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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**THE REVIEW AND EVALUATION OF
MARITIME TRAINING AND EDUCATION
SYSTEMS IN THE LIGHT OF NEW
INTERNATIONAL CONVENTION IN THE
UNITED REPUBLIC OF TANZANIA.**

By

MAYAGILO, THOMAS JUSTINE
United Republic of Tanzania

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for award of the degree of

MASTER OF SCIENCE

in

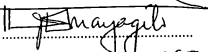
MARITIME EDUCATION AND TRAINING
(Engineering)

1997

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.


.....
10 October 1997
.....

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God bless you all

ABSTRACT

Maritime Education in Tanzania has been conducted as a project from 1979 to 1991. In 1991 the maritime training institute was formerly established by an Act of Parliament the implication was that things had to be run in the proper way . Despite the new status and the on going new technological developments in the shipping industry world wide, the legal provisions governing maritime training, the maritime education curriculum and operating systems of the shipping industry are still the same.

This dissertation makes a review and evaluation of maritime education and training systems in Tanzania in the light of the STCW 95 and the ISM Code. It highlights the challenges facing the Government, DMI and the shipping industry. It analyses the systems that are in place with respect to education and training, and highlights the shortcomings in the legislation and maritime education and training systems. It further discusses the impact and implications involved in implementing the STCW 95 and the ISM Code by Maritime Training Institutes, Shipping Companies and the Government.

Finally conclusions and recommendations are made on the challenges facing Tanzania:-

- The legal requirements that Tanzania has to address.
- Upgrading of MET systems .
- Development of human resources.
- Streamlining of Examination systems so that there is one standard in the country and,
- The need for regional and institutional co-operation.

All of which would be to the best interests of Tanzania in general and maritime training institutes and shipping companies in particular.

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Abbreviations.

AB	Able-bodied Seaman
A-Level	Advanced Level
AD	Anno Domini
AMC	Australian Maritime College
ARPA	Automatic Radar Plotting Aid
DMI	Dar-Es-Salaam Maritime Institute
DPC	Dual Purpose Crew
ENS	Electronic Navigating System
GDP	Gross Domestic Product
GMDSS	Global Maritime Distress Safety System
GPS	Global Positioning System
IET	Institution of Engineers of Tanzania
IMDG Code	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
ISM Code	International Safety Management Code
MARPOL	International Convention for the Prevention of Pollution from Ships
MET	Maritime Education and Training
MOU	Memorandum of Understanding
MS	Motor Ship
MT	Motor Tanker
MV	Motor Vessel
O-Level	Ordinary Level
PC	Personal Computer
RDF	Radio Direction Finder
SBM	Single Buoy Mooring
SINOTASHIP	China Tanzania Shipping Line
SOLAS	International Convention for Safety of Life at Sea

STCW	International Convention on Standards of Training Certification and Watchkeeping for Seafarers.
TACOSHILI	Tanzania Coastal Shipping Line
THA	Tanzania Harbours Authority
TRC	Tanzania Railways Corporation
VETA	Vocational Education Training Authority
WMU	World Maritime University

CHAPTER 1

1. Introduction

1.1 Geographical Information

Tanzania has a land area of 939,361 sq. km. It shares land borders with; Kenya, Uganda, Rwanda, Burundi, Malawi and Zambia. The river Rovuma forms the boundary with Mozambique and the lake Tanganyika forms the border with Congo (formerly Zaire). Major means of communication with Zaire and Uganda are by ship, on Lake Tanganyika and with Uganda on Lake Victoria

With the exception of Kenya, all the other countries use Tanzania's ports to export and import goods from around the World.

1.2 International sea-borne transport handled by Tanzania Harbours Authority

Table 1 Estimated freight traffic, '000 metric tons

	1988	1989	1990	1992
Goods loaded	1208	1197	1249	1220
Goods unloaded	3140	3077	2721	811
Total	4348	4274	3970	2131

(source THA Marketing Dept.)

1.3 Geographical Position (see appendix 1)

The geographic position of Tanzania is such that, it provides an outlet to the sea for neighbouring countries. This in itself is an economic asset which if well utilised could help in the development of the country.

In order to realise the benefits of being an ocean littoral state many matters need to be addressed. Of paramount importance is education, because it is only through education that society can be enlightened and sensitised on what is the right thing to do. Participation in IMO activities where many matters of national interest are discussed and decided (e.g. conventions such as the Standards of Training, Certification and Watchkeeping 1995) and where help and advice is readily available, is very much required.

1.4 Shipping Companies

There are a number of shipping companies operating different types of ships.

A large percentage of ships have been registered in Tanzania recently, following the liberalisation of trade policy by the Government. Most of these vessels are well over 10 years old.

The bringing into the Tanzanian Registry of these ships has created more jobs for the local seamen. However the age of the ships brings safety and environmental questions to the mind. It is difficult to say exactly how these ships are equipped, because there are no provisions in the Merchant Shipping Act, regulating the equipment a ship must have.

The main companies are Government owned. They are:-

- SINOTASHIP,
- TACOSHILI,
- Zanzibar Shipping Corporation.

The table below shows the type of vessels in the Tanzanian Register.

Table 2.

Type	oil	Passenger & Cargo	General Cargo	Total
Tanker	10			10
Cargo			8	8
RO RO		1		1
Fast ferry		9		9
Ferry		7		7
Wagon ferry			1	1
Total				36

source: *Shipping Section Ministry of Communication and Transport.*

1.5 The East African Trading Area

For the purpose of Examinations and Certification, the East African trading Area is-

- (i) Any location within the inland waters: Lake Victoria, Lake Tanganyika, Lake Nyasa, Lake Rukwa and
- (ii) Any location on the coast of Tanzania and in the Mozambique Channel and Madagascar to a point 11°S 44°E near Comoros and from there by the parallel
- (iii) circle 11°S to the Meridian 50°E and
- (iv) The near coastal areas of Kenya, Somalia south of Mogadishu and the eastern side of Madagascar within 5 nautical miles from land.

(Merchant Shipping Act 1967)

1.6. Unlimited Trading Area

Any location not within the East African Trading Areas.
(Merchant Shipping Act 1967)

The two provisions besides contributing to regulating certification of mariners also show the scope of trade that the Tanzanian fleet can do along the Eastern African coast, and also world wide trade.

1.7 General Observations

Having seen Tanzania's geographical position, it is obvious that, potential for development in the maritime industry is wide. Opposed to this observation development has been very modest. Part of the reason is that, Tanzania had other priorities during thirty five years of independence. Another reason is that, Tanzania so far has not been able to focus on the sea as a natural resource and a geographical endowment.

The present level of development of the maritime industry reflects Tanzania's awareness of the potential impact of maritime commerce on the economy.

For clarity one has to analyse the poor economic conditions of TACOSHILI (Tanzania Coastal Shipping Line) and the Tanzania Fishing Company(TAFICO); the number of calls that SINOTASHIP (China Tanzania Shipping Line) vessels call Tanzanian ports, the number of calls that foreign ships call Tanzanian ports each month, the shortage of Master Mariners to captain Tanzanian vessels, the maintenance culture on board our vessels and safety awareness among Tanzanians in general.

1.8. Old Systems

Maritime Education and training as we know it today, has a very short history in Tanzania. In pre-independence days, any person aspiring to go to sea was given

Corporation (EAR&H), companies had their own in-house training arrangement. After the break-up of the EAR&H into the East African Railways (EAR) and the East African Harbours (EAH) Corporations, and the formation of the East African National Shipping line(EANL) in 1967 this policy was generally the norm among them. The East African Harbours Corporation (EAH) and the EANL began to send Cadets to Britain and SINOTASHIP had a policy to sending their Cadets to China. these arrangements were phased out in the early 1980's

Tanzania Coastal Shipping Line(TACOSHILI), started its operations in the early 1970s and immediately saw the need for trained personnel. Therefore, it set up its own training unit.

In 1979, after ratifying the STCW 78, the Government decided to start a Tanzanian Training Institute.

1.9. Scope and Methodology

The focus of this work is to look into the situation of the Tanzanian maritime education, and discuss the shortcomings and strong points and ability to fulfil the requirements of the STCW 95.

The methodology employed takes various forms,

- Discussions at the University of Dar-Es Salaam.
- Discussions with Officials assigned to Maritime affairs in Tanzania.
- Library search.
- Various training and management concepts derived from lectures at WMU
- The Authors personal experience and views on education.

CHAPTER 2

2. Background Information

2.1 Background

The Minister of Communication and Transport is responsible for Maritime Administration, as the Merchant Shipping Act section 312 provides,

Save as otherwise provided in this Act the Minister shall have general superintendence in all matters relating to Merchant Shipping and Seamen.

(Merchant Shipping Act section 312).

The Registrar of ships and the Merchant Shipping Superintendent are the principal officers assisting the Minister in the execution of his powers provided for in the Merchant Shipping Act.

2.1.1. Legislation

The Merchant Shipping Act is the legal instrument which is used to regulate maritime affairs. The main shortcomings of the Act is that it needs to be reviewed to be effective and be able to meet today's requirements by the industry.

The Merchant Shipping Act does not apply to inland waters and Zanzibar does not recognise the Act. The only exception being, Government Notice No 130 published on 6/11/81, The Merchant Shipping Act, 1967, Regulations made under Sections 78, 79 and 80 of the Merchant Shipping Act (Certification of Marine Officers) Regulations of 1981 which are applied all over the Country.

Besides the Merchant Shipping Act, there are other Acts which are closely related to maritime activities. Like the Merchant Shipping Act, they are old. Except for

The Territorial Sea and Exclusive Economic Zone Act of 1989, the other Acts are:-

- The East African Inland Waters Transport Act of 1959.
- The Ferries Ordinance Cap 173 of 1929,

- Administrative matters related to ferries.
- The Inland Waters Transport Ordinance Cap 172 of 1938, which covers the Great Lakes and rivers.
- The Zanzibar Laws (chapters 130-ports; 131-Coastal Seamen)
- Engagement; 132-Shipping and 133-Desertion by Seamen of 1929.

2.1.2. International Conventions

Tanzania is a member of both IMO and the International Labour Organisation (ILO). Tanzania so far has ratified only three IMO Conventions. Those ratified are,

- The IMO Convention of 1948. (establishment of IMO)
- The Load Line Convention of 1966.
- The International Convention on Standards of Training Certification and Watchkeeping Convention of 1978

Tanzania's inactivity in IMO affairs contributes to her inability to keep abreast with maritime matters. This inhibits the functioning of some Organisations which in their day to day work have to apply international standards. For example the IMDG Code is incorporated in the regulations of one such organisation.

It is done this way essentially because, these organisations have to operate to internationally recognised standards to find acceptance in business. (THA is a good example, refer Regulations 133,166 and the Fourth Schedule which provide for application of the IMDG Code in cargo handling)

In other cases, there are certain conventions which are inter-related. That is, to effectively implement one convention a State has to accommodate the other.

A good example is:-

- The STCW 78;
- SOLAS,
- MARPOL 73/78

In the authors opinion in order to effectively implement SOLAS and MARPOL 73 a country has to have a sound training programme to educate those involved, on their duties and responsibilities and indeed to educate the masses at large. On the other hand it is somehow difficult to have laws about safety without having a training programme to teach the subject. In the case of Tanzania, the Government has decided

to ratify the STCW Convention but has left out the SOLAS and MARPOL Conventions.

These Conventions are related in the sense that they all in one way or the other address issues related to, safety and the protection of the marine environment.

2.1.3. Maritime related Institutions Under The Ministry of Communication and Transport

Under the Ministry of Communication and Transport, there are several corporations of maritime nature. These have been provided with legislation establishing them as autonomous bodies. Some of these legislations touch on areas covered by the Merchant Shipping Act.

The Corporations are:

- Dar-Es-Salaam Maritime Institute: This is a training institution charged with providing maritime training. It was established by the DMI Act No 22 of 1991.
- The Tanzania Central Freight Bureau: This is a commercial organisation dealing with cargo transportation. It was established under Act No 3 of 1981.
- The Tanzania Harbours Authority: Established by Act No 12 of 1977.
- The Tanzania Railways Corporation: Established by the TRC Act No 11 of 1977, among its functions is to operate marine transport services in the Lakes.

2.2 Maritime Administration in Tanzania

Up to June 1996 maritime administration was the responsibility of the Directorate of Shipping in the Ministry of Communication and Transport. The Directorate was headed by a Director.

The Directorate has since been downgraded to a section in the Directorate of Transport in the same Ministry. At the moment there is no Maritime Safety Administration in Tanzania, but immediately after the M.V Bukoba tragedy in 1996, the Minister of Communication and Transport formed a task-force to advise him on the establishment of such an Administration.

2.2.1. Execution of Responsibilities

The Government delegates responsibilities of carrying out day to day work of a Maritime Safety Administrative nature to Marine Officers employed by the Tanzania Harbours Authority. This arrangement is not a very good one, as in a way it dilutes the commitment to that responsibility.

This is because any person would be inclined to pay more attention to their full-time job rather than to a part time one. It is not good for the country to have people in such important positions having to divide their time between two jobs. As Vanchiswar (1996) observes:

Such Maritime development of developing countries would be dependent directly on; (a)their proper understanding of the many maritime activities that need to be attended to and,
(b)their respective capabilities created through the "Establishment and performance of appropriate Maritime Administration" to administer their Maritime affairs.

2.3 Maritime Education in Tanzania

Dar-Es-Salaam Maritime Institute (DMI) was established eighteen years ago. Before that time, there was no maritime training institute in the Country.

In 1978 the Management of Tanzania Coastal Shipping Line (TACOSHILI) saw the need for maritime training for their crew. It decided therefore to start a training unit within the company.

With the ratification of the STCW of 1978, the Government took over TACOSHILI'S training unit, and reorganised it into a National Training Institute in 1979. Due to the fact that maritime education has a very short history in the Country it is a common occurrence for employers to recruit untrained personnel (this is also the fact in Government owned companies).

2.3.1 The Dar-Es-Salaam Maritime Institute

The institute has evolved from a training unit of a shipping company, to a project within the Ministry, consisting of two separate units (Deck and Engineering), located some 12 km apart. Today both the units have been combined as one training institute. In recognition of this, the Ministry of Communication and Transport agreed to give the Institute its present name, i.e. DMI, dropping its old project name of Dar-Es-Salaam Maritime Training Unit (DMTU).

The new name had the significance of giving DMI the responsibility of serving the whole maritime industry.

DMI's present training capacity is 60 students in a school year on the main competency courses and 500 to 600 students on the short courses programme.

DMI is essentially a monotechnic institution. The main courses are run on the post-experience system. A candidate applying for a certificate of competency course is supposed to show proof of sea service among other conditions before he is accepted for the course.

The author thinks that the post-experience system in Tanzania's case is a limiting factor for those who wish to work at sea, for the following reasons:-

- Employers are today not inclined to employ an untrained person;
- Vacancies at sea are very limited;
- Demands put on employers on crew qualification by national law and International Conventions have forced them to abandon the old on the job training system, and go for the trained man.

For those reasons it would be difficult to expect a seaman to get sea going experience before attending a course at a training institute.

- MET in Tanzania is not accredited. This is a problem because it limits the scope of employment and academic advancement for the Tanzanian Seaman should he want to pursue higher education. Possibly this is the time for those responsible with maritime affairs to address this question for the benefit of all concerned.

2.4 The DMI Act

DMI had existed as a project in the Ministry from its inception in 1978 to 1991.

In order to maintain the momentum of development at the Institute, it was felt that autonomy for the Institute was necessary.

In 1991 an Act establishing DMI, and providing for functions, management and its control was passed by the Parliament. (The DMI Act No 22 of 1991).

In so far as Administration and Management matters are concerned, these have been well addressed in terms of regulations and procedures.

Perhaps, the period in which the Act has been in operation is not sufficient to make an in-depth assessment of these regulations and procedures, so far the author finds the following areas need to be looked into:-

- Selection of a staff member in his capacity as an expert in maritime education into the Board of Governors.
- Limitations to DMI as to the type of courses it can run (Part II Section 4 para (a) of the DMI Act).
- The Act does not provide any linkage to the National Education System to facilitate accreditation of maritime education.
- It does not address the question of auditing.

Of importance is the autonomy that the Act bestows on the Institute, defining its responsibilities and operational framework.

This Act like any other Act can be amended. It remains for the Institute to strive for whatever goals that can be achieved, to make DMI a better Institute.

2.5 The Examination Board

The Merchant Shipping Act Provides for an Examination Board, whose duties among others are to conduct examinations, and satisfy themselves with regard to the course content and academic standard of the relevant course of study offered by the Institute in respect of any professional certificate. The Merchant Shipping Act (Certification of Marine Officers)Regulations 1981 and Dar-Es-Salaam Maritime Institute Act No 22 of 1991 both provide for this Board.

Members of the Board are appointed by the Minister to serve on the Board on a part time basis. By the nature of their appointment, examiners are more tied-up with their employers, and the only interaction with the Institute is during the examination season.

The Examination Board has the important role to instil and maintain high academic standards at the Institute, this makes it necessary for the Board to take a more active role in ensuring academic excellence.

2.5.1. Examination Rules

Part iv and vii of the Merchant Shipping Act (Certification of Marine Officers) Regulations 1991, cover examination rules. While in most areas the rules are still valid. The rules need review in some areas.

For-example Sub Rule (7) of Rule 31 of Part iv of the Act and Sub Rule (6) of Rule 44 of Part vii of the Merchant Shipping Act (Certification of Marine Officers) Regulations 1981 still prohibit the use of calculators unless otherwise announced for the examination in question.

2.5.2. The Tanzania Harbours Authority Craft Masters and Engineers Licence

The THA Regulations Part vii (Section 123-131), provide for conduct of examinations for Mates and Engineers licence of Harbour Craft.

The Regulations, provide for the THA Management to determine and set the syllabus for such examinations, and standards to be attained. In order to have the same standards for all people working at sea, it is best that one body is charged with the responsibility of conducting seamen's examinations, without regard as to where they were going to work, be it in sheltered waters or open sea. On the other hand the law does not require Crew working on river ferries, lakes and cross channel ferries to be certificated. Part II Section 78 (2) of the Merchant Shipping Act (1967) requires Certificated Officers for vessel going out to sea only.

2.6. The DMI Organisation Structure

The DMI has three departments. Engineering; Navigation and Administration Departments. The Institute is led by a Principal, and each Department is led by a Head of Department.

2.6.1. The Engineering Department

It has five Staff members, three Chief Engineers; one Workshop Technology Lecturer holding a Full Technicians Certificate in Mechanical Engineering, and one workshop Assistant.

2.6.2. The Navigation Department

It has eight Staff members, two Master Mariners; three Chief Mates and two Scientists.

2.6.3. The Administration Department

It has ten Staff members, one Administrator; five Security Men; one Janitor/Cleaner; one driver/Messenger, one Steward and one Cleaner.

In 1995, DMI held a seminar to prepare a corporate plan for the period of 1996-2001. This plan lay the groundwork for a systematic (qualitative and quantitative) improvement in the following areas: Training and other Services; Facilities and Capacity; Human Resources; Finance and Administration and External Relations. The approach the Institute takes in tackling these tasks, will be an important factor if success is to be achieved.

2.7. DMI Programmes

Main courses at DMI have been :

- The Class 3/4 Deck Officer Course.
- The Class 3 Marine Engineer Programme, which includes, one year off the job training in the use of various tools and machinery on board ships.
- The Class 5 Deck Officer Course.
- The Master's and the Chief Engineer's Endorsement Courses.
- The Engineer Cadet's Course.

The Mandatory courses are conducted either as a single package together with the main programme, or as demand dictates.

Courses on the short courses programme are:

- First Aid,
- Fire Fighting,

- Survival at Sea,
- Restricted Radio Telephony,
- Electronic Navigation Systems(ENS),
- Efficient Deck Hand (EDH),
- Automatic Radar Plotting Aid (ARPA),
- Captains Medical Guide,
- Advanced Fire Fighting.

These courses have been conducted for seamen only, while there is a need for DMI to address requirements of shore establishments which need some of these courses e.g. fire fighting and fire safety, for that matter the college curriculum and all syllabuses need to be reviewed.

2.8 Resources

DMI has during the years acquired various equipment with which it conducts courses. The major asset has been the building provided by THA under a long term lease.

2.8.1. Navigation Equipment

Navigation equipment includes:

- Radar,
- Radio Direction Finder (RDF),
- Ship simulator,
- Loading simulator,
- PCs for simulation,
- Radar simulator,
- Life Boat complete with launching gear.

Most of this equipment is old and needs replacement. Currently the Navigation Department needs the following equipment in order to be more effective in training:

- Radar/ARPA(Automatic Radar Plotting Aid),
- Loran C simulator,
- Decca simulator,
- Global Positioning System (GPS) simulator,

- Echo Sounder simulator,
- RDF simulator,
- PC software,
- IMO Vega data base,
- Safety videos.

(Corporate Strategic Plan 1996-2001 AD Volume II-Main Report)

2.8.2. Engineering Equipment.

The Engineering Department has at its disposal:

- The Engineering Workshop,
- A Caterpillar Diesel Engine,
- An Alpha Laval centrifugal separator,
- An Electronic laboratory (not yet complete),
- Pneumatic, hydraulic and refrigeration benches.

The Department needs the following equipment:

- An Engine Room Simulator,
- Boiler equipment,
- Training Modules,
- Engineering Drawing Laboratory,

(Corporate Strategic Plan 1996-2001 AD Volume II- Main Report)

CHAPTER 3

3. Requirements and Impact of the STCW 95

3.1. Background

After independence, Tanzania's legal system shed its ties with Britain, and the country had to adjust to the situation relative to her new status as an independent country. In the early days up to 1977, Tanzania was a member of the East Africa Community, and the maritime industry was regulated by the East African Merchant Shipping Act up to 1977. As explained earlier, Tanzania ratified the STCW 78 in 1978 and in line with this ratification, did set up the first maritime education and training institute in 1979.

3.1.1. Training Regulations

The ratification of the STCW 78 was instrumental in the enactment of the Merchant shipping (Certification of Marine Officers) Regulations, 1981. These regulations for the first time provided for formal maritime training and certification for seafarers. The Revised STCW 95, though maintaining the old provisions, has additional provisions with more exacting requirements than the old one. In this chapter the requirements and impact of this new convention are examined.

3.1.2. Training of Deck Officers

Section A-I/6 dealing with Assessment, requires that training and assessment of Seafarers be conducted by qualified personnel, using a skills and knowledge based syllabus in order to meet STCW 95 training requirements. Any thing less than that will not qualify that College for listing in the IMO white list.

Part V of the Training Regulations of 1981, provide for a training scheme for Deck Officers.

Regulation 29 of the Regulations provide in part:-

- Entry requirements are Form VI National Certificate of Secondary

School Education with four passes including mathematics and English; or similar qualifications.

- The scheme of training consists of:-

(a) For all students-

3 years of training at the Mbegani Maritime Institute, including theoretical and practical training ashore and 20 months of sea service. Each study year is has 4 terms and the sequence may be as follows;

- 1st year: term 1 ashore; term 2,3 and 4 at sea.
- 2nd year: term 1 and 2 ashore, term 3 and 4 at sea.
- 3rd year: term 1 and 2 at sea, term 3 and 4 ashore.

(b) Students for certificate classes 3 or 4 will undergo a further period of 6 months sea service.

(Merchant Shipping (Certification of Marine Officers) Regulations 1981).

Regulation 21 of the same regulations lays down in brief form the examination syllabus, which says in part,

the minimum knowledge requirements set by the STCW 78, are included in the syllabuses for various certificates.....except for the provision in this rule, the syllabuses are as detailed in the publications known as, Examinations for Certificates of Competency in the Merchant Navy, and Deck syllabuses and specimen papers as issued by the **Department of Trade London 1977** and as amended from time to time.

(Merchant Shipping(Certification of Marine Officers)
Regulations 1981)

It should be understood that the Deck syllabuses and Specimen papers issued by the department of Trade as mentioned here are not syllabuses as such, rather they are guidelines which could be useful to follow in designing syllabuses for maritime courses; however the 1981 regulations are silent on this fact. No provision for auditing of academic matters is made in this Regulations and neither is there a mention of the areas to be covered in training or levels to be attained in training,

which leaves the responsibility of deciding that level to the Lecturers, and in a situation where the Board of Examiners works part-time and Examiners are fully occupied in their full-time employment. Therefore there is no one to make an independent external verification to see whether the syllabus has been covered or not.

3.1.3 Engineer's Training Scheme

For Engineers the Merchant Shipping (Certification of Marine Officers) Regulations 1981, did not provide the same scheme as the one for Deck Officers. Rule 10 of the 1981 Regulations requires engineers to attend and pass a course of study at a recognised technical secondary school, University or maritime institute.

Rule 11 of Part III "Initial Training" of the same Regulations provides that,

(i) Any deficiency in training from the requirements of Rule 10 will be assessed in each case by the Board of Examiners and must be made good by off job training or by further workshop service of a suitable character or compensatory ship board service.

(2) Compensatory ship board service must be performed either on regular watch or on day work on ships of not less than 200 kW power and time so spent on such ships will be accepted as having two thirds of the value of suitable workshop service.

3.1.4. Training Systems

For a country which is new to the field of Maritime Education and Training, the training scheme as laid down in Part V Regulation 29 and examination syllabuses as provided for in Regulation 21, was a very good beginning, which Tanzania could have built upon and improved its maritime education and training to an even more better training scheme.

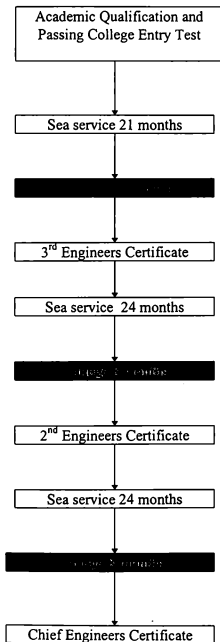
The short comings are:-

- This training scheme is not being followed.
- Neither are the syllabuses updated / or have never been updated in tandem with those issued by the Department of Trade of the United Kingdom as indicated in the Regulations. The system being followed by both Deck and Engineering

Departments is the front loaded system of training where a candidate is admitted to a course on the strength of his sea service experience, his academic qualification being an added advantage. Candidates are required to pass a college entry test which would be somewhat difficult for one with a low academic qualification.

Figure 1.

The Present Maritime Education and Training System for Engineers in Tanzania.



3.1.5 Deck Officers Examination Requirements

Part VI of the regulations deals with examination procedures, and a system of evaluating candidates. Candidates are first given a written examination, whereby they have to answer questions covering the syllabus covered. The candidates will be given an oral examination to test their knowledge and assess their level of skills. One can say that the system applied in the absence of requirements for competency, tests only the theoretical knowledge of the candidates, it does not test their competency and skill.

- Rule 26 of Part VI of the Regulations dealing with admissions to examinations and awards of certificates (engineers), provides that, "All examinations are normally conducted in the English language."
- Rule 29 of Part V-Training Scheme (Deck), provides for the same academic qualifications for admittance to the Maritime Institute for all candidates be they for class 3,4 or 5 Certificate of Competency.
- Rule 12 of Part III Classes of Certificates states:
 - (i) Subject to the provisions of Sub regulation (2) of this section, a candidate for a class 5 certificate must be not less than 19 years of age and must have served at sea in ordinary trading vessels either:-
 - (a) for 2.5 years as a trainee deck undergoing a training programme recognised by the Ministry of Communication and Transport,
 - or (b) for 3.5 years in any acceptable deck capacity, provided that at least 6 months of the final 12 months sea service is spent on duties associated with bridge watch-keeping under the supervision of an Officer holding a Certificate of Competency.

(Rule 29)

The above requirements to register for a Class 5 Deck Officer Course are quite good and this candidate according to these regulations has the same entry qualifications as any other candidate. However Rule 9 of part II Conditions of Entry provides that,

A Class 5 certificate examination may be conducted in Swahili.

(Rule 9)

Rule 9 also provides that,

Except for a Class 5 certificate examination which may be conducted in Swahili when a candidate indicates so on the application, other examinations are conducted in the English language only.

(Rule 9).

It is the view of the author, that the provisions in Rule 9 negates the standards set by Rules 26 and 29 of the Training Regulations and thus causes contradictions which contribute to the lowering of standards, if one considers the standards set in Rules 29 of Part V and 12 of Part III of the same Regulations.

From the foregoing the following shortcomings in the regulatory work can be observed-

- Contradictory and lack of clarity,
- Lack of precision,
- Not up to date,
- Dependent on what the United Kingdom decides for her self not considering our own position or interest,
- No follow up on legal and technical developments in the world.

These remarks are in addition to those made by IMO Consultants and experts on skills and competency.

3.1.6 Engineers Examination Requirements

Part IV Regulation 25 of the Regulations provide for remission of sea service for engineers, where a candidate has certain higher academic qualifications. When a candidate is on residential training at a Maritime Training Institute he will be afforded full remission under sub- regulation 5 of Regulation 29 and 6 months remission of sea service will be granted if the candidate held passes at grade A, B, or C in at least 5 subjects at O-Level Secondary School, with a bias in science subjects and passes at A-Level in either mathematics or acceptable physical science subjects, or holds a National Full Technicians Certificate or equivalent qualifications.

Regulation 36 of Part VII "Examinations and Exemptions," provides for exemptions from Part A of competency examinations for holders of National Full Technicians Certificate in Mechanical Engineering.

The author does not see how a newly initiated person qualifies for remission of sea service on account of their secondary school achievements, however good they may be. Sea service is purely about skills and competency which is gained by practice on board ship. Exemptions from examinations and remissions of sea service do not serve any good purpose, rather they generally push down standards.

3.1.7. Manning

Section 205 of the Act requires ships to be manned with sufficient and efficient crew, and remain so manned during a given voyage. The Act does not provide a definition of what sufficient and efficient means, which leaves manning levels to be decided at ship owners discretion, in the absence of a strong Authority to follow-up maritime affairs and weak Trade-unions.

According to Morrison (1992) manning is not addressed by the STCW 95 Convention, and this is by a general agreement of those preparing it,

After nearly seven years of discussion involving ten meetings it was agreed that the manning of ships not form part of the proposed Convention.

Various countries including Tanzania, provide for the number of certificated officers to be carried on board national ships in their respective Merchant Shipping Acts. In Tanzania's case, as is the case with several other countries, there is no provision for the minimum number of ratings to be carried on board.

The developments in shipping show a trend for reduced manning, in the absence of technical and legal guidance on this question. Economics will decide what the levels should be. Mr D.A Taylor in his paper on "Manning and Training for Present and Future ships," discusses the ships of the future projects in Norway, Germany, Japan and the United Kingdom. In this case reduced crew numbers have been suggested and put to the test with satisfactory results. The primary goal for this research is to remain competitive. However pre-assigning the number of crew is somewhat difficult. Manning levels need to be addressed differently and from ship to ship.

3.2. Weakness in the STCW 78 Convention

The STCW 78 Convention was expected to ensure qualified mariners, basing on its provisions. Areas to be emphasised were knowledge, understanding and proficiency. While the STCW 95 had the above requirements in its provisions, it gives additional requirements on demonstration of competence and criteria for evaluating competence. The STCW 78 Convention had global acceptance, but with time its aims and objectives were eroded. Major areas of weakness were:

- Countries were at liberty to interpret the Convention as they saw fit.
The Convention demanded only experience as a minimum of sea going service, but did not seek assurance of skills and competence.
- The Convention did not demand quality of training institutions and trainers.
- The Convention did not demand assurance of level of knowledge and ability gained in training.
- The Convention did not demand assurance of level of examination standards.

(P.Muirhead 1996)

3.2.1. Foreign Linkage of Legislation

In Tanzania, some of the legislation is tied/linked to laws of a second country and has not developed as it has, in the other country, and follow-up on amendment of the law is lacking. A good example is Regulation 21 Part III Classes of Certificates and Section 317 of Part X Supplemental and Transitional of the Merchant Shipping Act are both tied to U.K Legislation and have remained that way without updating/review ever since. As the legal system has not moved with the times, the result has been to have a systematic lowering of standards.

From the above points it can be seen that the central issue with the old convention was lack of quality standards. The Administrations were not required to, " Say what they do, do what they say and prove that they do what they say they do."

3.2.2. Main Elements

The 1995 Convention has a new Annex which covers technical provisions, which contains Part A-Mandatory Standards and Part B-Recommended Guidance. Muirhead (1997) states that,

A quality standards system is about having specific processes and procedures in place that are actively used by personnel to achieve the above objective.

This defines the quality standards as required by the new Convention. In order to fulfil the new Convention, maritime institutes need to properly address the question of quality standards, if they are to be recognised as such.

First and foremost Maritime Institutes will have to understand what is expected of them in terms of academic and administrative systems followed, evaluation of those systems, both internally and externally, checks and balances (with respect to assessment and conduct of examinations) in ensuring that awards go to the rightful candidates. Having defined the requirement, maritime institutes will have to address the following points:

- Maritime institutes visualise what they want to accomplish and come up with a guiding philosophy in the form of a mission statement.
- Identify aims, objectives and standards for the maritime institute, and come up with a policy guiding the implementation of those standards.
- Draw up a policy on the role of the Maritime Institute, workout the organisation chart, complete with job descriptions, responsibilities and clear reporting lines. This policy will encompass all aspects of academic and administrative matters regarding all staff. The chart will also show the reporting lines for the various committees carrying out the internal audit function.
- Work with the government in having an independent external audit.
- Maritime Institutes will have to strive for better relations with the industry in order to be able to co-operate in successfully carrying out their practical training function.
- In carrying out the training function the Maritime Institutes should strive for knowledge, skills, understanding and proficiency after learning. Further the Institute should workout a system of demonstrating competence, there are several

ways , e.g. workshop exercises, simulator tests, on board practical demonstration etc.

A system for evaluating the results of training should meet the Conventions requirements of assessment. Section A-I/8 on Quality Standards sub-sections 1, 2, 3, and 4 provides for requirements on national objectives on quality assurance.

3.2.2.1 Issue of Certificates

Normally, certification is the responsibility of a Government. It is a measure of recognition granted to a person who has passed a given examination, and by extension, it is recognition of the course programmes, and system of examination at a training institution that the course programmes and systems of training and examination satisfy, given objectives and standards.

Section A-I/8, sub-section 2 of the STCW 95 provides that quality standards shall cover the administration of the certification, all training courses and programmes, examinations and assessments including Lecturer and Examiner qualifications. Control of the certification process and maintenance of a register on certificates issued is a requirement of the Convention.

In Tanzania, the responsibility for administration of Certification matters, is vested in the Minister of Communication and Transport. Regulation 7-(1)of Part II “certificates” provides,

The Minister may specify that the standard of competency to be attained by officers of any description may be the standard of competency required for the issue of a certificate of competency by an authority empowered by the laws of the country outside the United Republic, and that a certificate issued by any such authority shall be treated as evidence of the attainment of a standard of competency equivalent to the standard required for the issue of a specified class of certificate under these regulations

(Regulation 7)

The chapters covering conditions of entry (to a competency examination), estimating sea service and training scheme, in the Merchant Shipping Act regulate the certification process and specify quality assurance in maritime training in Tanzania.

Areas that are lacking are, requirements for skills and competency and independent evaluation of skills, competency, and assessment activities. Further to that, Regulation 7 confers discretionary powers to the Minister to accept or reject any foreign certificate, the Regulation is too general in the sense that it does not spell out the basis of accepting or rejecting a certificate.

Refresher courses are offered for first aid, fire fighting and survival courses. This has been the general custom so to speak as there is no specific rule or regulation providing for it. With the Revised Convention there will have to be provision in the Merchant Shipping Act for revalidation of certificates of competency, and refresher courses for those seamen who have been away from the sea for a period of more than 5 years.

Alternative certification in Tanzania is a new concept, the level of development of the industry is at a very infant stage that this system will take time to be applied. Governments however may at their own discretion issue alternative certificates from 1 February 1997 after reporting to IMO on how they are implementing the Revised Convention and details of their procedures on issuing alternative certificates, manning systems and issue of certificates of safe manning. To make sure quality standards work, the Government will have to work out a mechanism to monitor training standards, conduct of examinations and issue of certificates.

3.2.2.2 Special Training

Maritime Authorities, have to organise relevant training for handling special ships, and ships with special equipment. People working on ships such as tankers, chemical or gas carriers and ro/ro vessels have to have a special mandatory training. Tanzania has on its fleet 8 small oil tankers. Half of these are used for supplying bunkers to ships calling Tanzanian ports. There are no chemical or gas carriers in the Tanzania's fleet. Special training for tankers has been conducted on very few occasions, probably this is due to the legislation giving prominence to chemical and gas carrier training.

Rule 35-(1) of Part VII Carriage of Highly Dangerous Cargo of the 1981 Regulations provides,

According to the Marine Officers Regulations a ship which has a bulk cargo specified in whole or in part as being dangerous cargo, shall carry as officer in command and as second in command respectively, deck officers who in addition to holding the qualifications required generally of them as explained in these rules, satisfy such requirements as the Minister may specify.

(Rule 35).

Sub-regulation 3 and 4 provide endorsement of the seamen's certificate for the relevant type of cargo for a sea man to get a dangerous cargo endorsement for liquefied gas and liquid chemicals;

(i) Sea service of at least 6 months

(ii) Attendance of a training course appropriate to the carriage of liquefied gas /and liquid chemicals or 14 days training in a supernumerary capacity on board ship and completed 3 months accredited shipboard service in subordinated rank or 6 months sea service in a subordinated rank or 28 days intensive shipboard training in a supernumerary capacity approved by the Ministry.

(Rule 35)

If the sea service was done on a ship carrying a certain type of cargo between the two named or crude oil, that sea service would be credited at half rate for the other type of dangerous cargo.

In view of the new demands put on the industry by the new Convention, there is a need to specify the appropriate syllabus, required knowledge, skills and competence rather than putting the requirements as explained in the above paragraph.

Part IX of the Merchant Shipping Act deal with pollution control. Rules 309 and 310, are the only provisions in this chapter. On the question of oil pollution, The Merchant Shipping act does not provide for training for ship's crew on pollution problems. Part IX of the Act section 309 and 310 only address the control aspect of the problem.

Section 309 sub-section (2)(b) in this chapter deals with spills within 100 miles of the nearest land. The Section provides for a fine of Tanzanian Shillings 10,000/=

equivalent to USD 17.24. The rule is silent on the size of spill. Section 310 (3) deals with the problem of air pollution. It provides,

If any vessel within limits of a port emits dark smoke or soot, or ash, or grit, or gritty particles for a period in excess of 5 minutes in any one hour, the master or owner of such ship shall be guilty of an offence.

(Merchant Shipping Act, Section 309)

The STCW 95 section A-V/I Pollution prevention 7 provides for instituting of procedures to be followed to prevent air and water pollution, and measures to be taken in the event of spillage, including the need to;

- reporting relevant information to appropriate officials.
- notification of shore based response personnel
- proper implementation of shipboard spill containment procedures.

It can be seen that Section 309 and 310 of Part IX of the Merchant Shipping Act needs to be upgraded in terms of training, reporting , contingency planning and oil spill combating.

The Training Regulations of 1981 do not specifically require a candidate for a certificate of competency examination to have attended a training course . Part II of the Regulations 1981, Conditions of Entry Section 5-(1) provides that, “eligibility to such an examination will depend inter alia upon amount of sea service performed and upon rank held on board.”

The general custom has been that, it was possible to register for an examination if the above mentioned criterion was met. The STCW 95 Convention requires every candidate for a certificate of competency examination to undergo a training course before applying to sit for such an examination and award of certificate.

3.2.2.3 Company Responsibilities

Recognising that it will take time to move from STCW 78, to the STCW 95 Convention, transitional provisions dealing with existing certificates are provided for. They take effect from 1.2.1997 with a target date of phasing out such provisions by the year 2002. Employers, have the important role of ensuring the establishment of a

system of strict observance of the STCW 95 on board their ships, including certificates and certification of crew, and every ship- related activity.

A system of auditing performance by companies will have to be verified by Governments.

- Governments are required to lay down laws specifying sufficient and efficient manning levels on board flag ships, specifying crew competency and provide guidance to control officers when a ship can be deemed a danger to persons property or the environment, and what grounds can be considered when detaining a ship.

Regulation I/14 of the Convention specifies company responsibilities:-

proper certification,

- manning,
- documentation of crew data,
- on board familiarisation training of crew,
- crew competence enhance by training and on board assessment.

By including the reporting procedure to IMO by Maritime authorities, accountability among parties is bound to increase. Management skills for ships Officers to better manage the ships and a global industry are a necessity.

3.2.3 Short Courses

The requirements of the STCW 95 Convention can be better achieved when there is national legislation in place, which will make implementation effective. A problem faced by many in developing countries is awareness and interest in matters related to maritime affairs which is low; Therefore maritime institutes as a place of learning will have to bear the responsibilities of making society aware of such important matters, so that relevant knowledge and awareness and understanding that maritime legislation is dynamic and needs to be reviewed form time to time to be able to stay abreast with developments in the industry.

In maritime education and training for example Regulation 17 of the Training Regulations 1981 provide that, a candidates for a Deck Certificate of Competency who have not graduated from an appropriate training course at a maritime institute

approved by the Ministry of Communications and Transport, must produce evidence of the required qualifications as to :-

- Radio telephony.
- Radar observation
- First aid at sea,
- Fire fighting.
- Operation of electronic navigational aids,
- Life boat handling,

From the above list of mandatory courses one is able to see the need for updating the regulations, because the convention today requires other equally important courses for efficient operation of ships , for example, advanced fire fighting, ARPA, Survival at sea courses. These are besides the new requirements on Global Maritime Distress and Safety System (GMDSS) training, Human behaviour and crowd management, Basic safety training, Proficiency in survival craft, Fast rescue boats, etc.

Maritime education and training institutions will have to address the needs of, Industry, Governments, Society, and the Seaman when designing programmes in order to get the best results.

3.2.4. Operations Systems

The Maritime Institute during most of its existence, has been run as a project in the Ministry of Communication and Transport. Presumably for this reason it did not have in place the normal operating procedures of an educational establishment. Even after its establishment as a corporate body, (apart from its administrative structure and operating system) its academic systems are not very different to what they were before. For example whereas in a school or college in the country, there would be an annual inspection by the inspectorate division of the Ministry of Education, to evaluate the schools performance, that system is not practised at DMI. Inspections in Tanzanian schools are the equivalent of the audits stipulated by the STCW 95, and with respect to audits, Morrison (1995) had this to say,

STCW measures require complementary action to be taken, which may cross traditional divisions of responsibility both within and

outside Government. The responsible Government Authority must therefore establish a small panel or committee to identify and monitor concerted actions needed.

The other thing is that DMI has to work towards promoting awareness and acceptance of maritime education. This can be achieved by striving for accreditation of the courses offered at the Institute by various important organisations and bodies such as, ship-owners associations, Vocational Education and Training Authority (VETA), Institution of Engineers of Tanzania (IET), University of Dar-Es-Salaam, Ports Authority, Lakes Marine services, etc. This will be a way of proving to society that what we are offering is acceptable. It should be easier to work with local institutions in engineering studies, but in relation to Nautical studies DMI will have to identify a College abroad to co-operate with in order to get proper accreditation.

The highest certificate offered at DMI is the 3rd Class Certificate of Competency. The policy with regard to lecturer qualifications has been to up grade the maritime lecturers to 1st Class Certificate of Competency which is over and above the highest certificate offered. Further than this nothing was planned, and a Class 1 certificate was seen as being enough for the institutes needs, such was the policy. Section A-I/6-Sub-sections 3- Qualification of Instructors, Supervisors and Assessors; 4-In-service Training; and Subsection 6 Assessment of competence provide for mandatory requirements to be met by Authorities and Institutes. However A-I/6 Sub-section 7-Training and assessment within an Institution provides,

Each Party which recognises a course of training, a training institution, or a qualification granted by a training institution, as part of its requirements for the issue of a certificate required under the Convention, shall ensure that the qualifications and experience of instructors and assessors are covered in the application of the quality standard provisions of Section A-I/8. Such qualification, experience and application of quality standards shall incorporate appropriate training in instructional techniques, and training and assessment methods and practice, and comply with all applicable requirements of paragraphs 4 to 6.

The new developments brought about by the STCW 95, the constant advances in technology and shipping, the social needs of the sea man and society in general make it necessary for DMI to review that policy.

Responsibility at Government level on the administration of the Convention has been weakened by the down grading of Directorate of Shipping to a mere section and the severe shortage of manpower in that section. Implementing the Convention will be difficult because, as Morrison (1995) correctly pointed out,

Ineffective application and enforcement of the Convention can no longer be tolerated and any dispute or lack of clarity as to which department or agency is in charge results in nobody being in charge.

In view of the above a stronger and effective body to administer maritime affairs is badly needed.

The point of emphasis here is ineffective application and enforcement can no longer be tolerated.

3.3. Challenges in Implementation for Tanzania

The revised Convention poses challenges in implementation for all countries, both developed and developing. For Tanzania these are many but in most cases surmountable. Some of those challenges are as follows:

- Maritime legislation is outdated and needs to be updated to meet today's requirements.
- Lack of manpower in the section dealing with maritime matters.
- Delegation of key responsibilities by the Ministry to people working for another employer, for example: Examiners, Surveyors, Merchant Shipping Superintendent, Receiver of Wrecks, Assistant Registrar of Ships, etc. For a long time the Ministry has had to appoint people from other agencies to carryout tasks on behalf of the Ministry, this is a short term policy which has to change.
- Lack of upgrading and updating training policy for such personnel. (given in- iii).
- No enforcement agency for the Merchant shipping Act.
- Little participation in IMO activities at National level.

3.4. Impact of the Revised Convention

Should Tanzania adopt the revised Convention this will have the following impact:

- Incorporation of the new Convention into the Merchant Shipping Act by Tanzania.
- DMI will have to institute internal and external independent audits for its academic and administrative systems.
- DMI will have to work out a system of continuous upgrading and updating of its Lecturers knowledge and skills.
- DMI will have to work out a new curriculum to be able to offer whenever required; alternative certification, revalidation, updating courses and Radar and ARPA training by simulator.
- DMI will have to ensure performance standards prescribed when using simulators by the Convention.
- DMI performance reports to IMO are necessary if Tanzania's MET is to be recognised.
- Tanzanian will have to establish in the shortest possible time the proposed Maritime Authority as the implementation agency of the Government.
- Tanzania will have to provide other parties information whenever requested
- Tanzania will have to establish standards of medical fitness, recording system of certificates and endorsements. and institute stringent inspection and control procedures and penalties for non compliance by all.
- Ensure compliance of Regulation I/14 by shipping companies. Tanzania will have to establish a means of monitoring observance of the Convention by companies such as a documented strict compliance of the Convention on board their ships and shore establishments, and also an auditing of such compliance. Areas of compliance include; -
 - certificates and endorsements.
 - Hours of work for merchant seamen.
 - Well operated ships in terms of trained personnel and ship operating procedures.
 - Refresher and updating training for crews of all categories.
 - Qualified trainers and assessors for on board training.
 - Co-operation with other countries, agencies and Colleges.

Article X-Control, Section (5) of the STCW 95 provides;

The article shall be applied as may be necessary to ensure that no more favourable treatment is given to ships entitled to fly the flag of a party. (Article X).

What this Article implies is that, should there be non compliance of the Convention, the offending states ship's and Seamen will not be allowed to operate outside their country's waters, the impact on that country's economy and the livelihood of her Seamen will definitely be jeopardised.

CHAPTER 4

4. Requirements and Impact of the ISM Code.

4.1. Background

The Code, has the prime purpose to improve safety management skills and systems in the maritime industry. This comes in the background of a tradition by shipping companies of traditionally looking at profits as being an end in the business. Profits are actually the prime incentive in any kind of business, but there are other equally important matters which need to be equally addressed by owners, that is; Safety of Life at Sea, safety of the environment, and the safety of cargo and ships.

To give an example, it would be quite easy to get a company finance control manual in a shipping company, whereas it would be hard to find the company maintenance and repair policy, ship-board safety policy or training policy. As a result, the incidence of high profile accidents in shipping are on the increase, good examples are incidents involving the following ships:-

- the M.V Bukoba (capsized),
- the M.V Magogoni (after suffering mechanical damage left to rust),
- the M.S Mtwara (collided with MT Uhuru and sank).

When closely examined these ships were lost due to lack of such policies in the first instance, though possibly the commissions of enquiry could have arrived at other conclusions as being the primary cause. For example the enquiry on the capsized of the M.V Bukoba observed that the Master of the ship was weak in his knowledge of "Ship stability". This observation by the high-powered inquiry team is a direct indictment of the Dar-Es-Salaam Maritime Institute's curriculum in general, and the company training policy in particular. The institution of safety management systems in a company will ensure less accidents and loss of life, and prevention of environmental damage.

Besides the ISM Code other Conventions which promote high standards in shipping, are the Paris Memorandum of Understanding of 1982, STCW 95 which Tanzania is yet to adopt, and SOLAS 74 among others.

The shipping industry today has to overcome monumental challenges such as:-

- global competition,
- public sensibilities to environmental issues,
- ever increasing demand for productivity and
- service to customers.

The international character of the industry makes these challenges even more pronounced. Therefore owners have to strike a balance between making profits and observing legislation (both national and international).

4.2 Elements of the Code

The Code marks a shift in the industry management concepts and approach to safety. Previously people concentrated on enacting laws and making technical innovations to get around problems, for example:-

- segregated ballast tanks,
- double hulls,
- free fall life-boats,
- modern life saving and fire fighting equipment,
- better steering gears and emergency steering systems and
- Oil pollution Act 1990 etc.

Never the less accidents have continued to occur. People in the industry have realised that time has come to look at man himself and his inherent weaknesses, and this is what is termed, “human factor”. The concentration now in the industry is to improve management systems in the industry in order to reduce casualties and improve performance.

Tanzanian shipping companies will have to do the same, and for them to be able to compete with their counterparts abroad the following are of paramount importance:-

- total commitment to safety by the Top Executives and their management teams,
- effective organisational structure of the company and
- efficient implementation and auditing of company systems.

In most cases people don't feel comfortable having their work checked, it is important for those carrying out company audits to avoid the policeman approach to audits, where people are led to believe that auditors are out to find faults, and have them

punished for their acts of omission or commission, whereas in fact the whole exercise is meant to identify deficiencies and rectify them as it is spelled in the objectives of the Code itself, which stipulates:-

- provide safeguards against all identified risks,
- continuous improvements of safety management skills and preparation for emergencies in shipping and environment protection,
- provide a safe working environment and safe practices in ship operation.

(ISM Code Section 1.2.2.)

These objectives can be achieved when the following have been prepared and effected:-

- company policies on safety and environment protection,
- rules, regulations and guidelines on safety and environment protection,
- company organisation, defined levels of authority and lines of communications between and among shore and shipboard personnel,
- procedure for accident reporting, response to emergencies, internal audits and management reviews,
- master's responsibilities and authority,
- nomination of a designated person ashore
- legislation for the implementation of the ISM Code and issue of document of compliance,
- documentation of all the management systems.

(ISM Code Section 1.4)

4.2.1 The Master

The Master on board ship is responsible in ensuring the compliance of the Code. As the owner's representative he has the responsibility to oversee the implementation of company policy, national and international regulations.

The Master has to provide leadership and motivation to crew in their daily work.

The Master, in other words has to be a man of substantial education, managerial and technical competence. His qualifications notwithstanding, the Master requires maximum assistance and support in the efficient execution of his responsibilities, from the shore management, in terms of clear guidelines and a fit and qualified crew. The Master will face the following problems:-

- too much paper work,
- too much documentation
- less time for him to concentrate on ships business and operational matters.

4.2.2 Leadership

The Chief Executive Officer of any organisation is the person who influences the way the organisation operates.

- A Leader needs to be a person with a clarity of vision as to which way the organisation will move in the present situation and in meeting the challenges of the future,
- A Leader as a manager of the company needs to be innovative,
- A Leader needs to be creative, and above all a Leader needs to be caring towards the welfare of the organisation and the Subordinate Staff,
- be the symbol of the team to the outside world,
- A Leader should be able to convince and motivate his subordinates to implement quality management systems.

(Mottram 12.12. 1994)

According to John Oakland, managerial breakthrough means, doing the right thing right, first time. He further makes the following rules on the lines of the managerial breakthrough concept for a manager to observe:-

- develop and publish clear documented corporate beliefs and objectives,
- develop clear and effective strategies and supporting plans for achieving objectives,
- identify critical success factors and critical processes

- review management structure,
- “empowerment”-encourage effective employee participation.

All this means that, the company has to have the right people in the right place at the right time. This calls for a sound “resources and personnel policy”.

4.3. Safety Management systems

Before the advent of the ISM Code, companies had their own policies and systems in dealing with the subject. These were built from operating experience of the companies, prepared by their own staff. Flag States enacted legislation on safety and environment protection as related problems increased.

Laws by States and policies by companies devolved around training, manning and equipment, with increased accidents the result was prescription of more laws and regulations and equipment of advanced technology, unfortunately no clear stipulation on level of intensity of training and consideration of the human element was concurrently addressed along with them. Moreover with more advanced technology being used on board ships they became more cumbersome and training more intensive and expensive, whereas accidents still persisted.

4.3.1 Training Institutes

Maritime training institutes have everything to gain if they adopt the ISM concepts of quality assurance, this in relation to shipboard, laboratory, and workshop training and curriculum development in management subjects, this is because management practices have suffered neglect in maritime training for merchant seamen.

4.3.2 Shipping Companies

The primary focus of safety management systems is the shipping industry. Companies are faced with a situation where they have to change the way they have operated, because the trend today is for “responsible management through the ISM Code”. Apart from the outdated Merchant Shipping Act, the only other regime on board ships that regulates safety is day to day supervision of the senior officers on

board through their own experience, written down standard operating procedures are very rare. Challenges facing shipping companies in the implementation of the ISM Code are:-

- recognising the need for change,
- that ISM Code will provide that change,
- total commitment to the Code at all levels of the company,
- educating company staff to adopt and implement the Code,
- plan, design and implement the Code, this will be affected by time, cost, attitudes commitment to change and lack of expert staff.

4.3.3 Governments

Governments in the view of the author are facilitating agencies. They lay down the law, and they put up structures to enforce the law. In other words, they create a conducive atmosphere for implementing all the conventions. Governments hold the pivotal position of making the ISM Code effective by providing the necessary environment in terms of expert staff, enlightenment of those in shipping, enacting laws and providing an enforcement mechanism.

To achieve the standards set-out in the Code, there is a need to co-ordinate strategy between, industry, training institutions and the Government in terms of planning, training, educating the shipping society, implementing the plan, feedback, review.

4.4. Impact of the ISM Code on the Shipping Industry

- Considering the implementation date for tankers, bulk carriers and passenger ships of July 1998, time is very limited and there is too much work to be done, and could result in poor results,
- a lot of money will have to be used to put up the mechanism of implementation, i.e. planning, training, implementation, feedback and review,
- initially there will be many who will doubt the system because people are suspicious of change, ISM Code is new and they need to prove it works,

- rules and regulations will have to be reviewed to reflect the adoption of the new system,
- more responsibility and more accountability,
- authorities will have to put in place a system of checking on implementation of the system,
- reduced injury rate resulting in financial savings,
- better maintenance and repair schedule, resulting in reduced premiums,
- less down time for vessel, safer carriage of cargo,
- one standard throughout shipping companies world wide,
- improved safety and pollution prevention,
- improved vetting, recruitment and training of staff,
- improved communication, feedback review and updating of systems
- improved job performance and less scope for human error,
- companies are more proactive in their approach to company problems and operating systems,
- ensures company personnel are better prepared for emergencies.

However the Code does not stipulate clearly how Companies should go about instituting and carryingout a safety management system, it is left to companies to workout a system suitable to their individual working environment.

Further in some respects the Code is vague, for example article 1.2.2.2 provides, “establish safeguards against all identified risks”.

This could be some basis for argument in a court of law, should there occur some thing extraordinary on board ship, and that would lead to some one innocent being on the receiving end of the law.

CHAPTER 5

5. Implementation of the STCW 95 and the ISM Code

5.1 The Merchant Shipping Act

In any country the primary source of authority for any legal document is the country's constitution. In Tanzania's case (officially the United Republic of Tanzania, composed of the mainland (formerly called Tanganyika) and the islands of Zanzibar) matters related to communication and transport (shipping included) are not dealt with under the Union Government. This means that each party to the Union will deal with such matters on their own (article 4 of annex 1 of the constitution of Tanzania of 1977 stipulates 21 matters which are the responsibility of the Union Government, of which communication and transport is not included), and therein lies the non application of the Merchant Shipping Act in Zanzibar. This including the provision by the Merchant Shipping Act Part 1 section 2 subsection (2) which does not provide for the Act from being applied in inland waters makes the Act ineffective. For example in the case of the Bukoba disaster it is questionable if anyone can be prosecuted under the Act.

Tanzania has ratified the STCW 78 but has yet to adopt the Revised STCW Convention and ratify SOLAS 74 and MARPOL 73/78. It should be borne in mind that the three Conventions form the basis of a safe, efficient and caring maritime industry. For the Merchant Shipping Act to have a positive impact on maritime affairs in the country, Tanzania has to incorporate the three Conventions into the Merchant Shipping Act. The Author recognises the limitations that a developing country like Tanzania could have in implementing MARPOL 73/78, nevertheless Tanzania should study the Convention and consult with IMO on how best to proceed at her level of development. The author is quite positive that a suitable more environment friendly arrangement could be arrived at.

It is expected that most countries will strive to enact legislation in line with the three Conventions, should Tanzania be left behind it will find that her ships and

seamen are affected by new regulatory regimes such as the Paris Memorandum of Understanding (MOU), and the unofficial rule,

no favourable treatment for non parties. (Morrison, 1995)

Tanzanian ships will therefore find it difficult to trade outside Tanzanian waters, and Tanzanian seamen will not be accepted in international shipping, limiting our shipping companies to trade locally and leaving foreign ships to reap the benefits of servicing our international trade and East African Trading Area transport requirements at the same time denying our Seamen working abroad, and their livelihood, because Tanzanian certificates will not be acceptable internationally.

The foregoing and the fact that the Act is out dated provide proof of a compelling need to review the Merchant Shipping Act for effective implementation of the requirements of the STCW 95 and the ISM Code.

5.2 Role of the Maritime Safety Administration

This body has the prime role of an executing agency of any Government's maritime policy, whose aims and objectives are the development of the shipping industry in terms of quality and size. Tanzania at the moment does not have such a body and neither, to the best knowledge of the author, is there a maritime development policy in place.

A Maritime Safety Administration is a body, whose primary duties are essentially technical and related to ships. The Administration's obligation could essentially be as follows:-

- Superintendence.
- Registration of ships.
- Implementation of Conventions.
- Consulting with the Government.
- Examinations, certification and facilitating independent auditing of MET on behalf of the Government.
- Port state controls.
- Jurisdiction of wrecks.
- Search and rescue.

enforcement of the Merchant Shipping Act.

In respect of port state control procedures guidance can be drawn from IMO resolution A 787(19) dated 24 November 1995.

Normally the Maritime Safety Administration is the executing arm of the Maritime Administration. This body is required to be pro-active in its approach to its tasks, it should be able to anticipate problems and opportunities and take timely action accordingly.

5.3 MET Systems- a new approach

The Revised STCW has put a new dimension on maritime education world wide. Tanzania like most other countries, ratified and enacted laws to meet the requirements of the STCW 78 soon after it came into force.

In line with this legislation a training scheme on the lines of the front ended training is provided for in Part V, Regulation 29. However that training scheme is not used. DMI in fact uses the post experience system of training. A serious flaw of this system is that it is geared solely towards a certificate of competency award, which today is out of favour among sea going officers, who now are seeking alternative qualifications in order to be able to compete for a job ashore after leaving the sea.

The world trend today has been set by developments in the industry and the needs of the merchant seaman, combined by the requirements of the STCW 95.

Time has come for Tanzania to review its education system, over and above the minimum standards set by the STCW 95 if we are to be competitive, otherwise the certificates will be looked down upon. At this point Tanzania will have to make a choice of which system best suits its environment. This is how the two systems can be compared:-

post experience system:-

- Students are well prepared to cope with examinations as the course of training they undergo strengthens the knowledge they got during their sea service.
- Competency is assessed at all levels.
- Good class participation.
- More costly.

- No course attendance.
- Examination oriented.
- Difficult to get training berths at sea.
- Lack of monitoring of at sea programme.

front ended system:-

- Students join at a younger age which is ideal for instilling skills, knowledge, good work ethics and discipline.
- Very strong academic background affords better quality Cadets with very good education, useful at sea and ashore.
- Students have the option of deciding early on if they are going to sea or not.
- Little at sea experience makes it difficult to have student interaction in class.
- Students may lack motivation.
- Difficult in assessing competence at later levels.
- There may be lack of standardisation in approach to STCW.

5.4. Reorganisation of MET Systems

The front ended system, as practised in Japan (see appendix 2-6), is today probably the best suited for the Tanzanian situation at this point in time. This is because the system gives a student the opportunity to decide after completing his studies if he wishes to go to sea or not. It affords him sound education which can be used both at sea and ashore and allows the industry to employ those who are keen for a career at sea who will most probably serve for a long time considering that people do not want to work at sea for a long time these days. The systems university entry qualification and a course of study interspersed with training periods at sea, which ends up with an academic award and a certificate of competency, fits well with today's expectations of merchant seamen and the shipping industry at large.

DMI has an Able Seaman (AB) training programme, this requires a candidate to have a minimum of twelve months sea service. In the view of the author this is a difficult requirement for one to satisfy given the reluctance of shipowners to take in an untrained person. Apart from this programme DMI has no other ratings training programme. This calls for a review of the Institutes ratings training programme.

The dual purpose crew programmes in Germany, France (see appendix 7-8) and Japan are systems that DMI could learn from and apply in its training for ratings. The DPC programme affords a wider scope of activities for ratings and gives them a wider chance for employment. Tanzania's economic and academic realities should not be lost to DMI, therefore DMI must try as best as it can to adopt to the changing situation in the world, in academic, funding, commercial and research and development aspects. Experience acquired by the Australian Maritime College (AMC) could be very useful in this area. The AMC's corporate strategic plan has made it a vibrant college with:-

- An accredited education system.
- A wide range of both long term and short term courses.
- An economic wing (AMC Search Ltd) is necessary for the Institute to be able to pursue its programmes effectively, according to Hughes (1997),

Those (the Institutes) that have survived have done so by adapting to the harsh realities of the commercial environment.

- An in-house quality assurance system.

The general policy in curriculum development will have to be that :-

- Courses should have a pronounced practical orientation and should foster a hands on approach to work.
- Safety, English and environment protection should have a higher priority than they are now accorded.
- Management skills for an efficient industry.
- Discipline and leadership as an essential component in maritime training.
- Should the seaman have to be redeployed ashore how useful will the training be?

5.4.1 Accreditation of MET in the National Education System

Shipping is a complex type of business, and most people find it difficult to understand. In most countries around the world the shipping industry has to struggle with Governments to get whatever it wants. In developing countries where development priorities are far removed from shipping the problem is even more acute. Considering this fact a maritime college needs to be a stand alone education

establishment to be able to plan and execute its development plans effectively and win recognition from local and international bodies. Morrison (1995) re-iterates IMO's stand in the final conference when he says,

IMO has made it very clear that audits will have to be made of MET institutions around the world and those that don't meet its basic requirements will not appear in the IMO white list.

(In this case how would a maritime college fare if it were a department in, lets say a polytechnic?) Should a maritime institute fail to qualify meet the standards set out by the Convention automatically the member country that owns the institute will not appear in the IMO white list, that institute will have lost her credibility as a maritime institute, that country's seamen will be looked at with suspicion, that country's ships will find it difficult to trade and the justification of that particular maritime institute as a college for training mariners will have been damaged. Parallel to Tanzania's efforts to appear in the IMO white list, DMI also should strive to get recognition by the Tanzanian educational establishment.

In planning for accreditation DMI should achieve the following:-

- Work with the Government towards Tanzania's adoption of STCW 95 and ratification of SOLAS 74 and MARPOL 73/78 Conventions.
- Work with the Government to amend the Merchant Shipping Act and incorporate the three Conventions.
- Make every effort to implement the present DMI mission.
- Evaluate and upgrade organisation structure, functions and documentation.
- Clarify courses offered their aims and objectives.
- Confirm curriculum, syllabuses, and clarify skills, competence and knowledge.
- Outline policies on student admission and procedures on feedback from them.
- Clarify examination systems- written, orals, simulation, course work, or projects.
- Clarify assessment procedures, scoring, grading and procedures for appeals.
- Clarify staff recruitment policy, lecturers continuing education training, development, appraisal and promotion policy.
- Upgrade of college facilities.
- Set up a **functioning** internal audit system.
- Work with Government to have a **functioning** independent external audit system.

- Clarify lecturer scholarship, and research and development work policy.

5.4.2 Curriculum Development

In preparing a suitable curriculum, we have to consider that it is a dynamic document which should be reviewed after a decent period of use (preferably every 24 months). In considering the process of preparing the document one should consider the following:-

- Consider the needs of all those involved, shipowners, Government, students, and the society at large, and workout a suitable arrangement to meet their requirements.
- Prepare a structure that can be built upon.
- Consider what elements should be included in skills and competence, knowledge and a suitable way of delivery of those elements, such as simulation, laboratory practice, workshop exercises, etc., set out clear aims and objectives to achieve the required change.
- Consider progression to other stages of higher education.
- Consider system of feedback, review and corrective measures.
- Consider availability of teaching aids.

Other important issues to be considered would be,

who delivers the lectures and how the teaching is organised.

(Fisher 1997).

According to Fisher (1997), DMI in achieving this goal will be well advised to make a situational analysis i.e., identify all positive and negative aspects of the Institute from an internal and an external perspective.

DMI's present curriculum has been in place for more than 12 years, during all this time it has not been reviewed, with all the developments in the maritime industry it is now high time to review the curriculum. There are a number of compelling reasons:-

- Judge Kisanga's Commission on the M.V. Bukoba disaster raises serious questions on stability knowledge of the Officer in Command of the ill fated ship (a former DMI graduate, and we can not afford to take those comments lightly or in isolation).

It is common knowledge that Tanzanian school leavers' command of the English

language is to say the least poor, and that the English language is given low priority generally in schools.

- Declining teaching resources- periodicals, magazines, up to date videos, library, etc. Finally, The effectiveness of DMI's curriculum will suffer as long as English is not given the importance it deserves in all courses. This is because English as a medium of instruction takes an important position in the ability of the students to absorb lectures, should they be unable to do so, their general performance will most likely be below average. The following points should be considered when planning for curriculum development:-

- what is to be taught?
- what is the expected output at the end of the training?
- which part of the training is of foremost importance?
- will the training be useful also if the seaman be deployed ashore?
- how can the training be categorised?

5.4.3. Quality Assurance in Maritime Education and Training

The world trend today is to have a functioning quality assurance policy in any line of business, and this is valid for MET too. Maritime training institutions are now required to put in place a quality system in line with the STCW 95.

In Tanzania MET is not part of the national education system, and therefore it has not been subject to its QA system or any other system, (how ever the author wishes to note that the DMI Act Part II Section 4 (d) provides for the evaluation of the Institute's programmes, though no time is specified for the evaluation to be conducted). DMI's management has the task of instituting such a system. It has the option of deciding how best to approach the question, with the primary aim of meeting requirements as set out in the STCW 95, which will create confidence in maritime education offered at DMI and possibly lead to a place in IMO's white list. In setting up a quality system with reference to Deming's cycle (as shown below) of, plan, do, measure, correct and continued planing would be recommended.

Figure 2.



Plan:- set out the corporate plan,

Do:- implement the plan,

Measure:- carry out internal and independent external audits,

Correct:- review activities and take corrective action,

Plan:- continue the process.

(P.Muirhead, Lecture notes as cited from Deming 1997)

Elements of the plan will include:-

- The mission statement.
- Aims and objectives of the institute.
- Curriculum and syllabuses.
- Examination system and assessment procedures.
- Staff development and implementation policy.
- Staff scheme of service.
- Financial and administrative systems.
- Student admission policy.
- Internal review system.
- Independent external audit system.
- Research and development.

In many places of work staff scheme of service is neither understood by staff, and in most cases treated as confidential, neither are its provisions followed to the letter. This is the document which spells out staff job description, rights, privileges, promotion procedure, and employment procedures.

It is the opinion of the author that parallel to the scheme of service, DMI should have a written staff development policy, this is because scholarship among the lecturers is important in enhancing quality in an academic institution and promoting

the status of the institution. Working hours is another area which ought to be looked into. Without a proper policy the Lecturers will either be under utilised or overworked. From experience, scant attention is paid to the possibility of lecturer fatigue. Lecturers are known to have contact hours in excess of 18 hours, which if you consider preparation of a lecture, exercises, tests and examinations, delivery, marking, review, working/living environment, syllabus, staff size and teaching aids, then it is a heavy schedule.

Lecturer motivation, should not be looked from a monetary point of view alone. A Lecturer's continued education is very important, and so is recognition of his/her work. The concept of audits and corrective action is not so prevalent. In many cases people look at an audit as some kind of police action to find fault, and prosecute. Corrective action in most cases is looked on as change (and people dislike change) to long held beliefs, perceptions and time tested systems. This is a new culture which DMI has to nurture and make the staff get used to.

5.4.4. Internal Audits and Independent External Audits in MET

In an academic establishment it is important to give academic matters a high priority, and parallel to that an institution has to build up a capacity to meet its mission requirements and public expectations. To achieve these goals it requires an efficient organisation structure, the correct atmosphere and a reporting system. That organisation structure will provide for a system of evaluation of the activities at all levels and corrective action whenever necessary.

In DMI's case, its auditing activities so far have been in respect of finances and stores only. Other areas of activities have never been properly audited in the sense that we understand auditing to be. At this point, in a time when modern systems of running organisations have changed, DMI has no other way but to adapt, the aim being to understand, review and improve, and in the process win recognition and respect and other benefits for the Institute e.g.:-

- Management benefits from ideas, judgements and observed weaknesses.
- The Institute is better understood and appreciated.

Areas of activity in an audit are:-

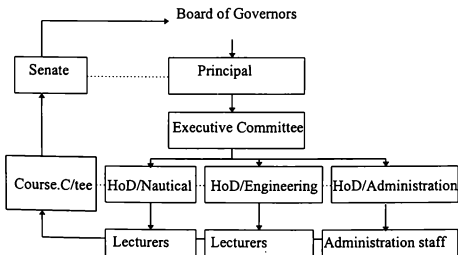
- Student registration and entry qualifications, discontinuance and appeals.

- Conduct of the course- lesson plans, scheme of work, coverage of tests examinations and department meetings.
- Student outcomes.
- Lecturer performance.
- Institute pursuance of mission's aims and objectives.
- Institute pursuance of various policies in strategic plan.
- Management systems, organisation and reporting systems.

The AMC organisation structure is a model from which DMI could organise itself. DMI will have to put in place an internal audit system at department level and at the Institute level, at the institute level there would be a course committee which will monitor the department's activities and at the Institute level there would be a body, say the senate to monitor the institutes activities. In the authors opinion, with some adjustments this structure should be useful to implement at DMI. The Senate will be a body composed of the Principal, Heads of Departments and Senior Lecturers. The Institute would be well advised to include some eminent educationists in the Senate which will have the job of auditing the Institute. The chairman of the Senate will be elected from among its members. Lecturers in a department would form the course committee, which could be chaired by any of the Lecturers. The diagram below is given as an example:-

Figure 3. Organisation Chart for DMI

(see appendix 9)



The Course committees and the Senate do the auditing at departmental and institute level respectively, and their reporting lines lead to the Board of Governors. This means that they are independent of the Institute's management, though their work is done with the full knowledge and participation of the management. In the case of independent external audits, at this point of development of the marine industry possibly, the involvement of an outside institution in the matter would be feasible to give the audit the required credibility.

5.4.5. Regional and Institutional Co-operation

For DMI at this stage of development, it would be difficult to put up an infrastructure like that of AMC, Ecole Centrale de Nantes or Flensburg Technical University. The best solution for countries in the same region like, Tanzania, Malawi, Kenya, Uganda, and Seychelles is to get together, pool their resources and establish a regional maritime college. On the other hand maritime colleges themselves have a responsibility to work hard to establish the validity of the work they do and hence justify their existence, as their counterparts have done in developed countries. The fact of the matter is that maritime colleges will be judged by what they can accomplish. Should they fail to do so it will be difficult to justify the money that governments have been putting into them.

Apart from regionalisation, colleges could opt for specialisation. Each college in the region after agreement with the others, could pick a field of specialisation and build its programmes around that field. This in the opinion of the author, can be well afforded and managed by these colleges.

Institutional co-operation is an area where colleges can complement each other .

Some areas of co-operation could be:-

- Lecturer exchange.
- Research and development.
- Consultancy.
- Student exchange.

- Library services.
- Curriculum/ course development.
- Examinations.
- Use of simulators, and laboratories.

5.4.6. The Examination Board

Part IV Rule 30(2) of the Merchant Shipping Act Training Regulations provides for the appointment by the Minister of the Board of Examiners. Like most other appointments by the Minister, these are not permanently employed as Examiners.

This arrangement stifles the effectiveness of the board, because the members have little time to concentrate on the board's work. Examiners once appointed are left to their own devices to carry out their work. Nothing is provided in terms of a higher educational qualification (considering most of them need further training) or continuing education to put them up to-date on MET developments.

A review of the constitution and operational structure of the Board of Examiners is therefore needed.

5.5. Role of the Shipping Industry

Maritime Colleges's primary role is to train people who wish to work in the industry. It is the primary responsibility of the shipping industry to appreciate the work and limitations of colleges and work out a policy of co-operation and assistance in the promotion and realisation of :-

- Safety on board ships.
- Protection of the marine environment.
- An effective and efficient shipping industry in peace time and emergencies.
- Awareness of a country's potential as a maritime nation.
- Shipping's potential impact on the economy.

5.6. Role of Maritime Education and Training Colleges

Maritime Colleges will be expected to :-

- Explain to the Governments the usefulness of the STCW 95 and the ISM Code.
- Discuss ways and means of their incorporation to the Merchant Shipping act.

Work in close co-operation with industry in the application of STCW 95 and ISM Code.

CHAPTER 6

6. Conclusions and Recommendations

6.1 Conclusions

The STCW 95 and the ISM Code will have far reaching impact on how the shipping industry is run. With the concept, “no favourable treatment for non parties”, being the general policy in ensuring the new standards are met, it becomes incumbent upon Tanzania and DMI to find ways to satisfy the requirements of the two Codes. Failure to do so will mean that Tanzania will be isolated. This will result in:-

- Tanzanian ships being prevented from trading overseas.
- Tanzanian certificates will not be recognised.
- Tanzanian seamen will not be accepted for employment overseas, meaning a loss of livelihood for them and their families.
- Tanzania will be entirely dependent on foreign shipping to move her goods even on the East African trading area.

This state of affairs cannot be appreciated unless one understands what the STCW 95 and the ISM Code require.

Tanzania is inactive in IMO affairs. This is a direct result of it having different development priorities, shipping being very low in Tanzania's economic priorities and general development strategies. There is an absence of a comprehensive maritime policy. The Merchant shipping act which is the legal regime regulating maritime affairs in the country is also ineffective because:-

- according to the Tanzania's Constitution Communication and Transport is not among the 21 matters to be administered by the Union government and for this reason the Act cannot be applied in Zanzibar,
- the Act cannot be applied in inland waters as there is another regime regulating that part of Tanzania's waters,

- there are many other provisions in the Act which need to be reviewed to make it work in the present situation.
- The word related in the DMI Act creates ambiguity in interpretation.

6.1.2. Maritime Education and Training

DMI's present curriculum has been in operation as early as 1985, it meets the old requirements of STCW 78. This as we have seen is unacceptable state of affairs, as any curriculum has to be dynamic to satisfy new developments. As such, DMI's curriculum and organisation/administration needs a complete reorganisation. The new curriculum will have to address the new concepts of transferable skills for the merchant seaman and win accreditation from various relevant bodies.

Maritime education is not complete without a combination of classroom lectures and training periods at sea. DMI has a duty to enlighten the Government and shipowners on the need to employ trained seamen and managers. To this end shipping companies should be required by law to provide training berths for DMI cadets in order to strengthen maritime education and make it comply with the revised Convention. DMI stands to benefit if it will develop relations with established colleges, as it will be able to learn from their experiences and so be able to develop new strategies.

In respect to Examination Board activities, this Board is mandated to conduct and supervise examinations at DMI only. This has to change if Tanzania is to have one standard for all mariners. It has been the practice for corporations to conduct internal examinations. This ought to be discouraged and all examinations for seamen should be set and conducted by the Examination Board, otherwise Tanzania will have different standards and it will be difficult to avoid accidents such as the one which occurred at the Single Buoy Mooring point (SBM) Mjimwema Oil Terminal just outside Dar-Es-Salaam harbour which resulted in loss of life and pollution of the marine environment on 25 December 1996 or observations such as the one made by the Commission investigating the capsizing of the M.V. Bukoba with respect stability knowledge.

6.1.3. Accreditation

Accreditation of any course programme is necessary. Unaccredited training serves no purpose if the graduate will not be accepted for employment, or if he/she will not be eligible for admission into colleges of higher education, and if at the end of the training the person will not be recognised by the society. DMI has to consult with various bodies to see how it can obtain that accreditation. Possibly DMI could explore the possibility to consult with Ministry of Higher Education, Ministry of Communication and Transport, National Examination Council, Vocational Education Training Authority, Faculty of Engineering of the University of Dar-Es-Salaam, Dar-Es-Salaam Technical College, Institution of Engineers of Tanzania and any other relevant bodies.

6.1.4 English (see appendix 10)

Tanzania has witnessed a general fall in standards of the English language, this can be easily seen in the classroom where the lecturer has to sometimes use Swahili to clarify a point. In many cases students have 0-level or A-level qualifications and in normal circumstances they should be able to understand and express themselves well in English, which in most cases, is not the case, English is often taken as a subsidiary subject. Concern for the fall in standards of the English language has been voiced by many and for a long time, the DMI Evaluation Report of 1990 by Jensen, Mokiwa, Massawe and Rwegayura makes the findings. The reasons for this state of affairs is out-side the scope of this dissertation. (However it should known that, the English language is the only language used world wide in the shipping industry and commerce). The STCW Convention stresses its use and requires seagoing personnel to be fluent in this language. Tanzania cannot afford to ignore this language.

6.1.5. Maritime Authority

Maritime Administration as known in established maritime nations is non-existent in Tanzania. In Tanzania, the Minister is the top executive in the administration of maritime affairs. The Merchant Shipping Act has delegated

owned companies. These Officers do not work full time on these responsibilities, which in the view of the Author limits their scope as they have to divide their time between their full-time employment and their extra duties on behalf of the Minister of Communication and Transport.

If we are going to make any progress at all, the way ahead for Tanzania is to have a Maritime Authority to carry-out those duties and responsibilities. It will need to have a clearly defined role, hierarchy and reporting system. It will need to have an effective and efficient system of correcting deficiencies through compliance, operational control and prevention of present or future violations through administrative, judicial and criminal proceedings.

A Maritime Authority to administer maritime affairs is now overdue. It will have to be a distinct and autonomous agency of the Government. It will need to be vested with detailed pan-territorial regulatory powers and in line with the country's philosophy of self reliance it would need have a commercially-driven component but remain essentially a professional organisation committed to excellence in all of its undertakings guided by a maritime policy and a revamped Merchant Shipping Act.

The main aim of the Authority would be to promote awareness to the Tanzanian society that the shipping industry is an alternate area of commercial activity that can have a positive impact on the economy.

Functions of the Authority would be:-

- Keep abreast with developments in the maritime field and the IMO and keep the Government advised.
- Improve facilities and lines of communication
- Break the monopoly of the conference lines by working towards a joint regional effort by East and Central African nations to pool their resources and build-up a joint shipping line, probably with Tanzania's SINOTASHIP as the nucleus.
- Promotion of Tanzania as a maritime destination and centre.
- Under the umbrella of the Maritime Authority the Maritime Safety Administration will undertake to promote safety on board ships, in ports, and the prevention and control of pollution in the marine environment.

- Develop DMI as a human resources , research and development centre.
- Oversee the efficiency of shipping.
- Control of registration of ships, examination and certification of seafarers and other administrative services as provided by the Merchant Shipping Act.
- Work out an arrangement with the Defence Forces and the Marine Police Unit and other related organisations to oversee good order in Tanzanian territorial waters. If Tanzania is to take a meaningful part in international trade, it stand to gain by adopting the STCW 95 and ISM Code , the ISM Code has the potential to dramatically reduce losses and frequency of accidents. It provides a means of learning from past mistakes and rectifying them by continuous feed-back and review of company operating systems. The STCW 95 will ensure Tanzania has able people to man the shipping industry and benefit from their competence. The practice in Tanzania has been to use Convention provisions in her municipal laws without regard to whether Tanzania is a signatory to those Conventions or not. This is contrary to procedures. In incorporating IMO Conventions into municipal laws, Tanzania should abide by internationally recognised procedures. The position of an Academic Registrar (or Chief Academic Officer) will be useful for DMI to consider co-opting in its organisation chart, this person will be the senior most Lecturer at the Institute, his duties among others should be:-
 - Admissions.
 - Staff development.
 - Sea service co-ordination.
 - Registration for examinations.
 - Preparing the school calendar.
 - Co-ordination with Board of Examiners.
 - Voting member of the Board of Governors.

He will take some of the duties now done by Heads of Departments, which will give them more time to concentrate on their departmental responsibilities.

6.2 Recommendations

As a result of the study it is recommended that the following actions be taken:

- Tanzania take an active part in IMO proceedings in order to keep abreast with trends in shipping and be in a position to take timely action on important matters to the country .
- Tanzania adopt STCW 95 as soon as possible and ratify the SOLAS 74 Convention and the Protocol of 78 in the light of the capsizing of the M.V. Bukoba.
- Tanzania should study closely the MARPOL 73/78 Convention with a view of ratifying it.
- The Examination Board should have a permanent Executive Secretary to carry out day to day work of the Board in the absence of a Maritime Administration.
- The Examination Board should have the mandate to set standards, conduct and oversee all marine related examinations including e.g. crew for all types of port vessels such as pilot-boats, shuttle-boats, tugs, etc. also all crew of any type of vessels in the lakes, and all types of yachts. The concept of internal examination systems for some corporations should be discouraged if we are to avoid having different standards and accidents such as the one which occurred at the Single Buoy Mooring point (SBM) Mjimwema Oil Terminal which resulted in loss of life and pollution of the marine environment on 25 December 1996 or observations made by the Commission investigating the capsizing of the M.V. Bukoba with respect to stability knowledge. The Board should satisfy itself that the course content and academic standards are up to STCW 95 requirements.
- A complete overhaul of DMI's curriculum is needed starting with the medium of instruction and English as a subject.
- The Merchant Shipping Act is out dated and has to be reviewed to keep up with present developments with respect to STCW 95, SOLAS 74 and the Protocol of 78, and MARPOL 73/78 Conventions. The review will include the Merchant Shipping Act (Certification of Marine Officers) Regulations 1981.
- A Maritime Authority backed by Law covering all the United Republic to administer maritime affairs is required.
- Parallel with the review of the Merchant Shipping Act and formation of the Maritime Administration , Tanzania needs to have a comprehensive maritime

policy which will cover all aspects of the shipping industry and provide guidance on how to proceed.

- DMI should go for university entry qualifications and offer an academic award at Higher National Diploma level together with a certificate of competency for Officers and give dual purpose crew training for Ratings. The Ratings programme should be reviewed to start taking direct school leavers.
- DMI should strive for accreditation for its programmes. DMI could start by linking itself to an established college and offer academic certificates under the umbrella of that College while working towards accreditation.
- DMI's corporate strategic plan should be reviewed so that it addresses the question of a quality standard system in the Institute's activities to be consistent with the requirements of the STCW 95.
- Government appoint an independent external audit body to audit DMI's systems.
- Tanzania should work towards adoption of the ISM Code.
- To enhance maritime training and safety on board ships the Government should require shipping companies to provide at least two training berths on each Tanzanian ship, and require them to employ trained and properly certificated seamen.
- DMI should work within the mandate of the DMI Act and develop a networking policy. DMI should develop external relations and wherever possible make maximum advantage of such relationships.
- English should be the medium of instruction and examination for all courses without exception.
- English should be taught at all levels and pass requirements for the subject should be as stringent as for safety subjects.
- DMI Act should be amended to extend the mandate of DMI's training activities, the word "related" in Part II Section 4 (a) and (b) of the DMI Act, should be deleted.
- DMI should consider introducing a position of Academic Registrar/Chief Academic Officer.

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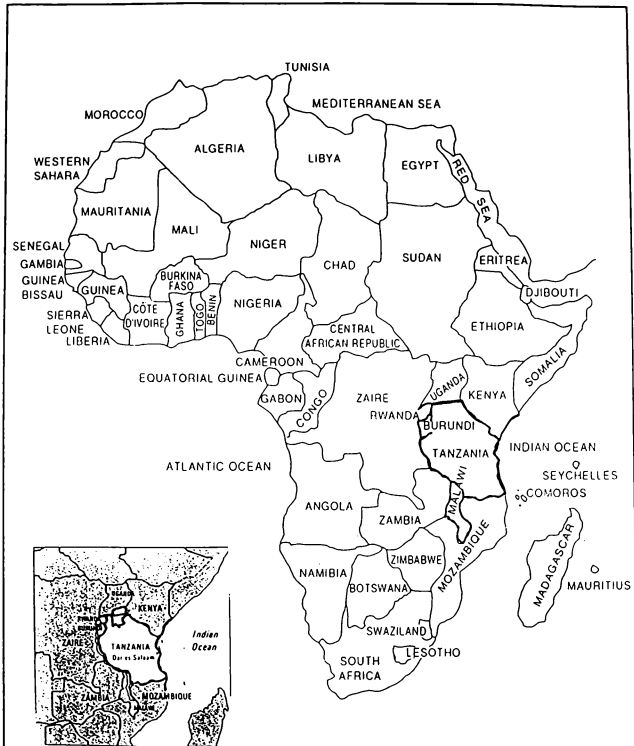
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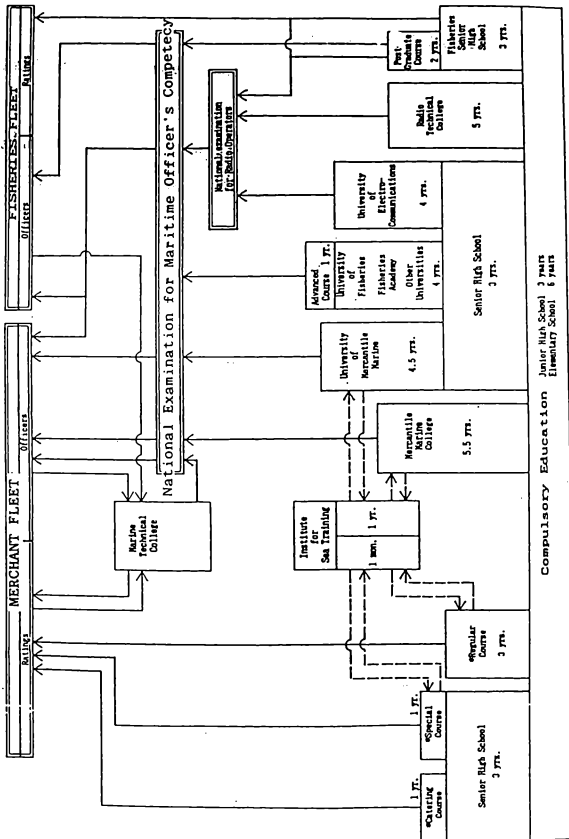
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MAP OF AFRICA

Schematic Diagram of Ways to Ship's Personnel



* School for Seaman's Training

Appendix 3

Marine Technical College

Section and Class	Applicant	Schooling/ Training period	Qualification on Graduation	Remarks (Number of Students) 10 per year for each course
Advanced Training Section	Holder of Competency for Higher than 3rd Grade Maritime Officer	2 yrs.	None	Navigation and Engineering Course 10 per year for each course
1st Grade Maritime Officer Class	Those to fulfill regulational requirement to apply for the intending competency on graduation	5 mos.	None	Ditto 10 for each course
2nd Grade M.Off. Class		6 mos.		Ditto
3rd Grade K.Off. Class I		10 mos.	Written examination exempted for 3rd Grade Competency	15 for each course Ditto 60 for each course
Special Training 3rd grade Section	Ditto and holder of Competency for 3rd Grade Maritime Officer for Watch	3.5 mos.	Ditto	Ditto 40 for each course
3rd Grade K.Off. Class III	Ditto and holder of Competency for 4th Grade Maritime Officer	4 mos.	Ditto	Ditto 40 for each course
4th Grade K.Off. Class	Ditto and holder of Competency for 5th Grade Maritime Officer	2 mos.	Written examination exempted for 4th Grade Competency	Ditto 40 for each course
Senior	Holder of Competency for higher than 3rd Grade Maritime Officer with 1 year or more experience as maritime officer	4 mos.	Written examination exempted for 3rd Grade Maritime Officer for Watch Competency	Ditto 120 for each course
Short Training Section	Those to fulfill regulation requirement to apply for 3rd Grade Maritime Officer for Watch	5 mos.	Written examination exempted for 3rd Grade K.O. for Watch Competency	Ditto 80 for each course
Junior D.P.C. Class	Have experience of maritime rating	3 mos.	Upgrading to D.P.C.	Deck and Engineering Course 60 for each course
Technical Skill Training Course	Ditto	1 mos.		Ditto 240 for each course
Correspondence Education Section	Maritime Officer or Rating	1 yr.-1.5 yrs.		5 course 900 per year

Appendix 4

School for Seamen's Training

Course	Application Requirements	Schooling/ Training Period	Qualification on Graduation	Remarks
Regular Course	Age : 15-19 Jr. high school grad	3 years	- Dual-Purpose Crew (D.P.C.) * - Exemption from written exam. for 4th Grade Mar. Off. (Nav.) and ditto (Eng.)	6 schools/220 PER Year! * With 2-yr. sea experience
Special Course	Age : 18-20 Sr. high school grad.	1 year	- D.P.C. - Exemption* from written exam. for 4th Grade Mar. Off. (Nav.) or ditto (Eng.)	2 schools/160
Catering Course	Age : 18-20 Sr. high school grad.	1 year	- Ship's Cook Certificate granted	1 school/60

Appendix 5

Training Periods on Board a Training Ship

Cadets or Trainees From:	Course	Time and Periods of Sea Training						Total Sea Training Period
		1st yr.	2nd yr.	3rd yr.	4th yr & Sea Training Course (*1)			
University of Mercantile Marine	Navigation	1 mo.	1 mo.	1 mo.	9 mos.			12 months
	Engineering	1 mo.	1 mo.	1 mo.	9 mos.			12 months
Mercantile Marine College	Navigation	1st yr.	2nd yr.	3rd yr.	4th yr.	5th & 6th yr.		12 months
	Engineering	12 mos.						12 months
School for Seamen's Training	Regular	1st yr.	2nd yr.	3rd yr.	1 mo.			1 month
	Special	1 mo.						1 month
		1 mo.						

(*1) Sea Training Course is designed for those who intend to apply for the Maritime Officer's Competency and its term is for six months.

Appendix 6

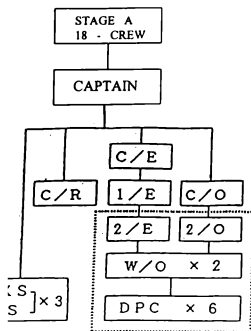


Fig. 1

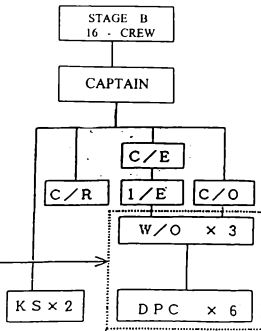


Fig. 2

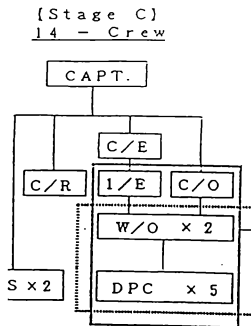


Fig. 3

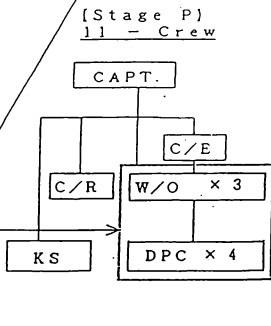
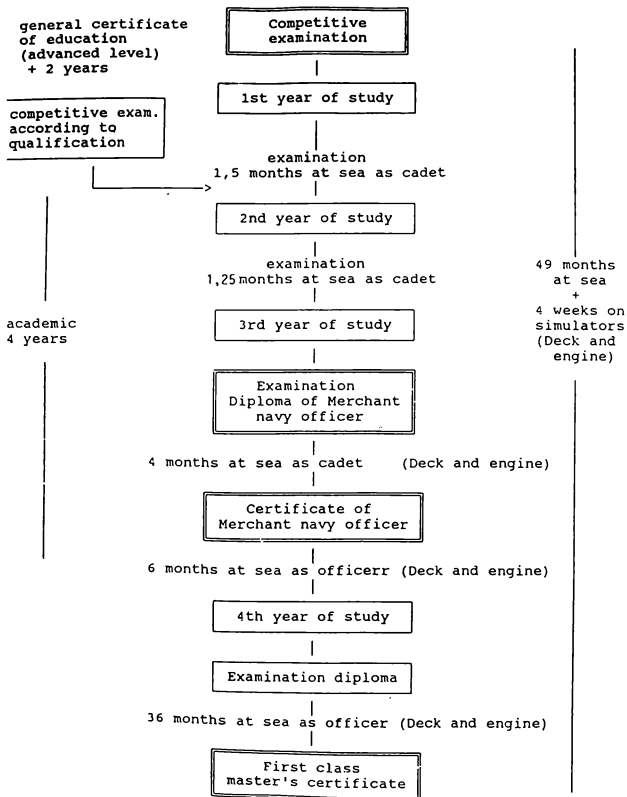


Fig. 4

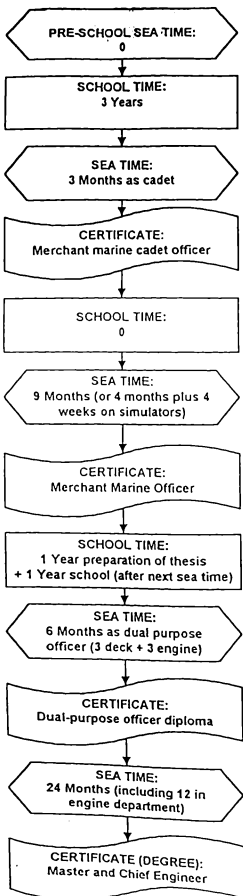
- W/O : It is called Watch Officer, that means navigation officer or engineering officer after acquisition of common skills as officer.
- DPC : It is called Dual Purpose Crew, that means a person with common skills besides expert skills as deck or engine crew.
- KS : It stands for steward who studied and trained general affairs management on board.

TRAINING COURSE OF FIRST CLASS MASTERS (POLYVALENT)

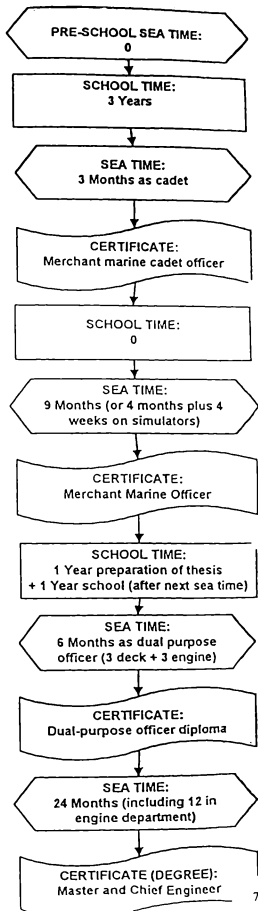
- general certificate of education (advanced level)
- under 23 years of age - Medical examination



DECK DEPARTMENT

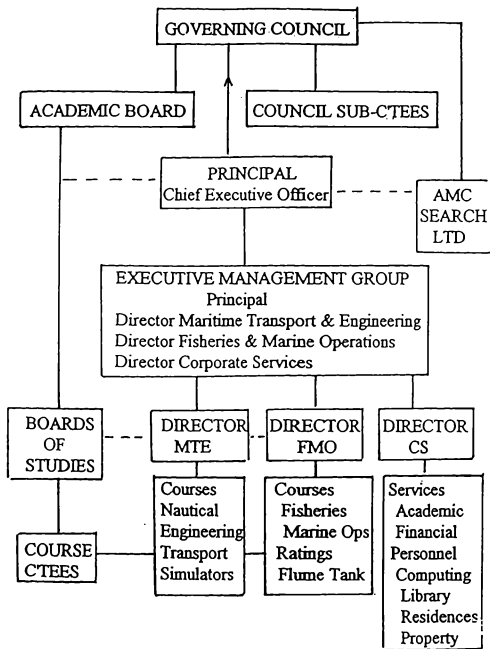


ENGINE DEPARTMENT



AUSTRALIAN MARITIME COLLEGE

MANAGEMENT STRUCTURE



12. Language

Should more teaching be done in Kiswahili?

Yes



No



If you have answered yes, indicate the extent of teaching in Kiswahili, subjects, etc.

- Teaching subjects in Kiswahili lowers the standard of the whole course. This is because most of the navigational terms have no direct translation to Kiswahili.
- No, in fact I prefer not teaching marine courses in Swahili. This is because after completing the course students are not going to work in Swahili. Also I think teachers are getting problems by teaching in Swahili.
- Kiswahili language should be strictly for class V and EDH only.
- Most books are written in English. The subjects taught are too technical for direct translation into Kiswahili. Most working terms used onboard ships are English. English is an international language, so people trained here are meant for international levels also.
- Yes, the teaching in Kiswahili should be to students in class V and EDH to enable them perform their duties properly onboard.
- Yes, shipknowledge, chartwork.
- I think future courses should not be done in Kiswahili because the language does not have enough translation of Navigation terms and it has been a burden for teachers and students.
- Teaching Kiswahili in this field is not good because English is an international language.