

## **Evaluation of Traditional MET Credentials: Empirical Evidences from Maine Maritime Academy**

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### **ABSTRACT**

Seafarers with traditional MET credentials often find it difficult to pursue higher education because of their lack of a university background. Presently, there is no documented standardized procedures to evaluate MET credentials for entry into advanced degree programs. The author explains the graduate admissions process used at Maine Maritime Academy and a methodology to evaluate applications from seafarers who do not possess a baccalaureate degree. The study's findings are statistically significant and will serve as a valuable tool in evaluating superior MET licenses. Furthermore, its findings will be a useful document for external accreditation bodies that accredit institutions of higher education--maritime as well as non-maritime--that admit seafarers without a baccalaureate degree.

### **1. Introduction**

Seafaring is a very demanding profession with little room for error. Contemporary trends in global business such as aiming for high quality outputs and zero-defects are really nothing new to the repertoire of a well-trained, qualified and conscientious seafarer. Following umpteen checklists and standing orders and being prepared to face the worst adversity during the best of times as well as the worst of times is very much a seafarer's daily routine. It takes a strong and unique individual to be a successful seafarer. The uniqueness comes not from the possession of any extraordinary intellectual capacity but from that of simple commonsense (euphemistically referred at sea as behaving in a "seaman-like manner") and from the willingness to subject oneself to the rigors of self-discipline of the highest order and separation from near and dear ones for prolonged periods of sailing.<sup>1</sup> It also comes from the individual's mental and physical aptitude to face the unknown, whether that be hurricane force winds at sea or militant stevedores pilfering cargo in port. The sea is certainly no place for incompetence, negligence or complacency, for it can be tranquil one day and ruthless the other. The only way seafarers can gain respect from their fellow shipmates is by knowing his/her job and performing their duties in the most professional manner. They know when they go to sleep each night that their lives are truly in the hands of their colleagues. And for every conscientious seafarer who takes over a watch at any time of the day or night, nothing could be more satisfying than the confidence of fellow shipmates in his/her professionalism. There is a common bond among seafarers from all over the world that far surpasses distinctions based on color, creed, nationality, religion, or socioeconomic stature. That bond comes from their professional pride and their wider view of the world which their land-based colleagues often do not fathom. If anyone is worthy of being called a global citizen, it is a seafarer for s/he is a true citizen of the world regardless of the port of call or the flag at the ship's stern.

The complexities that challenge a seafarer's life have not eased in the 21st century despite various technological advances, and the profession remains paradoxical. While it provides a good source of income and a better living standard especially for those from poorer countries, the agonies of being far from one's near and dear ones and the rigors of working in an hostile environment take a significant toll on the seafarer's mental and physical well-being. As a result, many seafarers seek opportunities to escape from this paradoxical existence. Many of them have gone on to occupy increasingly complex shore-based management and technical positions with their former employers after sailing for several years on their vessels.

One other solution to this paradox is through higher education. However, many seafarers are handicapped in this context because of their lack of a formal university educational background that leads to the typical baccalaureate degree. Oftentimes their certificate of competency as a master mariner or a chief engineer does not receive adequate recognition from the traditional academicians that make the higher education admission decisions. It is rather ironic that a master mariner credential is found inferior to that of a fresh college graduate with little to no real-world experience. Accordingly, the seafarer's application for higher education may be

turned down by a traditional university although the person in question may have successfully commanded the largest oil tanker afloat through the most treacherous navigational areas besides being a proven leader with exceptional commercial understanding.

The advanced degree programs offered by reputed maritime universities in different parts of the world often recognize this double standard and grant admission to those seafarers without a formal university educational background based on their life experiences. However, traditional universities find themselves unable to grant such admissions to seafarers partly for fear of their external accreditation bodies and primarily because of their lack of familiarity with the traditional MET curriculum and the competencies of contemporary seafarers. Furthermore, the community of maritime academicians and professionals has not produced adequate support materials that would make the task of their university colleagues (charged with validating the equivalency of seafaring licenses) any easier. Maritime institutions have developed their own admission standards and policies, and are documented in their respective program catalogs.<sup>2</sup> However, there is hardly any global or even regional co-ordination of such standards and policies.<sup>3</sup> There is an immediate need to convince the traditional university academicians about the true academic worth of MET credentials and the dilemma facing seafarers. It is the author's expectation to make such a contribution in this field using 15 years of data collected by the Maine Maritime Academy (MMA) graduate office. This data will be analyzed to examine the academic performance of all MMA graduate students that includes those with a traditional baccalaureate degree from a recognized university as well as those admitted based on traditional MET credentials. The author's challenge is to prove that the academic performance of those admitted based on the equivalency argument will be as good as that of those entering MMA graduate program with a traditional baccalaureate degree.

## **2. Background on Traditional MET Credentials**

Seafarers fall into two basic categories, licensed and unlicensed. Unlicensed personnel may undertake pursuit of deck or engine licenses upon accumulating the appropriate level of sea-time. Licensed officers pursue progressively higher licenses (certificates of competency) and go on to become captains or chief engineers ultimately. Although the basic credentials for beginning a seafaring career varies from country to country, a good number of licensed officers originate from a national or regional maritime academy. The academic programs at some of the maritime institutions lead toward a baccalaureate degree in addition to an entry-level license.<sup>4</sup> However, the maritime institutions in many countries continue to be training-oriented and go little beyond the professional component. This was typical of the British apprentice system and is still found in the Commonwealth group of nations.<sup>5</sup> Seafarers that originate from these countries do not graduate from their maritime academy with a baccalaureate degree although they are often selected for their training based on a highly competitive exam and very often they constitute the cream of that nation. There is an interesting local perception in countries like India that it is those applicants who are unable to get admission to professional institutions (such as a maritime academy) that go on to a traditional university and complete their baccalaureate credentials.<sup>6</sup>

Seafarers are an enterprising bunch and undertake higher education in various fields ranging from business to technology. The usual impediment that stands in their pursuit of higher education, i.e., the absence of a baccalaureate degree, was discussed earlier. An exception to the above are the maritime universities themselves. Many maritime universities offer advanced degree programs today. It is seven of these universities that have spearheaded the foundation of the International Association of Maritime Universities. The availability of higher education options is a prerequisite for membership in IAMU. Maine Maritime Academy is one such university and represents the Americas in the IAMU.

### **2.1 Higher Education Options at Maine Maritime Academy**

Maine Maritime Academy established a Department of Graduate Studies and Research in 1985 and began offering a unique modular program--MS degree in Maritime Management--in 1985. It follows the executive MBA pattern and is scheduled in five-week modules to meet the work commitments of typical seafarers seeking a shore-based middle management career. The Department's offering was expanded in 1996 with the introduction of an additional MS degree program in Port Management and again in 1998 with the introduction of the MS in Logistics Management.<sup>7</sup> The Loeb-Sullivan School was established in 1997 with the creation of the undergraduate program in International Business and Logistics. Presently, the School consists of the graduate component as well as the undergraduate component, each having its own administrative head.

### 3. The MMA Graduate Admissions Process

The MMA graduate program accepts application from those possessing a baccalaureate degree or its equivalent. In addition to the basic educational requirement, the students should appear for the GMAT or GRE exam as well as the TOEFL test if their medium of instruction is not in English. They should also write a personal essay as to why they seek admission in addition to submitting three personal evaluations of their managerial potential.<sup>8</sup> The MMA graduate admissions process is totally independent of the institutional undergraduate admissions office and its staff, and is the sole purview of the graduate admissions committee. It is chaired by a graduate faculty-member. Other members of the committee include the Director of the program as well as two other graduate faculty members. Once the admission package is complete, the graduate admissions committee scrutinizes each applicant on a case-by-case basis. While applications from students with a baccalaureate degree are relatively easy to evaluate, considerable attention is given to those that seek admission based on the equivalency argument.

#### 3.1 The MMA Criteria for Handling Non-Traditional Applications

When the admissions committee receives an application from a candidate without a baccalaureate degree, the equivalency argument is based on the candidate's professional credentials and managerial experiences. In general, a person serving as a master or a chief engineer or possesses the requisite license is perceived to possess the basic undergraduate educational credentials. Furthermore, a person who possesses a chief mate's license and has sailed as a chief officer is also given the equivalency because of the immense managerial and commercial responsibilities of this officer on board a ship. The educational contents for attaining these licenses have sufficient academic content and mathematical rigor to make the equivalency argument when combined with a significant sailing background. While it is beyond the scope of this paper to prove how many years of seafaring experience would equate to the general education component of a typical baccalaureate degree, the MMA committee looks for at least six years of such experience. The Committee also would like such a candidate to have at least one year's experience at the senior officer-level that involves significant managerial and leadership responsibilities. No candidate is admitted based purely on meeting the minimum academic threshold. In addition to meeting the equivalency argument, these candidates are subjected to the same admission rigor as the others in the other three areas. The final decision to admit is based on the votes cast by the individual committee members. A simple majority is required for admission. The Chair of the graduate admissions committee is responsible for all final decisions regarding admission as well as advising the Program Director on individual cases as to why a particular applicant was rejected and whether or not that person could reapply on overcoming specified deficiencies.<sup>9</sup> The author contends that MMA graduate admissions committee has applied these standards consistently over the last fifteen years and built up sufficient experience that can be disseminated and shared with other institutions.<sup>10</sup> Section 4 of the paper describes the study methodology and its findings. The crux of the analysis is academic performance outcomes as measured by grade point averages.

#### 3.2 Pool of Accepted MMA Graduate Students

**Table 1. Nationality of MMA Graduate Students**

Class	Nationality					Total
	U.S.	India	PRC	Canada	Others	
1987	4	3				7
1988	3	3	2		1	9
1989	10	4	3	1	4	22
1990	6	2	1	4	2	15
1991	5	4		3	1	13
1992	8	1	6	1	3	19
1993	1	4		1	3	9
1994	9	2	3		3	17
1995	5	3	4		2	14
1996	2	4	1	1	4	12
1997	4	1			2	7
1998	4	1	1		2	8
1999	1	3			1	5
2000	3	1		1	5	10
2001	3	1		2		6
<b>Totals</b>	68	37	21	14	33	173

The MMA graduate offerings have attracted students from many countries in addition to those in N. America. Table 1 shows the nationalities of students admitted dating back to the first graduating class (of 1987). Approximately 40% of the students have come from the U.S. with the rest being from India, the People's Republic of China, Canada and other nations respectively. The other category includes students from 24 nations. A year-wise distribution of the other category is shown in Table 2. The above statistics are based on the year of graduation rather than the year admitted into the program.<sup>11</sup>

**Table 2. MMA Graduate Students from the Others Category**

	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	Totals
HK		1														1
Kuwait			1			1										2
Sudan			1													1
Cyprus			1													1
Pakistan			1		1											2
Ghana				1							1			1		3
Panama				1												1
UAE						1										1
RoC						1										1
Egypt							1									1
Liberia							1									1
Thai							1				1					2
Holland								1								1
Argent								1								1
Russia								1	1	2		1				5
Nigeria									1							1
Romania										1						1
Austria										1						1
UK												1				1
S'pore													1			1
Ukraine														1		1
Sweden														1		1
S. Korea														1		1
Venzla														1		1
Totals	0	1	4	2	1	3	3	3	2	4	2	2	1	5	0	33

#### 4. Methodology

Table 3 (next page) shows students granted admission based on the equivalency criterion. The 37 students under this category come from 11 countries, 18 being from India alone. All these students possessed senior professional licenses, viz., Master Mariner, 1<sup>st</sup> Mate or Chief Engineer and met the MMA graduate admissions criteria discussed earlier.

Table 4 shows the average GPA of each graduating class. Furthermore, each class was divided into two categories. The BS category consists of those admitted with a baccalaureate degree and the MET category, those admitted based on the equivalency argument. It can be seen that students under the MET category outperformed students entering the program with traditional baccalaureate credentials in all years except 1995. Furthermore, 5 among the 12 students with a perfect transcript (GPA = 4.0) were admitted based on their MET credentials.

**Table 3. MMA Graduate Students Admitted with Traditional MET Credentials**

Class	U.S.	India	HK	Kuwait	Cyprus	Canada	Ghana	Nigeria	UK	S'pore	Venez	Totals
1987	1	2										3
1988		2	1									3
1989		3			1	1						5
1990						2	1					3
1991		3				2						5
1992	1											1
1993		3				1						4
1994		1										1
1995	1	1						1				3
1996		2										2
1997	2						1					3
1998		1							1			2
1999										1		1
2000											1	1
2001												0
<b>Totals</b>	<b>5</b>	<b>18</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>37</b>

**Table 4. GPA Comparisons 1987-2001**

Year	GPA Comparisons		
	Class	BS	MET
1987	3.568	3.530	3.618
1988	3.631	3.584	3.725
1989	3.600	3.594	3.620
1990	3.715	3.706	3.753
1991	3.732	3.627	3.900
1992	3.527	3.509	3.857
1993	3.560	3.342	3.832
1994	3.506	3.491	3.750
1995	3.580	3.585	3.563
1996	3.674	3.650	3.794
1997	3.521	3.446	3.621
1998	3.641	3.526	3.988
1999	3.750	3.687	4.000
2000	3.708	3.701	3.777
2001	3.807	3.807	
<b>Averages</b>	<b>3.635</b>	<b>3.586</b>	<b>3.771</b>

**4.1 Statistical Analysis and Testing the Results**

Although the mean values reported in Table 4 are highly in favor of MET students, the possibility of random factors contributing toward such an outcome cannot be ruled out. Accordingly, a normal distribution is assumed, and statistical analyses and tests conducted to add credence to the study's findings.

**4.2 Testing the Mean Values of the Two Populations**

Null hypothesis  $H_0: \mu_1 = \mu_2$  (Mean GPA of the BS population = Mean GPA of the MET population)

Alternate hypothesis  $H_1: \mu_1 \neq \mu_2$  (Mean GPA of the BS population  $\neq$  Mean GPA of the MET population)

where  $\mu_1$  = the mean GPA of BS students and  $\mu_2$  = the mean GPA of MET students. The hypothesis was tested for the population (1987-2001), and Z value obtained by dividing  $\mu_1 - \mu_2$  by the SE of the difference of the means. Table 5 summarizes the results.

**Table 5. Testing the Difference in Means**

1987-2001	Composite	$\mu_1$	$\mu_2$	$\mu_1 - \mu_2$	SE	Z Value
Mean	3.621	3.587	3.749	-0.162	0.046301	-3.49886
N	173	136	37			
Variance	0.0699	0.0666	0.0612			
SD	0.2644	0.2582	0.2472			

As the Z value ( $=-3.49886$ )  $< -1.96$ , the null hypothesis is rejected and alternate hypothesis accepted; i.e., the means of the two populations are statistically different for reasons other than random factors.

#### 4.3 F Test for Testing the Equality of the Variances

The equality of the two population variances was tested as follows (Berenson and Levine 1996):

Null Hypothesis  $H_0: \sigma_1^2 = \sigma_2^2$  (Variance in the GPA of the BS population = Variance in the GPA of the MET population).

Alternate Hypothesis  $H_1: \sigma_1^2 \neq \sigma_2^2$  (Variance in the GPA of the BS population  $\neq$  Variance in the GPA of the MET population).

The test was conducted for the entire 15 year population as well as three separate 5 year populations, viz., 1987-1991, 1992-1996 and 1997-2001. Table 6 summarizes the results of the F test. Accordingly, the null hypothesis that the variance in the GPA of BS students = the variance in the GPA of MET students cannot be rejected.

**Table 6. F Tests and Results**

Years	$\alpha = 0.05$		$F = S_1^2/S_2^2$	$\alpha = 0.005$		Results
	Lower Tail	Upper Tail		Lower Tail	Upper Tail	
1987-1991	0.5525	2.01	1.0362	0.3937	3.07	Accept
1992-1996	0.5128	2.49	1.1112	0.3546	4.44	Accept
1997-2001	0.4255	3.38	0.9725	0.2653	7.55	Accept
1987-2001	0.6667	1.6	1.0882	0.5319	2.11	Accept

## 5. Conclusions and Recommendations for Future Research

The study analyzed the academic performance outcomes of MMA graduate students ever since it began. It was observed that those granted admission based on traditional MET credentials outperformed those admitted with a baccalaureate degree in all but one of the years. The data and results were tested for scientific credibility. The first null hypothesis that the mean GPA of BS students = the mean GPA of MET students was rejected and the second null hypothesis that the variance in the GPA of BS students = the variance in the GPA of MET students was accepted at traditional confidence levels. It is expected that the findings of this study will help all universities and institutions, whether maritime-related or not, in giving appropriate consideration to applications from seafarers with traditional MET credentials. Its major contributions include a mechanism for evaluating the academic equivalence of those that possess superior seafaring licenses as well as meeting the needs of external accreditation bodies of higher education.

Although the study's findings are significant, it must be noted that a majority of students admitted under the equivalency criterion originated from one country, viz., India. Extending this further, 29 out of the 37 students admitted came from the Commonwealth group of nations. The possibility that these individuals receive a better level of secondary school education than those from other countries cannot be ignored. Also, in the case of countries like India, it cannot be ignored that a lucrative merchant marine career is placed in higher esteem than traditional university education. It is suggested that future research be conducted in these areas to fine-tune this novel effort to document the academic equivalency of traditional MET credentials.

#### Endnotes

<sup>1</sup> The author spent a good decade at sea. His longest stay on any ship was 14 continuous months.

<sup>2</sup> E.g., See MMA Graduate Catalog, p.27.

<sup>3</sup> A forum like the International Association of Maritime Universities could assume the leadership in filling up such a noticeable lacuna in traditional MET education. For a description of the goals and activities of IAMU, see IAMU Journal (2000, 68-9).

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<sup>4</sup> This is typically the case with all U.S. maritime academies except the Great Lakes Maritime Academy that only offers an associate degree.

<sup>5</sup> The deck and engine license programs at the Singapore Polytechnic, Singapore are good examples.

<sup>6</sup> However, the Indian government-sponsored college for navigating officers began granting degrees (as part of the University of Bombay system) beginning in the early 1990s.

<sup>7</sup> The program in Port Management was offered from 1996 to 2000 and then shelved temporarily because of lack of demand.

<sup>8</sup> For further details, see MMA Graduate Catalog.

<sup>9</sup> The committee also typically advises any incoming students of their weaknesses and possible alternatives to remedy the same.

<sup>10</sup> The author has served as the Chairperson of the MMA Graduate Admissions Committee from 1987 onwards.

<sup>11</sup> This is because the MMA graduate students have a window of up to five years to complete their degree requirements without disrupting their professional obligations.

### References

(1) Berenson, M.L. and D.M. Levine (1996); *Basic Business Statistics: Concepts and Applications*. Upper Saddle River, NJ: Prentice Hall, 1996.

(2) IAMU (2000); International Association of Maritime Universities: Goals and Objectives, *IAMU Journal*, **1**, 68-9.

(3) Maine Maritime Academy. *Loeb-Sullivan School Graduate Catalog*. Castine, Maine: Loeb-Sullivan School, 2000.