

Challenges in International Convention on the Standards of Training, Certification and Watchkeeping Compliance: A case study of the South African Maritime Education and Training System

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ABSTRACT

Maritime education and training (MET) has been instrumental in the development of seafarers in South Africa and internationally. As a result, different MET systems are used to not only produce eligible maritime professionals but to ensure that they comply with the requirements of the International Convention on the Standards of Training, Certification and Watchkeeping (STCW) 1978, as amended in Manila. Some of the challenges in MET prove not to be exclusive but common to some maritime countries. As such, this study aims to explore South Africa's unique approach to MET rather than the conventional approach of having higher education institutions dedicated specifically to maritime education and maritime training. This has created the need to analyse how the current MET system delivers training in compliance with the minimum standards of the convention. This paper therefore analyses how the STCW Convention and Code is embedded in the MET system in South Africa, and identifies the existing challenges in meeting the requirements of the convention, as well as identifying opportunities for improvement. The identification of challenges and opportunities is investigated by means of desktop research, reviewing existing literature, a document analyses on the academic and technical (vocational) framework, and a review of existing practice and benchmarking this against international practice standards (STCW). This paper proposes a framework that could contribute to the improvement of the current MET system in line with the requirements of the STCW 1978 as amended.¹

Keywords: STCW compliance, Maritime Education and Training (MET), STCW Convention and Code

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¹ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (STCW) 1978 (2017). International Maritime Organization, London, UK.

I INTRODUCTION AND BACKGROUND

The STCW Convention and Code

The international nature of the shipping industry is inarguable. This propelled the need for the industry to be regulated both at national and international level (Alderton & Winchester, 2002).² Like every industry, a skilled workforce, seafarers in this instance, form an integral part in the functionality of the industry and, as such, the human element has proved to be a subject of paramount importance for effective and efficient operations. Mohammed³ emphasised the notion that it is crucial to have a shared definition of the competencies needed to manage the vessels when there is a global crew, in addition to the different social, cultural, and religious diversities. Therefore, an international instrument proving to be quite pertinent towards defining training and certification standards that synchronise the competences of both seafarers and instructors is crucial. MET on an international scale, specifically for seafarer training, is regulated by the International Maritime Organization's (IMO) STCW 1978 as amended. According to Mohammed:⁴

This identifies the STCW Convention and its associated Code as a unique supranational legal document and regulatory framework that defines and frames the competency of seafarers at a global platform by setting the minimum standards.

As such, member states have the responsibility of implementing and enforcing STCW 1978 as amended. In South Africa, the South African Maritime Safety

Authority (SAMSA) is the mandated maritime administration, while the South African International Maritime Institute (SAIMI) is tasked with the 'advocacy and the promotion of South Africa's maritime sector, the coordination of education, skills, training, research and development, as well as to serve as the knowledge hub on maritime matters'.⁵

MET in South Africa

To better understand the dynamics of the South African context, it is important to first provide a background of the nature of MET in the country. Maritime education begins at a basic education level, with some secondary schools offering maritime studies or maritime economics. The learners who are able to branch into other technical marine and maritime-related careers after secondary school are those who took physical sciences and mathematics subjects while at school. For the theoretical maritime subjects, higher education institutions (HEIs) have different requirements from undergraduate to postgraduate level.

SAMSA is responsible for implementing and regulating the STCW Convention and Code. Bonnin and Woods (2002)⁶ highlighted the fact that, although SAMSA is the recognised maritime administrator for the country, the Transport Education Training Authority (TETA) is recognised as the sector education and training authority (SETA). This stems from the legislative mandates of TETA provided by South African Skills Development Act 1998 (SDA) as amended, South African Qualifications Authority Act 58 of 1995 and the National Qualifications Framework (NQF) Act 67

² Cited in TI Mohammed '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' in A Pazaver, ME Manuel, J Bolmsten, M Kitada and I Bartuseviciene (eds) *Proceedings of the International Maritime Lecturers' Association. Seas of transition: setting a course for the future* (Malmö: World Maritime University 2021) 90–102 DOI: 10.21677/imla2021.09.

³ TI Mohammed 'All Hands on Deck: Addressing Key Challenges in Kenya's MET System in Compliance with The STCW Convention and Code for Sustainable Blue Economy Growth' *Proceedings of the 1st TUM Multidisciplinary Conference and Innovation Week* Mombasa, Mombasa April 2019 3–5.

⁴ Ibid at 2.

⁵ South African International Maritime Institute (SAIMI) 'Background' *SAMI* (2019) (available from: <<https://saimi.co.za/article/background/>>).

⁶ Cited in PM Kuhlase 'The importance of maritime education and training within the secondary education system in South Africa' (Master's dissertation, World Maritime University, Malmö 2020) (available from: <https://commons.wmu.se/cgi/viewcontent.cgi?article=2449&context=all_dissertation>).

of 2008.⁷ The SDA paved the way for the establishment of 21 SETAs across the different sectors of the economy. As such, TETA was established so that the skills development issues of companies within the transport sector could be addressed, which led to the entity providing accreditation for some courses.⁸ As such, TETA's responsibilities in the transport sector include rail, aircrafts, road passenger, maritime and aerospace, among others. Accordingly, the two certifying bodies, SAMSA and TETA, developed a memorandum of understanding (MoU) to collaborate in the certification of seafarer training in the country by way of a joint certification and approval processes.⁹ The purpose of the SAMSA/TETA MoU was to promote a coherent and effective quality assurance system for education and training in the maritime industry, and to clarify the manner in which SAMSA and the TETA Education and Training Quality Assurance (ETQA) unit would cooperate with each other, coordinate their functions and promote consistency in their respective quality assurance policies and procedures. Hence Bonnin et al.¹⁰ described the South African MET system as one that is rather complex.

The training and development of seafarers in South Africa must comply with the STCW standards and fit within the NQF. However, maritime education is not limited to that of seafarer vocational education but different maritime HEIs offer maritime-related courses that are based more on the academic system. According to Manuel (2017),¹¹ 'training is more focused

on using practical skills, whereas academic education deals more with developing the in-depth analytical and critical thinking skills of students'. This paper uses seafarers' practical training as the contextual basis. 'The current curriculum and learning programmes are also translated into the South African Qualifications Authority (SAQA) format and registered on the NQF.'¹²

The MET approach adopted in South Africa (in contrast to some of its African counterparts, such as Ghana, Egypt and Nigeria, among others) does not include an independent maritime university. Instead, the country has technical schools and HEIs that offer maritime-related courses.¹³ Training institutions, such as the South African Maritime Training Academy (SAMTRA), offer maritime programmes up to the diploma level. The qualifications offered by these institutions are a combination of theory and practical training, which incorporates the requirements for STCW. For instance, the Durban University of Technology (DUT) offers a three-year National Diploma in Maritime Studies, where there is a requisite theoretical knowledge programme for two years and then 12 months of experiential learning in order to deem the qualification complete.¹⁴ The design of the curriculum in these institutions depicts the nature of MET defined by Basak (2017):¹⁵ 'MET is a combination of education of knowledge of the defined theoretical subject and training skills for a number of practical short duration courses, in training institutions'. However, the maritime HEIs mostly provide long-duration courses, with a minimum of

⁷ Transport Education Training Authority (TETA) 'Mandates' *TETA 2023* (available from : <<https://www.teta.org.za/index.php/home/about-us/mandate>>).

⁸ M Dube, V Lushaba & N Gumbi 'A qualitative investigation into challenges faced by transport sector small micro and medium enterprises in accessing skills development' *Southern African Transport Conference* July 5–7 July 2021 Pretoria, South Africa (available from: <https://repository.up.ac.za/bitstream/handle/2263/82391/2C_04.pdf?sequence=1&isAllowed=y>).

⁹ Kuhlase op cit note 6.

¹⁰ D Bonnin, T Lane, S Ruggunan & G Wood 'Training and Development in the Maritime Industry: The Case of South Africa (2004) 7(1) Human Resource Development International 7–22 (available from: <<https://www.tandfonline.com/doi/abs/10.1080/1367886021000029449>>).

¹¹ Y Nhleko 'Integrating a sustainability curriculum within maritime education: case study of a South African university' (Masters dissertation, World Maritime University, Malmö 2022) (available from: <https://commons.wmu.se/cgi/viewcontent.cgi?article=3079&context=all_dissertations>) at 7.

¹² Kuhlase op cit note 6.

¹³ Nhleko op cit note 11.

¹⁴ Durban University of Technology (DUT) 'Maritime Studies' *Faculty of Applied Sciences* (2023) (available from: <https://www.dut.ac.za/faculty/applied_sciences/maritime_studies/>).

¹⁵ SK Basak 'A Framework on the Factors Affecting to Implement Maritime Education and Training System in Educational Institutions: A Review of the Literature' (2017) 194 *Procedia Engineering* 345–350 (available from: <<https://www.sciencedirect.com/science/article/pii/S1877705817333064>>) at 345.

three years to complete the qualification. Additional STCW training is then offered as short courses that are provided by various SAMSA-accredited independent training institutions. This is reflected in Table 1. As of 2021, the University of KwaZulu-Natal began offering a Post Graduate Diploma in Maritime Studies in the Unit of Maritime Law and Maritime Studies.¹⁶

However, Zimmerman¹⁷ found that although South Africa produces sufficient graduates with maritime-related degrees, they lack the specific skills needed by the sector, which are mostly technical and professional maritime abilities, indicating the need to prioritise the critical skills for the industry.

Table 1: The Maritime Courses Offered by South African Institutions

Institution	Programme/structures
Cape Peninsula University of Technology (CPUT)	Marine Engineer/Seafarer
Durban University of Technology (DUT)	Degree/Diploma in Nautical Sciences
False Bay TVET College	Short courses/vocational
Maritime, Ports, Transport and Logistics – University of Stellenbosch	Short courses in ports and terminals, maritime and shipping, transport and logistics
Nelson Mandel Metropolitan University	Degree/Postgraduate Diploma
South African Maritime School and Transport College	Various courses/diplomas
STC-SA; SAMTRA; SA Naval College	Various courses and naval officers
Transnet Maritime School of Excellence	Port related courses
University of KwaZulu-Natal, Unit for Maritime Studies	Postgraduate Diploma in Maritime Studies, Master of Maritime Law, Master of Commerce Maritime Studies
SSTG Maritime Training Academy	STCW and STCW-F approved Maritime Training Courses
Others are minor course providers listed by SAMSA, TETA	Minor/Short courses, certificates and diplomas

Source: Modified from Dyer¹⁸

¹⁶ University of KwaZulu-Natal (UKZN) 'Postgraduate Diploma in Maritime Studies' *Unit of Law and Maritime Studies* (2021) (available from: <<https://maritime.ukzn.ac.za/programmes/postgraduate-diploma-in-maritime-studies/>>).

¹⁷ D Zimmerman 'South African Maritime Skills Supply and Demand' (2022) 1(1) *South African Journal of Maritime Education and Training* 63–70.

¹⁸ JA Dyer 'The Impact of Climate Change on the Future of Pacific Maritime Supply Chains, Seaports and Shipping: How Stakeholders Can Adapt' (PhD thesis, University of Tasmania 2019).

II CHALLENGES

In 2019, South Africa was among the over 80 countries that faced a possible delisting from the list of parties to the STCW Convention by the Maritime Safety Committee, dubbed as the 'Whitelist', because of quality management systems and regulations-related reasons.¹⁹ However, in 2022, the country was able to retain its Whitelist status, inferring compliance with STCW.²⁰ Although South Africa has its recognition on the IMO Whitelist, the country is still prone to challenges in implementation with regard to the synchronisation of the MET–STCW requirements.

Sufficient training

The STCW Convention clearly advocates for the amalgamation of theoretical knowledge with on-the-job training, promoting experiential learning. The findings of a comparative study done by Ruggunan et al.,²¹ (2014) which aimed to review the human resources development strategies for seafarers in South Africa and Australia, indicated issues such as:

- On the part of South African seafarers, they claimed that reforming legislation that supports the industry, having the political will and providing more practical training on vessels for cadets would greatly enhance maritime training in South Africa.
- School-based instruction now dominates, even in many parts of the on-the-job training programmes. This leads to difficulties that frequently arise in acquiring and transitioning knowledge to workplace.
- The combination of school-based instruction and unstructured and unsupervised on-the-

job training produces unsatisfactory results. Many mariners never get the chance or the proper learning environment to become verifiably competent.

- Too high a workload on the seafarer as a result of constantly updated conventions and codes. There is a lot to do, and there is a lot of paperwork and procedures to follow. The resultant increase in the workload of crewmembers leaves little room for mariners to engage in and supervise the training of apprentices on board ships. Rather than reducing the workload at sea, regulations are making it more challenging.

Qualified trainers/instructors

The STCW clearly states in Regulations I/6 (Training and assessment) and I/8 (Quality standards) the requirements for the qualification of instructors and assessors in maritime education and training institutions (METIs) (IMO, 2017).²² The Convention and Code encourages the MET instructors and assessors to continually improve their teaching skills in order to keep up with the ever-changing trends within the industry. Vujičić et al.²³ assert that the instructors need to be adequately qualified for the specific type as well as the level of training and assessment. The authors put forward that (2017), the recommendatory Part B of the STCW Code in Sections B-I/6 and B-I/8 provide practical recommendations for Member States states on how to adhere to the requirements outlined in the mandatory Part A. Thereby serving as a guide for the kind of training required for qualifications at each level. In reference to the capacity of DUT and CPUT for training

¹⁹ South African Maritime Safety Authority (SAMSA) 'Possible Delisting of South Africa From IMO's STCW 'Whitelist' a Major Concern' *The 10th Province* 02 May 2019 (available from: <<https://blog.samsa.org.za/2019/05/02/possible-delisting-of-south-africa-from-imos-stcw-whitelist-a-major-concern-samsa/>>).

²⁰ South African Maritime Safety Authority (SAMSA) 'South Africa Proudly Retains its IMO 'Whitelist' Status for Continued International Validity of Seafarers' Certificates' *The 10th Province* 17 November 2022 (available from: <<https://blog.samsa.org.za/tag/1978-stcw-convention/>>).

²¹ S Ruggunan, S Ghosh & M Bowles 'Reviewing Human Resources Development Strategies of Merchant Navy Seafarers in South Africa and Australia' *15th Annual General Assembly International Association of Maritime Universities* Australian Maritime College, University of Tasmania, 27-30 October 2104 152–162.

²² International Maritime Organization (IMO) *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (STCW) 1978* (London: International Maritime Organization 2017).

²³ S Vujičić, N Hasanspahić, A Gundić & L Maglić 'Analysis of Factors Influencing the Effectiveness of MET Instructors' (2022) 21(4) *WMU Journal of Maritime Affairs* 549–570 (available from: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9112274/>>).

officers, Ruggunan et al.²⁴ stated that ‘these institutions are faced with severe human resource constraints in the training of cadets, and produce a combined total of 240 cadets a year’. This indicates that for METIs to acquire human talent with the appropriate qualifications and experience is still an enormous challenge, not only in South Africa but globally. The lack of knowledgeable instructors and assessors surely has an impact on the quality and the continuous supply of skilled seafarers by these METIs because the trainer’s job is to impart the necessary skills to the trainee seafarers. Chawla²⁵ further emphasised the fact that, more significant than any gadgets, simulations or instructional aids present in a college, is the quality of the instructor.

This challenge is also stressed by Zimmerman.²⁶ The author makes the argument that tertiary institutions are experiencing difficulty in attracting and retaining lecturers who have adequate levels of knowledge and experience, together with students who enter these institutions and struggle with science, technology, engineering and mathematics (STEM) subjects. This exacerbates the mismatch between the demand and supply of maritime skills in the country. This is also highlighted in the Seafarer Workforce Report 2021 by BIMCO/International Chamber of Shipping (ICS) that the industry needs to ‘significantly increase training and recruitment levels if it is to avoid a serious shortage in the total supply of officers by 2026’.²⁷ Zimmerman discusses the threat posed by this challenge and posits that ‘these issues exacerbate the disconnect between the fast-paced, and increasingly technical, global maritime sector and the courses being offered in South Africa’.²⁸

Vujičić et al. proposed a conceptual model (see Figure 1) regarding what makes a competent MET instructor, focusing on the characteristics, professional development and performance. The model emphasises the need for a balance between the practical (sea-going) and theoretical aspects of maritime training, while taking into account the STCW requirements and recommended IMO courses.²⁹

Misalignment between STCW and the NQF requirements

Ruggunan et al.³⁰ stated that another challenge in South Africa is the lack of alignment between the country’s NQF and the implementation of STCW. The accreditation framework for national skills and the standards of the maritime industry must be met. As such, implementing STCW in parallel to the NQF can have conflicting requirements on METIs and involved stakeholders. The author provides the example that, in the certification of officers, the NQF supports the recognition of prior learning (RPL). SAQA³¹ defines RPL as:

a process through which non-formal learning and informal learning are measured, mediated for recognition across different contexts, and certified against the requirements for credit, access, inclusion or advancement in the formal education and training system, or workplace.

This way of granting certification of officers has no station in STCW specifications which raises questions on the relevance of both requirements. Manuel and Baumler³² state that the maritime industry

²⁴ Ruggunan et al. op cit note 21 at 3.

²⁵ P Chawla ‘Standardizing Maritime Education Across Nationalities’ *The Maritime Executive* 11 November 2015 (available from: <<https://maritime-executive.com/editorials/standardizing-maritime-education-across-nationalities>>).

²⁶ Zimmerman op cit note 17.

²⁷ International Chamber of Shipping (ICS) ‘New BIMCO/ICS Seafarer Workforce Report Warns of Serious Potential Officer Shortage’ ICS 28 July 2021 (available from: <<https://www.ics-shipping.org/press-release/new-bimco-ics-seafarer-workforce-report-warns-of-serious-potential-officer-shortage/>>).

²⁸ Zimmerman op cit note 17 at 63.

²⁹ Vujičić et al. op cit note 23.

³⁰ Ruggunan et al. op cit note 21.

³¹ South African Qualifications Authority (SAQA) ‘Current Recognition of Prior Learning (RPL) Initiatives in South Africa’ SAQA 2023 (available from: <<https://www.saqa.org.za/current-recognition-of-prior-learning-rpl-initiatives-in-south-africa/>>).

³² Manuel, ME and Baumler, R ‘The Evolution of Seafarer Education and Training in International Law’ (2020) *Maritime Law in Motion* 471–494 (available from: <https://link.springer.com/chapter/10.1007/978-3-030-31749-2_22>) at 475.

'remains one of the most globalized of contemporary industries—if not the most globalized'. Because of the global nature of the industry, and because seafaring is an international profession, STCW requirements are of more relevance in this instance, and the requirements of the STCW Convention and Code have given local regulatory frameworks little space for manoeuvring.

Regulators demand the same safety requirements on board all ships, regardless of the nationality of the crew,³³ hence the relevance of STCW as the tool that has been established for the purposes of setting minimum training standards for seafarers that are common across nations.

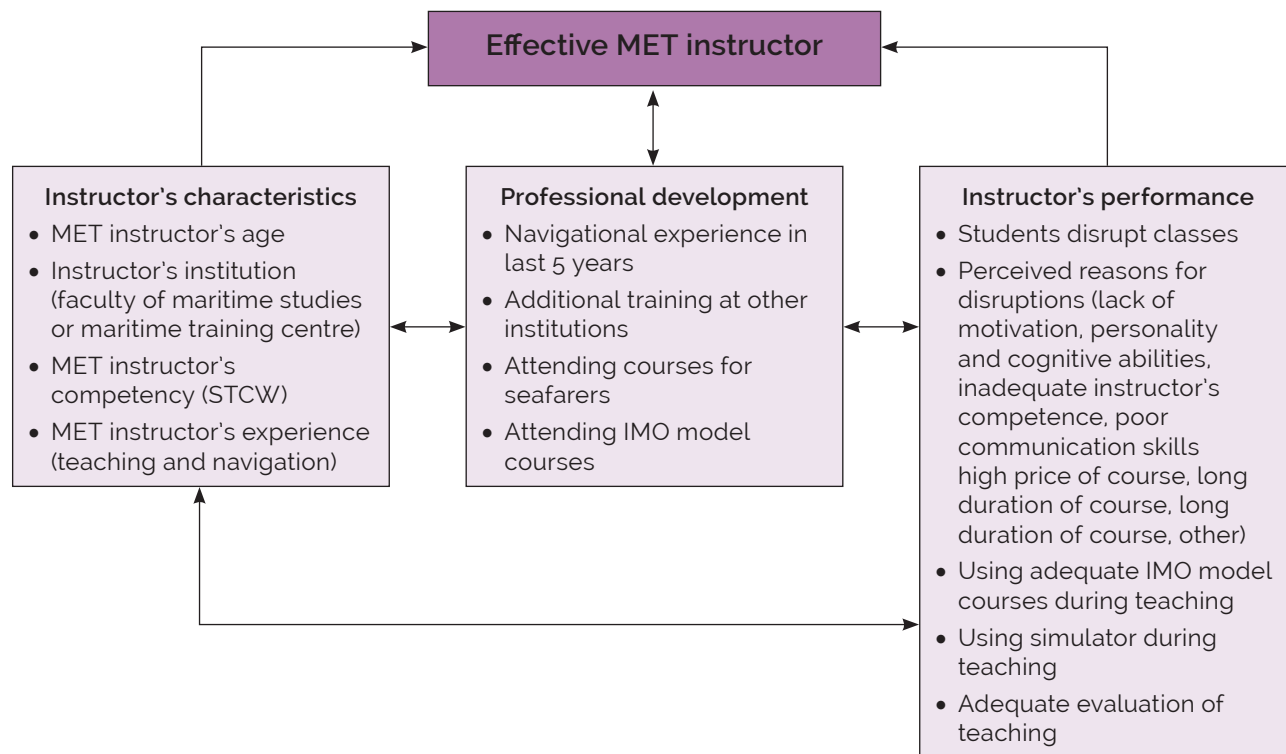


Figure 1: Conceptual Model for an Effective MET Instructor

Source: Vujčić et al.³⁴

III METHODOLOGY

The aim of this study was to assess whether the South African MET system has challenges in complying with the requirements of the STCW Convention and Code, and a process to identify these challenges. Using a desktop research approach, this paper begins by looking at the South African MET system, in parallel to the global requirements for training seafarers in relation to STCW. This assisted the author to identify the gaps

and challenges within the regulatory frameworks. The paper aims to answer the following questions:

- Is the current South African MET system in accordance with the requirements of the STCW Convention?
- What are the existing gaps and challenges in optimizing the conformity of the MET system in meeting the minimum standards of the STCW Convention and Code?

³³ Chawla op cit note 25.

³⁴ Ibid.

- What change for continuous improvement could the relevant stakeholders implement towards STCW compliance?

These questions are addressed by means of a case study of the current South African MET model, by analysing the technical and academic regulatory environment, how it is currently implemented and how it benchmarks with the current minimal threshold for training standards. Online libraries were used for

the relevant search, looking at key concepts, such as ‘maritime education and training’, ‘higher education’, ‘STCW’ and ‘maritime higher education’, among others. To assist in reducing the pool of articles, the timeline factor was applied to ensure that the majority of the material used was from the last five years. Any articles with more than a five-year timeline proved to be relevant to this study and likely to be true of the current state of affairs.

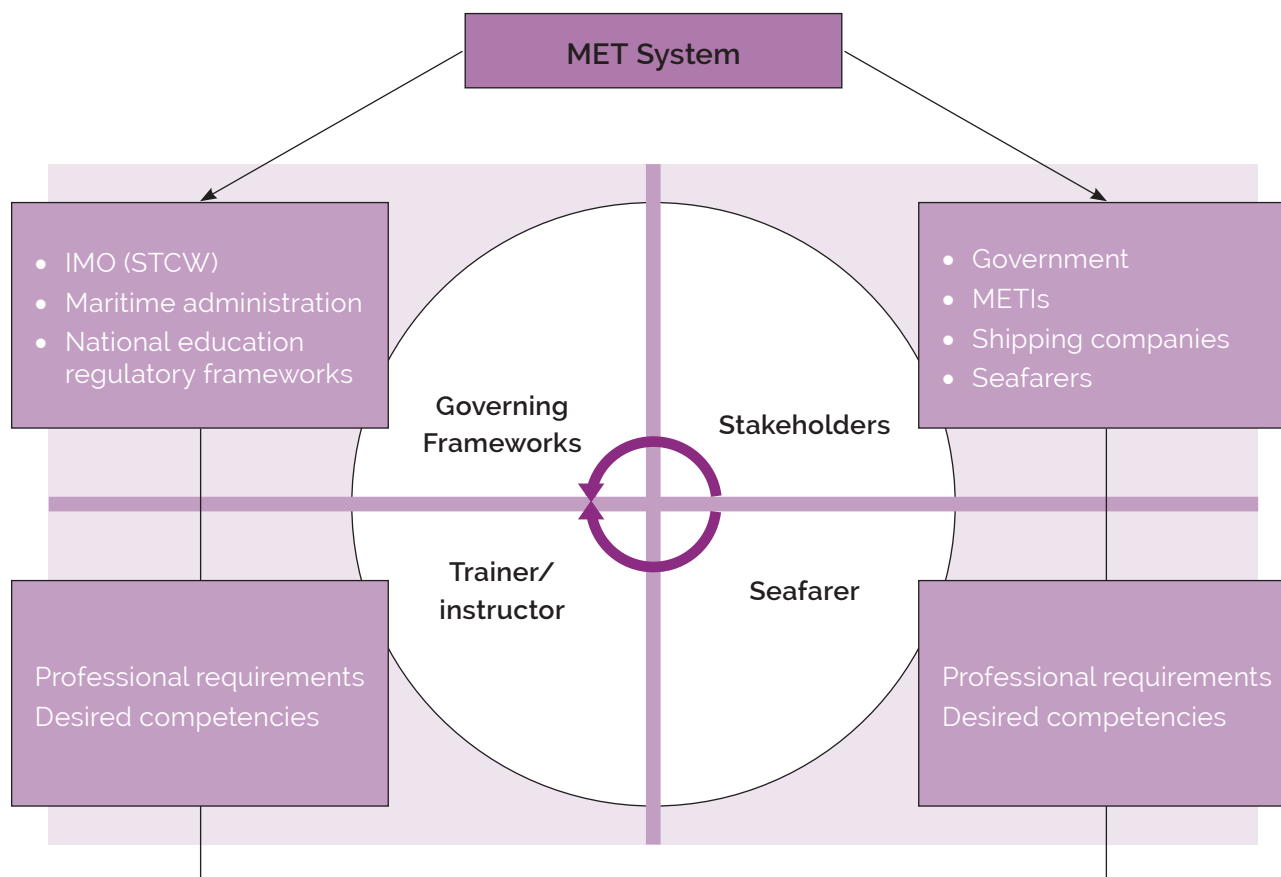


Figure 2: MET System Framework

Source: Author

IV FRAMEWORKS

MET system framework

The proposed framework (Figure 2) highlights the complexity of MET and the different factors that need to be considered in the development and management of MET. These factors must be clearly defined to

achieve the desired MET outcomes to comply with the national educational policies and, on an international level, the requirements prescribed in the STCW. The interaction of all these stakeholders is imperative to ensure efficient learning and the synchronisation of the MET programme, while meeting the requirements of all stakeholders. While this may seem a rather complex

task, it is achievable. The STCW Convention and Code recognises national regulatory frameworks or policies and, hence, sets minimum standards. In addition to these minimum standards, the national frameworks that regulate MET professional requirements, in alignment with the desired competencies in the industry, all have to interact to produce eligible maritime professionals. The challenges identified in this paper were sufficiency in training of seafarers, qualifications of instructors and the misalignment between STCW and national education regulatory frameworks. This indicates quite a few needed changes, such as standardising the requirements for the qualifications of instructors is a necessary step because this has a ripple effect on the quality of seafarers – the kind of training they receive.

Compliance framework

As a Member State of the IMO and a signatory to the STCW Convention and Code, South Africa is obligated to comply with the minimum requirements of STCW 1978, as amended. As such, the national education regulatory policies do not take first preference in this regard, and national policies must be designed in such a manner that they do not conflict with international requirements, and their implementation must be complementary. Consequently, 'giving effect to the provisions of STCW shall be achieved through restructuring of the requirements of national regulations regulating education and training' in the instance where there is a clash or a misalignment.³⁵ The author further suggests that, with regards to METIs complying and effectively implementing STCW, it is best to draw on best practices from other METIs that are well-established when considering factors that affect training delivery locally. This highlights the fact that, although STCW sets the minimum standards on an international level, countries or MET institutions must take into consideration local factors that may hinder effective implementation.

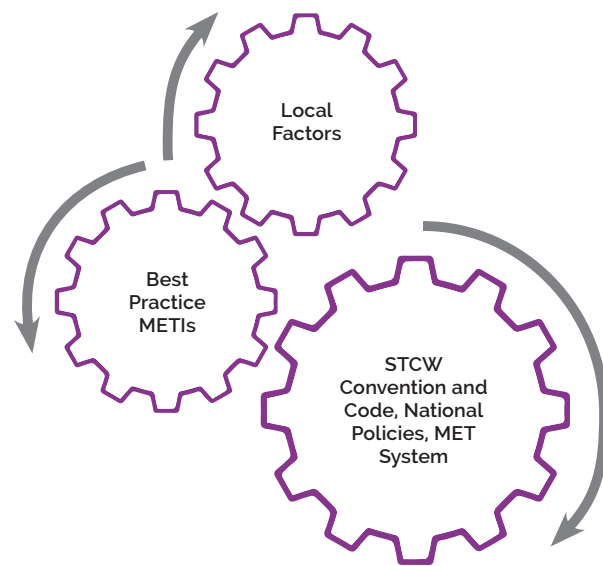


Figure 3: Compliance Framework

Source: Modified from Mohammed³⁶

V CONCLUSION

South Africa has retained its listing on the Whitelist, inferring compliance with the STCW. There are still issues that can be improved for the country to maintain and improve upon the challenges associated with compliance and becoming a seafarer-supplying country. The country has done well in terms of attaining this standard without a dedicated MET university but should not overlook the possible opportunities associated with having such an institution, especially as one of the biggest maritime nations in the continent. Shipping remains and will continue to be the backbone of world trade. As such, the quality of seafarers produced is of vital importance in order to not only comply with regulatory frameworks but also attract the interest of major shipping companies in South African seafarers.

Therefore, this paper proposed looking at factors, such as ensuring that local frameworks align with international requirements, the quality of instructors

³⁵ Mohammed op cit note 3.

³⁶ Ibid.

in the South African METIs and the sufficiency of training that is received by cadets. For MET to be highly effective, it is vital to take into consideration all the aspects that make up and influence the MET system.

REFERENCES

Books, Chapters, Journal Articles, Conference Proceedings and Theses/dissertations

- Basak, SK 'A Framework on the Factors Affecting to Implement Maritime Education and Training System in Educational Institutions: A Review of the Literature' (2017) 194 *Procedia Engineering* 345–350 (available from: <<https://www.sciencedirect.com/science/article/pii/S1877705817333064>>).
- Bonnin, D, Lane, T, Ruggunan, S and Wood, G 'Training and Development in the Maritime Industry: The Case of South Africa (2004) 7(1) *Human Resource Development International* 7–22 (available from: <<https://www.tandfonline.com/doi/abs/10.1080/1367886021000029449>>).
- Dube, M, Lushaba, V and Gumbi, N 'A qualitative investigation into challenges faced by transport sector small micro and medium enterprises in accessing skills development' *Southern African Transport Conference* July 5–7 July 2021 Pretoria, South Africa (available from: <https://repository.up.ac.za/bitstream/handle/2263/82391/2C_04.pdf?sequence=1&isAllowed=y>).
- Dyer, JA 'The Impact of Climate Change on the Future of Pacific Maritime Supply Chains, Seaports and Shipping: How Stakeholders Can Adapt' (PhD thesis, University of Tasmania 2019).
- Kuhlase, PM 'The importance of maritime education and training within the secondary education system in South Africa' (Master's dissertation, World Maritime University, Malmo 2020) (available from: <https://commons.wmu.se/cgi/viewcontent.cgi?article=2449&context=all_dissertation>).
- Manuel, ME and Baumler, R 'The Evolution of Seafarer Education and Training in International Law' (2020) *Maritime Law in Motion* 471–494 (available from: <https://link.springer.com/chapter/10.1007/978-3-030-31749-2_22>).
- Mohammed, TI 'All Hands on Deck: Addressing Key Challenges in Kenya's MET System in Compliance with The STCW Convention and Code for Sustainable Blue Economy Growth' *Proceedings of the 1st TUM Multidisciplinary Conference and Innovation Week* Mombasa, Mombasa April 2019 3–5.
- Mohammed, TI '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' in A Pazaver, ME Manuel, J Bolmsten, M Kitada and I Bartuseviciene (eds) *Proceedings of the International Maritime Lecturers' Association. Seas of transition: setting a course for the future* (Malmö: World Maritime University 2021) 90–102 DOI: 10.21677/imla2021.09.
- Nhleko, Y 'Integrating a sustainability curriculum within maritime education: case study of a South African university' (Masters dissertation, World Maritime University, Malmo 2022) (available from: <https://commons.wmu.se/cgi/viewcontent.cgi?article=3079&context=all_dissertations>).
- Ruggunan, S, Ghosh, S and Bowles, M 'Reviewing Human Resources Development Strategies of Merchant Navy Seafarers in South Africa and Australia' *15th Annual General Assembly International Association of Maritime Universities* Australian Maritime College, University of Tasmania, 27–30 October 2104 152–162.
- Vujičić, S, Hasanspahić, N, Gundić, A and Maglić, L 'Analysis of Factors Influencing the Effectiveness of MET Instructors' (2022) 21(4) *WMU Journal of Maritime Affairs* 549–570 (available from: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9112274/>>).
- Zimmerman, D 'South African Maritime Skills Supply and Demand' (2022) 1(1) *South African Journal of Maritime Education and Training* 63–70.

Industry Publications and Reports

- International Chamber of Shipping (ICS) 'New BIMCO/ICS Seafarer Workforce Report Warns of Serious Potential Officer Shortage' *ICS* 28 July 2021 (available from: <<https://www.ics-shipping.org/>>).

press-release/new-bimco-ics-seafarer-workforce-report-warns-of-serious-potential-officer-shortage/>).

International Maritime Organization (IMO) *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (STCW) 1978* (London: International Maritime Organization 2017).

South African International Maritime Institute (SAIMI) 'Background' SAMI 2019 (available from: <<https://saimi.co.za/article/background/>>).

Articles and Websites

Chawla, P 'Standardizing Maritime Education Across Nationalities' *The Maritime Executive* 11 November 2015 (available from: <<https://maritime-executive.com/editorials/standardizing-maritime-education-across-nationalities>>).

Durban University of Technology (DUT) 'Maritime Studies' *Faculty of Applied Sciences* (2023) (available from: <https://www.dut.ac.za/faculty/applied_sciences/maritime_studies/>).

South African Maritime Safety Authority (SAMSA) 'Possible Delisting of South Africa from IMO's STCW 'Whitelist' a Major Concern' *The 10th Province* 2 May 2019 (available from: <<https://blog.samsa.org.za/2019/05/02/possible-delisting-of-south-africa-from-imos-stcw-whitelist-a-major-concern-samsa/>>).

South African Maritime Safety Authority (SAMSA) 'South Africa Proudly Retains its IMO 'Whitelist' Status for Continued International Validity of Seafarers' Certificates' *The 10th Province* 17 November 2022 (available from: <<https://blog.samsa.org.za/tag/1978-stcw-convention/>>).

University of KwaZulu-Natal (UKZN) 'Postgraduate Diploma in Maritime Studies' *Unit of Law and Maritime Studies* (2021) (available from: <<https://maritime.ukzn.ac.za/programmes/postgraduate-diploma-in-maritime-studies/>>).

Government Publications

South African Qualifications Authority (SAQA) 'Current Recognition of Prior Learning (RPL) Initiatives in South Africa' SAQA 2023 (available from: <<https://www.saqqa.org.za/current-recognition-of-prior-learning-rpl-initiatives-in-south-africa/>>).

Transport Education Training Authority (TETA) 'Mandates' TETA 2023 (available from : <<https://www.teta.org.za/index.php/home/about-us/mandate>>).

Legislation

South African Skills Development Act 1998

Qualifications Authority Act 58 of 1995

National Qualifications Framework Act 67 of 2008



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