The critical role of government and key industry players for sustainable development of maritime education and training institutions: the case of institutional development in Kenya

Talib Ibrahim Mohammed
The Technical University of Mombasa
The critical role of government and key industry players for sustainable development of maritime education and training institutions: The case of institutional development in Kenya

Talib Ibrahim Mohammed
The Technical University of Mombasa, Mombasa, Kenya, talyib@yahoo.com, tmohammed@tum.ac.ke

Abstract: Maritime Education and Training (MET) in Kenya has developed over the years at the university in addition to Technical and Vocational Education and Training (TVET) levels. However, despite the apparent growth, funding of MET is still a challenge. This is clear through lack of defined stakeholder engagement of key industry players and the government to guarantee sustainable training needs collaboration between the industry and the institutions is still a challenge. The paper investigates the challenges of funding for MET through a descriptive and analytical approach to address sustainability of MET in Kenya. Data was collected through the statistics for disbursements of Higher Education Loans Board (HELB) and institutional funding for public instructions of post-secondary training. A meta-analysis of fees paid by MET students to selected Maritime Training Institutions (MTIs) and Universities was used to determine the median for comparative analysis. The study revealed comparative challenges in funding of MET in Kenya in addition to lack of enabling policies to ensure funding. Study also revealed a lack of structures that define government and industry stakeholder roles in MET. In conclusion the paper recommends a scenario based approach to determining funding and development of enabling policies in MET in harmonising training.

Keywords: Maritime, Education, Training, Sustainability, STCW.

Introduction

Through a concerted effort to its best of intentions, the Kenya Maritime Authority (KMA) presented to the IMO the draft Kenyan syllabus on Maritime Education and Training (MET), which was accepted and led to the country's inclusion in the white list. As a result, a number of institutions launched maritime training programmes especially in the field of maritime engineering, with the most prominent being the Jomo Kenyatta University of Agriculture and Technology (JKUAT), the Bandari Maritime Academy and the Technical University of Mombasa (TUM) which are publicly funded. Maritime education and training in Kenya has been largely incorporated in the existing departments and faculties. This can largely be attributed to insufficient teaching staff and resources for establishing new departments and faculties. It has largely been placed rather conveniently and conspicuously under the Faculties/ Schools of Engineering with the exception of Bandari Maritime Academy. The Bandari Maritime Academy\(^1\) was established in 1980 as a training and staff development institution for

---

\(^1\) Under the old name as The Bandari College, it was previously owned by the Kenya Ports Authority. The college has been upgraded to a Maritime Academy pursuant to the Executive Order under LEGAL Notice No. 233 dated 28th November,
the Kenya Ports Authority as Bandari College; however, with time it transitioned into a MET institute catering for the training needs of the Maritime industry.

Funding of MET in Kenya is a critical element of the success and competitiveness of the sector. The research is aimed at establishing the challenges posed by the inadequate funding and the funding structure implemented through existing educational policies.

**Funding in Maritime Training and Higher Learning Institutions**

Funding of postsecondary education is a major challenge to not only developing countries but also developed countries (Ayonmike, Okwelle & Okeke, 2015; Okoye, 2013). One of the advantages cited by stakeholders in education is the orientation of the trainees to the work environment hence the necessity to adopt training curriculum emphasising on acquisition of employable skills (African Union, 2007; Terblanche, 2017). This paradigm in TVET training includes MET which expressly addresses seafarer training and certification of competences. It therefore highlights the maritime industry players as key stakeholders in MET (Lamb, 2011; Okoye, 2013; Preddey, 2009). In addition to the maritime industry, the government and its agencies regulating MET form the core of the stakeholder caucus in MET (Preddey, 2009; Shirley, 2015; Zirkle & Martin, 2012).

The development of MET and the use of technology in MET has influenced funding of training resources. It should be realised that the cost associated in Maritime Education and Training (MET) is not only the direct costs but rather it also incorporates the indirect resources associated with the training. MET is by design an apprentice-based programme. This has faced more complexities due to differences in learning environments, resources available and the business models of the industry stakeholders. This is further complicated by the interest of employers, which at most times is maximizing their revenue through reduction of costs, hence lesser berths for cadets. Industrial placement (internship) has been globally acknowledged and acclaimed as an extremely valuable component of education and training. In MET particularly as the training is highly technical and professional, the government has the obligation to approach principal stakeholders in the Maritime Industry to fund cadetship of seafarers indirectly through berths for cadetship in ships; in lieu of incentives. This follows a matrix of supplementing government funding in the long through funding diversification (seeking alternative sources), which can be represented by Fund Augmentation, Cost Sharing and infrastructural support for Income Generation.

The nature of maritime training is expensive and therefore requires many resources in monetary allocation. This has been so far realised by a number of concerned maritime entities that have established maritime related funds. It is proven that to build the knowledge and skills base in maritime training, the states need to provide adequate resources to the institutions to provide quality vocational training for seafarers. Singapore for example has established the Maritime Innovation & Technology (MINT) Fund and the Maritime Cluster Fund (MCF). This has realised an injection of $S150 million to support development programmes for the maritime technology cluster. However, this does not stop at that level but rather the disbursements and sponsorship to develop maritime expertise through funding of maritime-based training for employees of Singaporean nationality or others with permanent residency status. It is therefore incumbent upon the government of Kenya to follow suit and institute the measures needed to revive seafarer training and in general MET in Kenya.

2018 in the Kenya Gazette Supplement No. 149. The board has already been established and consultations are underway in restructuring the institution to an autonomous institutions running independent of the Kenya Ports Authority
Methodology

Sustainable development is defined by (Baylon, Panaitescu, & Panaitescu, 2020) as “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. The paper focuses on analysis of sustainability in MET in Kenya through a meta-analysis of literature and studies focused on sustainability in MET and Higher education. This is augmented with analysing elements best practices and global median average for fees charged by MET institutions within the same economies as Kenya. Systematic review of the level of government funding during the academic period 2013/2014 and 2014/2015 is applied. Government funding for institutions of higher education has not changed through its capitation system over the last two decades, hence the sampling of the two academic years.

The result of the analysis from the gathered data is presented in this summary. The analysis was based on the following research objectives: (1) analyse training costs of selected countries per student based on average fees chargeable to students; (2) assess the deficit of training in comparison to the chargeable fees in Kenya; (3) identify policy gaps in funding of Maritime Higher Education Institutions (MHEIs) and Maritime Education and Training Institutions (METIs); (4) assess the level of integration of industry stakeholders in MET; (5) propose a framework for stakeholder engagement in funding MHEIs and METIs for sustainability.

Results and Discussion

National Government Spending

As much as the maritime sector development cannot be ignored, in the context of a national strategy, so far it is not clear whether the government has already put in place the necessary structures for the development of MET institutes in Kenya. MET institutes are broadly but not definitively categorized under Technical and Vocational Training (TVET). Therefore, it should be realized that the cost associated is not only the direct costs but rather it also incorporates the indirect resources associated with the training (Tsang, 1997). Grants and student loans from the government do not quite meet the desired amount for MET training per year. The Table 1 below shows the disbursement for the period 2010-2013.

Table 1: Amounts per Beneficiary disbursed by the Higher Education Loans Board

<table>
<thead>
<tr>
<th>Year</th>
<th>Beneficiary Loan</th>
<th>Scholarships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Undergraduate Loan</td>
<td>Total KES (M)</td>
</tr>
<tr>
<td>2010/11</td>
<td>77,141</td>
<td>3,434.0</td>
</tr>
<tr>
<td>2011/13</td>
<td>363,241.00</td>
<td>15,746</td>
</tr>
</tbody>
</table>

Note: Adapted from The Higher Education Loans Board (Kenya) - Education Sector Report FY 2013/2014

The amounts disbursed per beneficiary on loans prove the inadequacy of alternative funding through tuition fees hence reliance on the government and stakeholders for sustainability. This leaves the burden on the government to fund the deficit through infrastructural and capacity
building in providing the necessary technological tools and equipment. Thus, alternative funding in the form of increased fees becomes a necessity. This is clearer with comparison to global median training cost per student. Table 2 shows the deficit in funding annually while Table 3 shows the deficit in funding per student for 3-4 year study. The global cost estimation for Tables 2 and 3 has been done through assumption of a median cost of training using fees structure for international students in maritime institutions including the Arab Academy for Science, technology and Maritime Transport, the UK and EU countries.

Table 2: Cost inadequacy in Training USD (Cost deficit per student)

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Average Annual Fees</th>
<th>2014</th>
<th>2015</th>
<th>Global</th>
<th>Deficit</th>
<th>Global</th>
<th>Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nautical studies</td>
<td>12,000.00</td>
<td>(9,000.00)</td>
<td>13,500.00</td>
<td>(10,500.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine engineering</td>
<td>12,000.00</td>
<td>(9,000.00)</td>
<td>13,500.00</td>
<td>(10,500.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Cost inadequacy in Training USD (Cost deficit per student)

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Average Cost of Training on Cadet + (3-4 yr) Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Nautical studies</td>
<td>36,000.00</td>
</tr>
<tr>
<td>Marine engineering</td>
<td>36,000.00</td>
</tr>
</tbody>
</table>

Challenges

Maritime Education and Training is an expensive undertaking and it has much been proven in research for the EU with (Gekara, 2009) highlighting ship-owners co-financing cadet training. Current tuition fees paid by MET students clearly show the deficit in terms of funding for the programmes. This deficit translates into lack of financial resources to equip the university with desired resources and equipment to produce very competitive graduates in the industry. Therefore, the university is forced to align its priorities within the minimum required standards of certification and as such, qualifications and training beyond the minimum standards becomes a mirage. This limits the competitiveness of both the university and the graduates in the ever-dynamic maritime and offshore industry.

Table 4: Current tuition fees paid by students in both Nautical Science and Marine Engineering

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>Average Fees Paid Per Trimester</th>
<th>Average Fees Per Annum (2 Semesters)</th>
<th>Diploma (3 Yrs) USD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014 (forex 95)</td>
<td>2015 (forex 98)</td>
<td>2014 (forex 95)</td>
</tr>
<tr>
<td>KES</td>
<td>USD</td>
<td>KES</td>
<td>USD</td>
</tr>
<tr>
<td>Nautical Studies</td>
<td>32,000</td>
<td>336.84</td>
<td>38,000</td>
</tr>
</tbody>
</table>
This is a huge deficit in the MET budget at international standards where it stands at 94.3%, which is untenable for sustainable growth in the MET sector.

Table 5:
Deficit cost of training per student in comparison with median global fees per year.

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Average Annual Fees (USD)</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Global</td>
<td></td>
</tr>
<tr>
<td>Nautical studies</td>
<td>12,000.00</td>
<td>(11,326.32)</td>
<td></td>
</tr>
<tr>
<td>Marine engineering</td>
<td>12,000.00</td>
<td>(11,326.32)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6:
Deficit cost of training per student in comparison with median global fees per year.

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Average Cost of Training on Cadet + (3-4 yr) Study</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Global</td>
<td></td>
</tr>
<tr>
<td>Nautical studies</td>
<td>36,000.00</td>
<td>(33,720.00)</td>
<td></td>
</tr>
<tr>
<td>Marine engineering</td>
<td>36,000.00</td>
<td>(33,720.00)</td>
<td></td>
</tr>
</tbody>
</table>

The analysis of the trends in funding from tuition fees from the students gives a rather alarming signal for the sustainability of the MET to meet international standards and enhance competitiveness for graduates. Figure 1 shows the analysis of global trends in cost of training and deficit realised in comparison to the cost per student in Marine Engineering and Nautical Science.

Figure 1: Financing Deficit in comparison to global financing trends of MET
With continual admissions of MET students, the burden of funding and financing increases with a downward trend on the deficit. This as such calls for urgent measures to curb the downward trend. The Figure 3 below shows the comparison of the deficit realised through the current financing model through fees charged against global average cost of study.

Figure 3: Comparison of Admission Trends vis-a-vis Financing Deficit

Stakeholder Functioning and Stimulus

This has been quite a challenge due to no-specific guidelines for maritime training, industrial placements and attachments guidelines. The burden of such has been left in individual guidance from tutors and lecturers who are overwhelmed. It is understandably clear that most maritime industry players are profit making ventures that are quite intent on profit taking, thereby with the lack of training infrastructure in most met institutions, a lot is left to be desired. Stakeholders ought to be aware that the relevance of Education and training to sustainable development cannot be underscored thereby it is only prudent that in the initial stages of Maritime Education and Training (MET) it such needs are made available both widely and methodically. The integration of maritime education and training in matters relating to the maritime and shipping industry would be encouraged and enhance with a view to reflect the proper attitudes hence the right people being trained for the absorption in the industry. This, with special regards to the fact that it is the basis of development of professional values and practices (McConnell, 2002). It should be therefore of concern on the degree of professionalism and proper training of the maritime labour force to the industry stakeholder.

Sustainability in MET

Sustainability is a key issue in running and operations of a maritime training institute. The maritime industry has seen tremendous global growth being global industry and as such encompasses and absorbs the emergent boundary-spanning roles within its academic, educational, entrepreneurial and industrial spheres (Youtiea & Shapira, 2008). It is therefore prudent that sustainability is a core factor in MET. As maritime education and training is clustered under Technical and Vocational Education and Training (TVET), it is therefore prudent that MET - TVET institutions are adequately facilitated to develop sustainable partnerships in the maritime domain through a multi-prong approach that enhances sustainability. To meet such obligations, first it is important that the government and stakeholders realize the global nature of the industry which has a labour market that is increasingly defined as non-national and neither nation specific (Alderton, et al., 2004). An example is the shift in recruitment process and methodology worldwide, where the pattern has
shifted to predominant employment of affordable labour from labour supply countries e.g., the Philippines, Singapore, India and Malaysia² (Lillie, 2006; Selkou & M, 2004; Alderton & Winchester, 2002). This has greatly affected traditional maritime nations and as such opening frontiers and opportunities for other nations although they do not have shipping fleets. Thus to benefit from the prevailing conditions, Kenya must invest in quality MET which requires capital investment in infrastructure and running costs.

With the new regulations and standards in training, it requires that certain standards are met hence installation of specialised equipment and simulators. Students are mainly admitted through the central placement of universities with admission to technical institutes and universities through direct admission through localised applications. MET institutions therefore are obliged in the use of new technology for mutual benefit. This however should be realised through rational planning and sustainable staged growth (Muirhead, 2004). This technology revolves around the use of computer-assisted learning (CAL) and computer based training (CBT), which has placed pressure on the MET institutions because of the student’s expectation that such technology is provided within their learning and training environment. This has become the challenge in the Kenyan context as technology is expensive, and as a result development of the necessary and competent workforce is a critical factor in the support for development and maintenance has now become more of a critical factor. This has left the institutions exposed to imminent collapse, as other sources of funding are not yet accessible to facilitate grants and donor aids. These grants for research and donor aids have a basic criterion of realistic approach to the output of such grants and most MET institutions in Kenya lack the necessary work force, resources and personnel in the fields of proficiency and expertise. It is therefore incumbent on the government in its essence to create funding structures either by inclusion on the existing budgets, drawing and implementing new policies for development within the maritime cluster. The interlinkages within the cluster has also proven to be weak, notwithstanding the ‘disconnect’ between research, education and training in the maritime sector and the maritime industry components especially core stakeholders and the supporting and ancillary industries to maritime operations.

Sustainability has been approached through different perspectives hence defined with respect to the essence of use in certain disciplines, projected results and operational environment. These perspectives are dependent on views and interests (Clugston & Calder, 1999). Other definitions have approached through the paradigms of regenerative growth, dynamic equilibrium, efficiency and regenerative growth (Sonetti, Brown, & Naboni, 2019). This therefore presents a matrix of definitions which in some instances are convergent and at others divergent. Corporations define sustainability around ‘corporate behaviour’ (Baumgartner & Winter, 2014). The Brundtland Commission (1987) defined it around the existence of mankind on the planet. This provided a directional approach towards intergenerational equity. In Education, to address intergenerational equity, we need to interrogate the responsibility of education. This manifests through the cycle of generating continuous challenges that includes critique of existing knowledge and generation of new knowledge. (Wals & Jickling, 2002). This is realised through the learning process which forms a critical component of the paper’s definition for sustainability in MET. The learning process thus requires resources; financial, material and human resources (in terms of human capacity) to realise a continuous process for an MET organisation to learn and unlearn. To achieve sustainability in MET, we need to address achievement of competences and proficiency, resources to make the learning process

² This is mainly as a result general deregulation in the maritime and shipping industry as expedited by the establishment of international open registers for ships which has seen shipping companies maintaining competiveness due to low operating costs.
achievable, accountability and verification of processes and the framework for organisation learning. Therefore, the paper defines sustainability in MET as the ability of an METI or MHEI to deploy the required resources that ensures quality education and training for achievement of competences through enhanced learning processes guided by a quality standard system within a sound institutional framework.

**Funding of Technology: Theoretical, Practical and Simulator Training to Enhance Competitiveness**

The nature of maritime training is expensive and therefore requires many resources in monetary allocation. This has been so far realised by a number of concerned maritime entities that have established maritime related funds. It is proven that to build the knowledge and skills base in maritime training, the states need to provide adequate resources to the institutions to provide quality vocational training for seafarers (Muirhead, 2004). Singapore has established the Maritime Innovation & Technology (MINT) Fund (The Maritime and Port Authority of Singapore (MPA), 2015a) and the Maritime Cluster Fund (MCF) (Maritime and (MPA, 2015b). This has realised an injection of S$150 million to support development programmes for the maritime technology cluster. However, this does not stop at that level but rather the disbursements and sponsor to develop maritime expertise through funding of maritime-based training for employees of Singaporean nationality or others with permanent residency status (MPA, 2015c).

It is therefore incumbent upon the government of Kenya to follow suit and institute the measures needed to revive seafarer training and in general MET in Kenya. The Technical University of Mombasa in its inception as Mombasa Institute of Muslim Education (MIOME) was the only seafarer-training institute in East and Central Africa. With time due to lack of funding for the MET sector and change of policy, the programmes collapsed. Through adequate funding MET has taken a pivotal point as flagship programme hence the acquisition of the Marine Engine Room Simulator. It is critical for the government to offer incentives to the industry as maritime service companies, whether small enterprises or big corporate will always stay aloof of basic training mainly in terms of maximising revenue hence profits, therefore they covertly rely on governments to provide the much needed vocational training especially for seafarers both officers and rating (Sampson, 2004).

The maritime industry has moved towards more specific personnel especially on-board with relevant and additional qualifications due to the technological demand for safer ships to both the ocean environment and manning requirements. Without proper investment for technological funding, the risk is training an unemployable workforce. This requirement for technical and specialised qualification in technology comes from special courses therefore more requirements at most time beyond the capacity for most developing nations, Kenya included. It is therefore beyond doubt that for competitiveness Kenya must invest in technology through proper funding of technology in MET.

**Conclusions and Recommendations**

**Proposed MET Funding Structure**

The government should adequately finance MET being primarily vocational. Relevant policies have to be implemented and reviewed over time with demand and necessity. The current model for MET-TVET funding in Kenya has been largely an all-funding structure for all TVET
institutions and capitation for Universities. The conspicuous flow is lack of identification for thematic areas for enhanced training and funding through relevant technology tools of education and training. To beat the odds Kenya needs to look into key areas beyond traditional TVET Training as apprentice-based programmes have become more complex due to differences in learning environments. This is primarily complicated by the interest of employers, which at most times is maximizing their revenue through reduction of costs.

Industrial placement (internship) has globally been acknowledged and acclaimed as an extremely valuable component of education and training. In MET particularly as their training is highly technical and professional, the government has the obligation to approach principal stakeholders in the Maritime Industry to fund cadetship of seafarers indirectly through berths for cadetship in ships in lieu of incentives. This follows a matrix of supplementing government funding in the long through funding diversification (seeking alternative sources), which can be represented by Fund Augmentation, Cost Sharing and infrastructural support for Income Generation (Ziderman, 2001).

Table 7: Proposed funding Matrix and Structure for MET

<table>
<thead>
<tr>
<th>Level of training</th>
<th>Role of government</th>
<th>Stakeholders</th>
<th>Level of funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic MET and Cadetships</td>
<td>● Increased quota for institutional and capacity building for the institution. ● Increased size of the funding pool available for distribution to training institutions.</td>
<td>Enterprise training with: ● Training grants. ● Apprentice Wages. ● On-demand training funding for employees.</td>
<td>● Increased Higher Education Loans Board (HELB) grants to MET Students ● Project Grants ● Research Grants ● Grants of bonded and disposable equipment and training assets</td>
</tr>
<tr>
<td>Mid-Level MET Maritime Industry Research and Graduate Research Programmes</td>
<td>● Incentives on enterprise training for stakeholders. ● Facilitation of Instructors and Trainers in MET</td>
<td>● Funding of Research Programmes undertaken by Institutions.</td>
<td>Through individual and other sponsorship channels</td>
</tr>
</tbody>
</table>

The financing and stakeholder functions in the funding can be articulated by the following graphic representation.
Figure 3: Model-funding structure for resource and institutional capacity building in Kenya for ME
Recommendations

From the analysis, it is evident that the level of funding available for MET is very low. This directly affects the quality of training. Therefore, drastic and strategic measures that are a necessity in order to arrest the situation and thereby give the domain a lifeline.

i. The establishment of a forum that shall provide for standardisation of training in MET and advising the government and consulting with stakeholders in areas of TVET-MET is critical. An example is the Merchant Navy Training Board of the UK (MNTB) which developed a set of occupation standards for seafarers.

ii. Establish practicable and executable Government-to-Government MOUs and Quasi Consular agreements in terms of MET and maritime industry facilitation. In addition to that, establishment of clear guidelines to Kenya’s diplomatic representation in different countries on maritime related issues.

iii. Tripartite agreements between maritime administration and industry players/stakeholders with the inclusion of training institutions; to enhance and develop quality standards and as such the finality being proficient and competent seafarers.

iv. Rationalising government subsidies and grants, and creating special grants and funds for maritime education and training campaigns.

References


