a commercial rate of return on capital employed. In the current situation, it is clear that these problems have been recognized and are being addressed. In 1984, deliberate steps were taken to have, inter alia, the data
processing accounting system of the port computerized. However, this has not yet been accomplished.

In 1984, port management began a revision of its tariff structure, which included a complete change in the method of determining container handling tariff rates. Presently rates are set on the basis of TEU’s handled in relation to the cost and revenues centres. Formerly container rates were set along the lines of revenue tons which is still applicable to break-bulk cargoes in Trinidad and in the region as a whole.

The structure of accounts have also been updated to provide more relevant information. Further improvements should be sought so that the revenues and the costs, including labour costs may be determined in each of the two major areas of cargo handling operations. This will allow Port Management to measure the performance of its operations on a cost per ton basis, and allow for comparisons with other port entities.

Personnel Management.

We have seen under the section historical analysis, the developments which led to the current dichotomy of personnel employed by the merger of PATT and former Port Contrctors employees after the dissolution of the latter company. As a consequence, this has limited management's ability to make transfers and promotions accross the total port organization. Instead, transfers and promotions have largely remained within the confines of one or other aspect of port operations, i.e administration viz-a-viz operations. This has created problems for management.
originating out of differences in terms, conditions, salaries and contractual obligations applicable to both set of employees. In the present circumstances, legal requirements must be fulfilled and contracts honoured. It is hoped that shortly a negotiated settlement will be arrived at, which will create common terms and conditions for all personnel employed.

Certainly this will have an effect on the worker morale and motivation as promotional and other opportunities are increased.

The number of personnel employed at PATT averages about 1400 persons. Former bureaucratic approaches to management have led to an excess of personnel employed as many job functions are either overly segmented, or involve a duplication of functions and responsibilities. At present there are plans to introduce computer applications at the port. This will certainly lead to a rationalization in the use of personnel and therefore many clerical positions will inevitably become redundant. Moreover, the changing role and functions of port organizations internationally has meant that fewer employees are now required within the Port Organization. This in itself is a serious problem which has and will continue to create severe social and economic problems for communities dependent on the port work. In a paper prepared by UNCTAD on manpower development, it is recognized that for developing countries, the impact of technological change on employment remain one of the most intractable policy issues facing senior port management. As an example, in Great Britain, there were 65,000 dockworkers in 1960, but there are only 13,000 today, even though seaborne trade has actually doubled in that period.
The average age of the typical port employee is about 45 years; and largely as a result of promotion by seniority, the junior personnel are typically youngest of average 30 to 35 and the most senior, which includes most senior and middle managers and supervisory staff range between 50 to 60+ years old. The typical senior clerk is aged between 35 to 45 years old. It should be noted that a significant number of the older generation of dockworkers are currently retiring from the organization. Any strategies aimed at reducing the overall size of personnel at PATT should take this factor into consideration.

The introduction to the Ports' Industry today of through transport system encourages the transfer of what was traditionally considered dockwork to importers' premises inland container depots and off-dock container yards / freight stations. The amount of cargo handling work in the port will continue to decline as inland transport improves and as the proportion of FCL movements increases.

Already PATT is faced with serious policy issues relating to the reduced job opportunities in its operations. This problem will continue to increase as more efficient technological improvements enter the industry. Even given the choice of using "appropriate" technology, the problem still remains, and must be addressed. As we have seen this has constituted one of the major problems in the port organizations' attempt to reduce its operating labour costs in the face of strong union resistance. This is understandable as the trade union attempts to cushion the social impact of the new technology, protecting the employment prospects of its membership and indeed the strength of its own organization. However, this is an
unwise policy and has negative long run implications for both the port organization and the union.

Clearly maintaining high-manning levels and indeed high-cost operations cannot protect jobs in the long run, if the resulting high shipping costs make goods less competitive and the port less attractive to shipowners and shippers. It must be remembered that the Port of Spain Wharves is no longer a gateway port in so far general cargoes are now being handled at Port Lisas.

The trauma of adjusting to technical change and we may emphasize here "appropriate" technological change, will have to be faced, if the national economy who are ultimate owners of port technology are to enjoy the benefits which should come with its purchase.

Moreover, reductions in operating costs associated with port operations, will benefit the nation as a whole, including port workers themselves, who are also final consumers.

It is the responsibility of the senior manager to establish policies to deal with these human resource problems. A long term plan must be arrived at by detailed discussion and agreement with government, trade union representatives and port management.

The starting point requires a detailed inventory of present manpower levels, a skills inventory, an analysis of the the present age structure of employees (we have already examined and made evaluation in this respect) and the experience and qualification of personnel. From this inventory, a needs analysis should be developed taking
into consideration, present requirements and future prospect for changing requirements. This latter aspect involves an assessment of short, medium and long term changes in both the internal and external ports' environment. It is only then that alternative manpower strategies can be considered and evaluated so that human resource supply and demand can be brought into balance. Strategies may include natural wastage, an early retirement scheme, a voluntary retirement scheme, a compulsory retirement scheme or finally job creation and retraining to perform ancilliary services.

With respect to the latter two, serious consideration should be given to firstly, reducing the retirement age from 65 years to perhaps 60 even 55 years, given the still physical nature of port work. Secondly, as we have tried to point out under the section on policy, the construction of inland container cleaning, repair and refurbishing services constitute prospects for retraining and redeployment. It is recognized that the current downturn in the economy may cause compromises in government and port management strategy as attempts are made to avoid the negative effect of already increasing unemployment. This involves careful evaluations and trade-offs may have to be made.
Labour Management

PATT employs a total of 1174 registered workers on contract to perform its cargo handling functions. Of this total, 434 are stevedores and 740 are longshoremen. In addition the port employs about 1300 unregistered workers either on a casual, or temporary basis, of which 100 are stevedores and 1200 are longshoremen, who have no guaranteed income or contract with PATT. There are further sub-categories of workers, within these two broad sub-divisions which bear little relevance to current requirements, and has its basis in historical precedent.

At present, there are 5 different call-on or recruitment centres for labour. This presents a major problem in terms of the port’s ability to co-ordinate its operations and involves a great deal of duplication of personnel functions as each category of worker is provided for under a separate recruitment centre. This has been recognized as a major problem affecting operational effectiveness.

Plans are currently being formulated and discussions held with the Trade Union, to rationalize, co-ordinate and streamline the utilization of labour at Port of Spain.

Industrial Relations

The Seamen and Waterfront Workers Trade Union (S.W.W.T.U) remains one of the strongest unions in Trinidad and Tobago today. Representatives are well trained and exposed to developments taking place in the maritime industry.
The strength of the union is recognized and respected by other unions, the government and port management itself.

Since 1984, industrial relations problems have been under review. At present, on the advice of the government, an Operational and Industrial Relations Committee has been established to introduce a fresh approach to industrial relations. It remains a significant challenge to port management, to negotiate important settlements with the union on matters relating to seniority, rationalized gang structures, overtime in operations, reductions in overall workers employed etc.

Strategies will have to sought to convince the union to give up benefits it has negotiated on behalf of its membership over the years. This remains a fundamental challenge to port management.

Motivation

The overall morale and motivation of the average dock worker is very low. This is perhaps a contradiction whether it considered that the Port remains attractive not only in terms of salary levels but also the potential earning from overtime operations. However, it should be qualified by noting that overtime is normally associated with the cargo handling operational areas, as a result, operational staff and labour are the main beneficiaries of such earnings. In addition, incentive schemes are established for the stevedoring and long-shoring gangs for both break-bulk and container cargo handling on a tonnage and box movement basis, respectively. However, the targets which are set for such incentive payments have long since lost their relevance to
operational rates of moving cargoes and therefore serve no purpose but to increase the real incomes of port labour without subsequent increases in productivity.

It can be concluded that the differences in terms of opportunities of personnel to derive overtime benefits has had a negative impact on the organization.

Training

Within the last 2 years, management personnel have been involved in institutional training at international organizations, including short courses and visits to different ports.

There is a need, however, to further increase training and extend it to all levels of the organization, particularly with respect to middle managers and supervisors, junior managers, equipment operators and maintenance and repair technicians. This has constituted one of the many problems to the port organization not only in Trinidad and Tobago, but also in many developing countries, where training facilities and capability are often limited or altogether not available and has consequently increased the financial burden of port organizations in attempting to find solutions their training needs.

Moreover, since shipping and port operations often involved considerations of an international dimensions, where international conventions, rules and regulations on maritime safety must be observed, it is now largely recognized that there are internationally common grounds for a universal integrated approach to training a board spectrum of maritime personnel including government
administrators and officers, commercial managers both in shipping and ports, and technical personnel involved.

The management training needs of shipping and ports have been adequately provided for by both the International Maritime Organization and UNCTAD; the former offering two year fellowships and the latter modular seminars.

PATT should take full opportunity to train its managers at the above mentioned institutions, where finance is available from international UN agencies and governments.

In assessing the present and the future needs of PATT, taking into accounting the need to rationalize the middle manager structure, it is the estimation of this author that roughly 10 senior managers including port planners, 30 middle managers and 60 junior managers and supervisory personnel are currently in the need of training.

Training should be done on a phased basis and as stated earlier, should include institutional education, training on short courses and seminars, including visits to other ports, as is currently being done.

With respect to the actual cargo handling operations of PATT, relating to equipment operators and maintenance and repair technicians, training is usually conducted by on-the-job methods. One report in 1980, estimated that the number of trained equipment operators was inadequate to the functional requirement of PATT. This aspect of training is vital, since these personnel represent the directly productive element of port operations. Well trained operators will improve the safety and the productivity of cargo handling operations.
6.2 ENGINEERING MANAGEMENT

The Engineering Division is responsible for the planning, development, maintenance and maximum utilization of all the Authority’s fixed assets and resources, including the maintenance of harbour buildings and ancillary services of the Authority.

Physical Location and Facilities

The Port of Spain Wharves is located on the southern shoreline of Port of Spain, and is bounded on the north, east and west by a major arterial roadway which links the west coast of Trinidad, via Port of Spain, to the eastern parts of the country.

Description of Deep-Water Facilities

The Port of Spain Wharves is divided into two sections. The western section (King’s Wharf and King’s Wharf Extension) consists of deep water port facilities, allowing berthing of vessels at wharfs with a design water depth of 9.75m minus L.W.O.S.T., and two containership berths with a design water depth of 12m minus L.W.O.S.T. The eastern section (Queen’s Wharf) consists of the shallow draught port facilities allowing a design water depth of 4.60m minus L.W.O.S.T. The total area of the port complex is 495,820 sq. metres.

Various plots of port area, especially along the main roads are leased to port-related and other government and private agencies, reducing the actual available port area to roughly 337,799 sq. metres.
Within recent years, private bulk operators and other
businesses have been relocated and available port areas increased. As we saw in the historical background, the difficulties involved in the retrieval of port areas, reduced the available back up facilities and significantly hindered container storage operations.

King’s Wharf and King’s Wharf Extension comprise from the east to west, 5 break-bulk berths, one multi-purpose berth (berth # 6) which is also used as a roll-on-roll-off berth, two container berths (berths 6A East and 6A West) and finally berths 7 and 8.

King’s Wharf is the oldest of the port’s deep water facilities and comprises berths 1 to 6. These berths were constructed in 1939 and offer 855m of marginal wharf designed with a water depth of 9.75m minus L.W.O.S.T.

Berths 7 and 8 were constructed in 1952 and comprise 370 metres of marginal wharf. The latter was rehabilitated in 1971 and berth 7 is currently under repair.

Berth 6A East and 6A West were constructed in 1976-77 and comprise 400 metres of wharfage. Both quays are provided with crane tracks and a cable duct near the quay edge to accommodate two PACECO gantry cranes of 40 ton lifting capacity and 30 metres backreach.
Closed Storage Facilities

There is a total of 10 transit sheds which are basically of the same construction of average dimensions 3280 sq. metres.

Open Storage Areas

A large number of scattered areas provide open storage space. Most storage areas are paved with asphalt. The container terminal apron is paved with concrete slabs. The dimensions of the container storage areas comprise a total of 16,490 sq. metres. Containers are stored on the terminal area and also on many open areas throughout the port. In addition port areas have been assigned to private shipping line operators for the storage of their respective empty containers.

Port Buildings

A large number of buildings are located in the port area. Within the first line of sheds, the main offices of PATT are located. At present shed 1 is being refurbished for use as a Passenger Terminal and Tourist Reception Facility. Within the port compound is located other administrative buildings where documentary offices and operations managers are housed, including maintenance and repair facilities, garages, canteens, labour call on centres, customs, pilotage etc. as well as non-port related buildings scattered over the port area.

The condition of most of these buildings are poor and not conducive to the efficient functioning of port administration. This has frequently caused industrial
unrest as buildings are overcrowded and in disrepair. In addition the absence of an adequate central administrative building of sufficient capacity, has resulted in a number of administrative functions being conducted in different areas. This has consequently increased the personnel requirements of the port as well as created additional problems of co-ordination.

The layout of the port complex is in need of reparation. The proliferation of administrative buildings are undesirable and significantly affect operational effectiveness. Administrative functions need to be centrally located. This includes customs and excise functions.

Plans have been prepared for the construction of a new administrative building to house PATT, customs and other related agencies. These plans should be given serious attention.
6.3 Operations Management

The Operations Division, under an Assistant General Manager, is responsible for the performance of all the basic cargo handling functions relating to the berthing of vessels, the receiving, storage and delivery of cargo to and from consignees, the allocation of equipment to various areas and finally, the operation of the Government Shipping Service.

All the functional aspects of port operations are the direct responsibility of various senior managers viz: the Port Captain; Manager, Wharves (break-bulk operations); Manager, Stevedoring and; Manager Container Operations. Additionally, both the Manager, Wharves and the Manager, Stevedoring are assisted in conducting their functions by a number of wharf and ship superintendents, respectively.

At present, it is proposed to integrate both stevedores and longshoremen. This integration will now allow greater co-ordination of all operational activities and, importantly, information flows with respect to each shed from ship to shore. Within each shed and container operations centre, the systems orientation of port activity should, however, be maintained viz: ship, transfer / storage (quay to shed) and delivery operations. Within the above-mentioned 3 sub-operations desirable flows should be aimed at increasing the productivity and efficiency of operations and creating a balance in cargo-handling flows.
Another important proposition, will be the need to restructure the traditional functions of stevedoring and longshoring personnel, including supervisors and managers. Certainly the need to supervise ship operations will remain. However this supervision will now be related to the shed management concerned, so that ship and shed will now assume an integrated functional nature, best suited to the operational needs of the port organization.

In addition quite a number of essentially administrative personnel functions such as cargo manifesting, checking and documentation are currently being performed at each transit shed. This involves a significant number of personnel. These functions should be re-located to a central administration, where other functions relating to storage charges and cargo claims, checking and documentation may be complemented and services provided through an integrated approach. This will increase the efficiency of internal operations as well as reduce the number of delays experienced by consignees. In such a situation all that is needed is an updated information flow from each shed to the central administration.

A second important area of consideration relates to the current duplication of cargo checking and tallying, which utilizes two clerks, one stevedoring, and one longshoring, who perform essentially the same functions. This is a hangover from the 1960s when operations were performed by independent parties and currently serves no useful purpose.

In the current situation both conventional and container cargo handling are conducted within the same organizational structure. Both personnel and labour are
mobile throughout the entire port system. This has had a negative effect on operational efficiency. To a large extent these problems have been recognized and current negotiations are intended to create a single entity for container operations apart from conventional operations.

Operational Procedures

Operations typically begin with the daily berthing meeting of labour and equipment managers, shed managers, the port captain and the representatives of various shipping lines. Meetings are chaired by the Assistant General Manager Operations.

At this meeting, the operational requirements for the next day are determined and responsibilities allocated to those concerned.

Labour and equipment recruitment takes place on the next day, one hour prior the commencement of operations. Registered labour is first allocated and short falls supplemented by casual and temporary workers.

With respect to weekend operations, requirements and recruitments takes place on a Friday evening so that workers know in advance what and where their assignments will be.

It has been determined that all recruitment can in fact be done, immediately after the berthing meeting as is done on Fridays. This remains a desirable proposition, in that many manhours are currently lost in the present system. The pre-planning of operations should lead to improvements in the net operational hours available to carry out port
operations.

On study conducted in 1984, showed the operational delays due to late start and to early completion of duties accounted for 15 percent of time lost. With respect to early completions, poor lighting primarily in the break-bulk quay and shed areas have been identified as cause of such reductions in operating hours.

The above study does not take into account man hours lost due to tardiness primarily in getting supplementary labour (casual and temporary) to their job areas. However, this has been improved by the provision of an internal transportation system of mini-buses for use by workers.

If operations are planned, the one hour (6 a.m - 7 a.m) used to recruit labour in the morning, may now be used in operations. As a result, operating hours may now begin from 6 a.m to take advantage of natural light and save on power and energy costs.

At present negotiations are currently being conducted to introduce a two shift in container operations, from 7 a.m to 3.30 p.m. and from 3.30 p.m to 11 p.m. It is suggested in this study that both break-bulk and container operations should have a minimum of two shifts with a contingency for a third shift to complete vessel operations where marginal assignments remain. In the current situation the decline in break-bulk operations, should be accounted for through a reduction in the gross available capacity, but an increase in the capacity utilization of facilities. For example it may no longer be feasible to utilize the existing 7 conventional cargo berths, instead a minimum of 2 berths, with a contingency for using other berths, may be
operated under increased manhours though a shift system. This will certainly increase the attractiveness of the port to vessel operators. It is evident, however, that an increase in operating hours, will lead to an increase in operating costs and expenditure. Under such circumstances it is imperative that inefficient costs are removed and further that management personnel and labour functions are streamlined in all aspects of port operations to derive reductions in operating expenditure and ensure that port charges do not rise enormously.

Finally, the delivery function at the port needs to be immensely improved, procedures are way too lengthy and involve a considerable amount of time wasted in bureaucratic procedures. With improvements derived through a more centralized approach to documentation and delivery, consignees will lose less time in this aspect and a consequent faster turnout of cargo to the hinterland will ensue, reducing the tendency toward congestion.
CONCLUSIONS AND RECOMMENDATIONS

In this study we have attempted to evaluate the total ports' environment, firstly, with an assessment of the external environment, changing port user requirements and demand and, secondly, with an analysis of the impact of such changes on the internal ports' environment. In so doing, an attempt was made to evaluate the strategic, administrative and operational decisions to be taken by port management.

With respect to the external maritime environment, we have concluded that the competitive characteristics of the liner industry indicates a possible rationalization on the supply side, which may lead to a reduction in vessel calls in the region during the next few years.

Major technological changes taking place (i.e. the move towards greater capacity per vessel and greater capacity utilization), the increasing size and optimization of container units and finally, the innovations and improvements being made in port technology, will allow for a faster rate of cargo handling and processing. These changes will continue to alter the structure of port investments and expenditure on the one hand and, port charges and revenues on the other.

It is estimated that important changes in the maritime transport industry may occur between 1995 and the year 2000. These changes will continue to increase the risks attached to port investment in so far as, new requirement criteria will have to be met without an assurance of stable user demand. At the second level, the
organization and structure of port operations will continue to change, exposing the port organization to further employment and industrial relations problems.

With respect to the internal ports' environment at Port of Spain, we have identified the decline in cargo flows arising from national/international economic activity, growth and development. This analysis led us to conclude that within the next 4 years, to the year 1990, the tonnage throughput at Port of Spain may average roughly 800,000 metric tonnes and probably move between 700,000 to 900,000 tonnes at the extreme ends of our average. Of this total, we anticipate that roughly 65 percent or approximately 500,000 tonnes will be containerized tonnage of consumer and intermediate goods and, roughly 300,000 tonnes will be break-bulk tonnage of raw materials and capital goods. In terms of vessels calls, we have anticipated that roughly 300 container vessels and roughly 250 breakbulk vessels on average may call per annum. However, we should note that all figures quoted are estimates only and subject to many ceteris paribus assumptions as well as the developments which may arise in the national economy and the maritime liner industry.

We have also identified low levels of productivity and other structural weaknesses such as the hours of work which together affect the operational efficiency and effective capacity utilization of port facilities and result in poor turnaround times for vessels.

As a consequence we have suggested that it is necessary on the one hand to restructure and reduce the operational capacity of the port to adjust to the dramatic
decline in tonnage movement and user demand. On the other hand, we have suggested that the structure and hours of operation be increased to improve the dynamics of capacity utilization and consequently to make Port of Spain an attractive port of call.

In this respect it is recommended as follows:

1. Increase the operational hours at the port to a two-shift system, with a contingency to complete vessel operations.

2. Reduce the operational requirements, i.e. management, personnel and labour engaged in break-bulk operations, from a capacity suitable for 7 berths to a capacity suitable for 2 berths.

Recommendations 1 and 2 will result in 4 berth-days available on a daily basis for container and break-bulk operations each.

3. That container operations be conducted as a separate entity, apart from break-bulk operations. As a result, undesirable features and problems associated with the horizontal mobility of personnel and labour will be removed.

4. The creation of a central administration building to house all administrative personnel, including those personnel currently located and deployed in operational areas.

5. That a needs analysis be conducted, bearing in mind the above-mentioned recommendations, including the present
proposa to introduce computer applications. As a consequence, the excess of personnel and labour can be precisely determined.

6. That voluntary and compensatory retirement schemes be created to allow for the reduction in employment requirements.

7. That the current age of retirement be reduced, to further encourage the needed reduction in employees.

In conclusion, it is recognized that the implementation phase of decisions requires adequate consultation between government, the labour union and port management. In the current economic situation, compromises may have to be made.
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CHAPTER I


CHAPTER III


CHAPTER IV

2. UNCTAD, Port Problems, Ports and Economic Development Policy Issues TD/B/C4/248

CHAPTER V

2. UNCTAD, Improving Port Performance Seminar, Container Terminals a Policy for Development, 1986
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UNCTAD - Port Problems, Ports and Economic Development,
Policy Issues
### APPENDIX 1

**ANALYSIS OF NON-OIL IMPORTS BY ECONOMIC END USE, 1980–1985**

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<tbody>
<tr>
<td></td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
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<td>4,580.8</td>
<td>3,358.5</td>
<td>2,823.8</td>
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*Percentages may not add due to rounding.*
## APPENDIX 2

**GROSS DOMESTIC PRODUCT OF TRINIDAD AND TOBAGO AT FACTOR COST (CURRENT PRICES), GROWTH RATES, 1982–1985**

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<td>11.1</td>
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<td>Domestic agriculture</td>
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<td>17.9</td>
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<td>Sugar</td>
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<td>7.2</td>
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<tr>
<td>Manufacture</td>
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<td>-4.0</td>
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<td>Miscellaneous manufactures</td>
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<td>2.4</td>
</tr>
<tr>
<td>Electricity and water</td>
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<td>-1.9</td>
<td>15.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Construction and quarrying</td>
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<td>-7.0</td>
<td>10.6</td>
<td>13.0</td>
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<tr>
<td>Distribution and restaurants</td>
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<td>8.3</td>
<td>9.1</td>
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<td>Hotels and guest houses</td>
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<td>3.9</td>
<td>16.5</td>
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</tr>
<tr>
<td>Transport, storage and communication</td>
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<td>Government</td>
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<td>4.0</td>
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<tr>
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<tr>
<td>Personal services</td>
<td></td>
<td>17.9</td>
<td>7.6</td>
<td>6.8</td>
</tr>
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</table>

*Source: Central Statistical Office.*
### APPENDIX 3

**GROSS DOMESTIC PRODUCT OF TRINIDAD AND TOBAGO AT FACTOR COST**

*(CURRENT PRICES), SECTORAL CONTRIBUTIONS, 1982–1985*

Percentages

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<th></th>
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<tr>
<td>Petroleum (oil)</td>
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<td>75.1</td>
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<td>Export agriculture</td>
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<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
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<td>Domestic agriculture</td>
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<td>Sugar</td>
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<td>0.5</td>
<td>0.6</td>
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<tr>
<td>Manufacture</td>
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<td>7.0</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Food, beverages and tobacco</td>
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<td>2.6</td>
<td>2.7</td>
<td>3.0</td>
</tr>
<tr>
<td>Textile, garments and footwear</td>
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<td>0.4</td>
<td>0.4</td>
<td>0.3</td>
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<tr>
<td>Printing, publishing etc.</td>
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<td>0.6</td>
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<td>10.7</td>
<td>9.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Hotels and guest houses</td>
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<td>0.4</td>
<td>0.3</td>
<td>0.4</td>
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<tr>
<td>Transport, storage and communication</td>
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<td>11.5</td>
<td>10.4</td>
<td>10.1</td>
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<tr>
<td>Finance, insurance, real estate, etc.</td>
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<td>9.1</td>
<td>10.1</td>
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<td>Government</td>
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<td>13.2</td>
<td>14.2</td>
<td>15.3</td>
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<tr>
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<td>2.8</td>
<td>3.1</td>
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*Source: Ministry of Finance and Planning*
### APPENDIX 4

#### SUMMARY OF CENTRAL GOVERNMENT FINANCES, 1976–1985

**Millions of Dollars**

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<td>2,302.9</td>
<td>2,991.4</td>
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<td>7,117.8</td>
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<td>.497.9</td>
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<td>827.4</td>
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**Source:** Ministry of Finance and Planning

*re: Revised estimates*
## APPENDIX 5

### DIRECTION OF TRADE (IMPORTS), 1978–1985

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**Source:** Central Statistical Office
## APPENDIX 5

### DIRECTION OF TRADE (EXPORTS), 1978–1985

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<td></td>
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<tr>
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<td>272.0</td>
<td>3.0</td>
<td>213.0</td>
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**Source:** Central Statistical Office

\(^1\) Includes Centrally Planned Economies in Europe, U.S.S.R., Other Europe, Saudi Arabia, Other Middle East Countries, Cameroon Republic, Angola, Guinea, Other African countries, Centrally Planned Economies in Asia, Japan, Taiwan, Indonesia, Other Asian Countries, Other Oceania, Miscellaneous Countries.
## APPENDIX G.11

### COMPARATIVE CONTAINER HANDLING RATES UTILIZING PORTAINER CRANES

<table>
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<th>COUNTRY</th>
<th>AVERAGE HANDLING (DISCHARGING/LOADING) RATE PER HOUR</th>
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<td>Jamaica</td>
<td>24</td>
</tr>
<tr>
<td>Barbados</td>
<td>20</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>24</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>26</td>
</tr>
<tr>
<td>Miami</td>
<td>28</td>
</tr>
<tr>
<td>New York</td>
<td>30</td>
</tr>
<tr>
<td>Felix Stowe</td>
<td>22</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>10</td>
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</table>

Rates for all countries except Trinidad and Tobago were obtained by interviewing Shipping Lines. The Trinidad and Tobago rate was derived by observing operations at the Terminal. In addition, the National Port Development programme study done by the Netherlands Engineering Consultants (NEDECO) for the Government of Trinidad and Tobago, was consulted.
# Appendix 7

## Present Cargo Handling Productivity for Conventional Cargo

### Sample of Conventional Cargo

<table>
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<tr>
<th></th>
<th>Revenue tons</th>
<th>%</th>
<th>Gang-hours</th>
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<th>Revenue tons</th>
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</thead>
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<tr>
<td></td>
<td>Gross Delays</td>
<td>Net</td>
<td>Gross</td>
<td>Net</td>
<td>Gross</td>
<td>Net</td>
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<tr>
<td>Non-palletized</td>
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<td>1,439</td>
<td>242</td>
<td>1,197</td>
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<tr>
<td>Palletized</td>
<td>33,182</td>
<td>60</td>
<td>2,196</td>
<td>503</td>
<td>1,693</td>
<td>15.11</td>
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<tr>
<td>Mixed</td>
<td>10,011</td>
<td>18</td>
<td>1,207</td>
<td>240</td>
<td>967</td>
<td>8.29</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55,704</strong></td>
<td><strong>100</strong></td>
<td><strong>4,842</strong></td>
<td><strong>985</strong></td>
<td><strong>3,857</strong></td>
<td><strong>11.50</strong></td>
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**NOTE:** A ship has been considered full palletized if at least 85 percent of its cargo was pre-palletized.
OPERATING REVENUE/EXPENDITURE
OF P.A.T.T.

MILLIONS OF DOLLARS

YEARS

SOURCE: P.A.T.T.
PORT AUTHORITY OF TRINIDAD & TOBAGO

BOARD
EXECUTIVE CHAIRMAN

EXECUTIVE COMMITTEE

GENERAL MANAGER
INTERNAL AUDITOR

SECRETARIAT

PUBLIC RELATIONS

PLANNING

ASST. G.M. ENGINEERING
PLANNING DEVELOPMENT, MAINTENANCE & MAXIMUM UTILISATION OF ALL THE AUTHORITY'S FIXED ASSET RESOURCES. ALSO INCLUDED, THE MAINTENANCE OF HARBOUR BUILDINGS, ANCILLIARY SERVICES OF THE AUTHORITY.

ASST. G.M. ADMINISTRATION
DEVELOPMENT & IMPLEMENTATION OF POLICIES RELATING TO BOTH FINANCIAL AND HUMAN RESOURCES. THE ACQUISITION, STORAGE AND CONTROL OF ALL AUTHORITY'S PURCHASES & THE SECURITY OF THE AUTHORITY MATTERS RELATING TO THE HEALTH, WELFARE, SAFETY & TRAINING OF EMPLOYEES.

ASST. G.M. OPERATIONS
RESPONSIBLE FOR THE PERFORMANCE OF ALL THE BASIC CARGO HANDLING FUNCTIONS viz. BERTHING, RECEIVING, STORAGE & DELIVERY OF CARGO TO & FROM CONSIGNEES. ALLOCATION OF EQUIPMENT TO VARIOUS AREAS IS ALSO THE RESPONSIBILITY OF THIS SECTION. GOVT SHIPING SERVICE.
APPENDIX B
PORT AUTHORITY OF TRINIDAD AND TOBAGO
BREAKDOWN OF REVENUE FOR 1984–1985
Thousands of Dollars

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<td>Containers</td>
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<td><strong>Total</strong></td>
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<td><strong>44,632.0</strong></td>
<td><strong>-24.5</strong></td>
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Source: Port Authority of Trinidad and Tobago

PORT AUTHORITY OF TRINIDAD AND TOBAGO: EXPENDITURE ON WAGES AND OVERTIME, 1984 AND 1985
Thousands of Dollars

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<td>Wages and Cola</td>
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<td><strong>Total</strong></td>
<td><strong>105,744.9</strong></td>
<td><strong>26,506.5</strong></td>
<td><strong>-74.9</strong></td>
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</table>

Source: Port Authority of Trinidad and Tobago
(i) There shall be a 3-shift system for the efficient operation of the container terminal
details of which are as follows.—

There should be a 3-shift system of 8 hours each with continuous operation without
a formal break as such. The first shift from 7 a.m. to 3 p.m. the second 3 p.m. to
11 p.m. and third 11 p.m. to 7 a.m. Because of the fact that the volume of containers
may not justify the introduction of a three-shift system at the outset, introduction
of the shifts should be phased in the following manner:—

(a) Monday–Friday ... ... 2 shifts plus extra time to complete the
vessel;
(b) Monday–Sunday ... ... 2 shifts plus extra time to complete the
vessel;
(c) Monday–Sunday ... ... 3 shifts;

(ii) each shift should be comprised of not more than 10 men including equipment drivers
and a tally clerk;

(iii) the shift system should also apply to supervisory personnel involved in loading and
discharging operations of container vessels;

(iv) workers engaged at the container complex will be guaranteed a minimum wage based
on the same earnings as those on conventional operations; if possible based on the
same earnings as those on conventional operations and also based on an annual average
earning;

(v) the container berth must be operated as an entity completely fenced and separated
from conventional cargo handling activities;

(vi) at the container berth only vessels which are fully containerised will be worked.
Consideration might be given to the working of fully containerised hatches but no
conventional operation will be undertaken at the container complex:

(vii) all LCLs are to be stuffed or stripped at the container complex by Port Labour;

(viii) all FCLs are to be transported directly to the consignee's premises except when con-
signees request that stuffing or stripping should be done at the container terminal;

(ix) a shift bonus to be considered for night shifts;

(x) a production bonus for distribution to all men in the gang based upon number of lifts
per hour in excess of the norm;

(xi) it must be understood that there would be no reduction of the permanent registered
labour force throughout the life of this contract;

(xii) a special register should be established for workers at the container berth, that is to
say, workers should be invited to accept employment only at the container berth;

(xiii) workers on the container shift would be required to report daily and when there are
no vessels alongside the berth workers should be utilised on other jobs at the container
complex, such as stuffing, stripping, as well as the delivery process, in other words,
the gangs must be fully integrated;

(xiv) it must be recognised that permanent gangs are essential for efficiency at container
terminals; this is the policy followed in world container ports. This should also apply
to other personnel, i.e., managerial, supervisory and general clerks engaged in the
container complex;

(xv) because of the very nature of container operations, workers should be provided with
raincoats and the necessary protective gears to enable smooth and continuous operation;

(xvi) workers will be guaranteed a 5-shift payment per week to fall in line with their counter-
parts on conventional operation. If, however, workers are to work on Saturdays,
Sundays and Public Holidays, the same shift arrangement will apply but with the
bonus for work during overtime;

(xvii) management must have the right to select the drivers to heavy equipment having
regard to the several million dollars of investment involved in providing such units
in the field of container activities;

(xviii) there should be complete flexibility in the labour operating in the various functions.